

# Syndromic management of sexually transmitted diseases: is it rational or scientific?

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## Summary

Control of sexually transmitted diseases improves the reproductive and sexual health of afflicted individuals and lowers the community burden of HIV. Preventing STDs or their complications requires health education, condom promotion and effective case management. Clinical diagnosis is frequently incorrect while laboratory-confirmed aetiological diagnosis is expensive. In resource-poor countries which lack trained personnel and laboratory facilities, syndromic management remains a rational approach to STD care. Although the approach is simplistic in design, its successful implementation requires regular monitoring and evaluation of protocols as well as supervision and training of clinicians.

**keywords** STD, syndromic management, syndromic approach, aetiological diagnosis

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## Introduction

Sexually transmitted diseases (STDs) are of major public health importance as they predominantly affect young adults, carry stigma, facilitate transmission and acquisition of the human immunodeficiency virus (HIV) infection and have complications which constitute a great socio-economic burden. Complications resulting from failure to diagnose and treat infections include pelvic inflammatory disease (PID), infertility, ectopic pregnancy, chronic pelvic pain, cervical cancer and urethral stricture. The impact on foetuses and newborns can be devastating, as manifested by miscarriages, stillbirths, neonatal deaths, mental retardation, neonatal conjunctivitis and pneumonia. The World Bank (1993) estimates that for those aged 15–44 years, STDs excluding HIV are the second most important cause of healthy life lost in women after maternal mortality and morbidity. In spite of this burden, STDs have been accorded low priority in many developing countries. Most countries lack an effective STD control programme (Adler 1996).

Fortunately, interest in STDs has been boosted by evidence from recent studies confirming that control of STDs could contribute considerably to reducing the incidence of HIV (Grosskurth *et al.* 1995; Dallabetta & Diomi 1997). The main aims of STD control are to interrupt their transmission, development and consequences. Besides primary prevention, measures to accomplish these aims include detecting and curing disease by providing adequate diagnostic and treatment

facilities as well as limiting the complications of infection by providing early and effective treatment for both symptomatic and asymptomatic patients and their contacts. Syndromic case management is one approach for the secondary prevention of STDs. This paper discusses the rationale for the approach, underlying principles, advantages and disadvantages and how it can be made to work.

## Rationale for syndromic approach

The signs and symptoms of the various STDs are not specific and so make accurate clinical diagnosis difficult. Only about 70% of single infections of genital ulcer disease are correctly diagnosed clinically (Dangor *et al.* 1990). In a recent report of a study in Nairobi, Kenya, only 40% of chancroid and 24% of syphilis infections were correctly diagnosed clinically (Ndinya-Achola *et al.* 1996). Laboratory-confirmed aetiological diagnosis is the usual approach used in the management of many diseases and is therefore considered 'scientific' by many doctors. Involving the use of microscopy, cultures and serology, this approach is expensive and could lead to delays in diagnosis. Laboratory support is often unavailable in many resource-poor countries or may be located in the urban centres and thus serve a limited segment of the population. Patients may have to travel long distances from peripheral health centres to specialist or laboratory facilities in cities. Many patients with STD have mixed infections. The limitations of clinical diagnosis without tests and laboratory-based

aetiological diagnosis have led to development of the syndromic approach.

### What is the syndromic approach?

A syndrome is set of symptoms and signs that characterize a clinical condition. Extending this definition, syndromic management implies an approach in which clinical algorithms such as decision trees for commonly presenting signs and symptoms (e.g. urethral discharge or genital ulcer) are used in case management. The symptoms selected are reasonably consistent and easy to recognize. The algorithm provides treatment for the commonest biological causes of the syndrome. For example, for genital ulcer disease (GUD), treatment is provided concomitantly for the two commonest causes, chancroid and syphilis in the absence of laboratory support and in recognition of the limitations of clinical diagnosis. Examples of STDs treated syndromically include vaginal discharge (VD), male urethral discharge, lower abdominal pain, scrotal swelling and ophthalmia neonatorum. Education and counselling for prevention of future infections, condom promotion, compliance promotion and partner management are integral components of patient management (Table 1) (WHO 1991). The requirements for effective management of STDs using the syndromic approach are presented in Table 2 (van Dam 1996).

**Table 1** Components of syndromic case management of STDs – the 7 Cs

Client selection
Chemical treatment
Compliance with treatment
Counselling
Condom promotion
Contact tracing and contact management
Coming back for review

**Table 2** Requirements for effective syndromic management of STDs

Recognition of common and consistent combinations of signs and symptoms of STDs
Knowledge of the most common causative organisms for the various syndromes
Knowledge of the socio-behavioural characteristics of people with STDs
Knowledge of health-seeking behaviour of STD patients
Co-operation of the partners of people with STDs
Local antibiotic susceptibility patterns
Data on drug availability, cost and drug distribution systems
Choice of algorithms appropriate to the level of training of clinical staff
Regular monitoring and evaluation of the management protocols

### Efficacy of the syndromic approach

The Mwanza Intervention Trial probably provides the most convincing evidence in support of the efficacy of syndromic case management. In that study, communities randomly allocated to receive improved STD case management achieved a 42% reduction in the incidence of HIV (Grosskurth *et al.* 1995). Further analysis of the data indicated that the intervention also led to a 30–50% reduction in the prevalence of active syphilis and symptomatic male urethral discharge (P. Mayaud, personal communication; Mayaud *et al.* 1996).

Syndromic case management achieved clinically assessed cure rates of 91% in Abidjan (La Ruche *et al.* 1995) and 96–98% in Mwanza (Mwijarabi & Mayaud 1997). Studies from Zambia and Côte d'Ivoire report cure rates of 87–97% for vaginal discharge, 92–97% for male urethral discharge, 82–100% for female GUD and 69–100% for male GUD (La Ruche *et al.* 1995; Hanson *et al.* 1996). Differences in cure rates reflect factors such as definition of cure, choice of drugs, compliance with treatment and antibacterial resistance.

Bogaerts *et al.* (1995) compared the sensitivity of three approaches to the diagnosis and management of genital ulcer in Rwanda. The approaches were a concomitant algorithm in which patients with genital ulcers were treated for both chancroid and syphilis without laboratory tests, a hierarchical algorithm in which the choice of treatment was based on the results of laboratory test for syphilis and a clinical approach in which treatment was indicated on clinical diagnosis alone without laboratory tests. The proportion of correctly managed chancroid and/or syphilis cases by these approaches was 99%, 82.1% and 38.3%, respectively. The authors concluded that in situations where no laboratory support is available and where chancroid and/or syphilis are the major causes of genital ulcers, a simple syndromic approach should be used for case management.

### Syndromic case management

#### Advantages

The major advantages and disadvantages of syndromic case management of STDs are summarised in Table 3. The categorical (or specialist/laboratory-based) approach is based on specialist care and laboratory support and limited in coverage. The syndromic approach provides a useful mechanism for STD services to be integrated into the primary health care (PHC) system. High STD prevalence rates, lack of specialized staff and limited laboratory services in many developing countries warrant the use of such an approach.

As treatment is provided at the first visit, the syndromic approach avoids the pattern in the categorical approach in which patients have to visit the clinic, then go to a separate

**Table 3** Advantages and disadvantages of syndromic case management

Criteria	Advantages	Disadvantages
Algorithm	Simple Problem-orientated; based on presenting symptoms	Low sensitivity and specificity for cervical gonococcal and chlamydial infections in women
Initiation of therapy	Rapid. Patients are treated at first visit without need for laboratory confirmation	Risk scores are not highly sensitive or specific Not easily accepted by doctors
Treatment outcome	High rates of cure	Requires surveillance of antibiotic susceptibility profiles Some algorithms do not provide for 2nd or 3rd line treatment
Cost	Saves money on laboratory tests Cost-effective	Leads to overtreatment which may be costly
Coverage	Can achieve high coverage of population	Does not detect asymptomatic cases
Implementation of approach	Can be easily integrated into the PHC system Can rely on nonmedical staff to manage cases	Needs to be adapted to specific settings
Management support systems	Simplifies reporting, supervision and ordering of drugs  Facilitates data collection for surveillance and planning	May have to set up a parallel information system in order to monitor trends in traditional aetiological STDs

laboratory, return to the clinic for diagnosis and a prescription, and then go to a pharmacy to buy drugs (Ryan & Holmes 1995). Immediate treatment could prevent the development of complications or further infection transmission while waiting for laboratory results. Patients unwilling or unable to return for follow-up visits are not required to do so. Those who are infected but might be denied treatment based on false-negative test results (especially where laboratory facilities are of marginal quality) are assured of treatment with this approach. Money is saved on laboratory tests which could be used to improve drug availability. In Mwanza, a follow-up of nonreturning patients at their homes revealed that about 70% were clinically cured; recurrences being due to untreated partners (Mwijarabi & Mayaud 1997).

The use of syndromic case management standardizes STD care, thus replacing a plethora of regimens which may be ineffective. Patients receive the same treatment for a given condition in local health facilities, thus boosting their confidence in health services. STD data collection and analysis is simplified, thereby facilitating surveillance and planning. Standardizing treatment may also delay the development of antimicrobial resistance of STD bacteria.

STD management by syndromic approach achieves high cure rates (La Ruche *et al.* 1995; Mwijarabi & Mayaud 1997) and is cost-effective. In Côte d'Ivoire, the cost of effective STD treatment with the syndromic approach (US\$ 5.60) is less than a fifth of the cost with the laboratory-based approach (La Ruche *et al.* 1995). While syndromic management may lead to overtreatment of patients with single infections, the cost per patient cured (considering all direct costs)

may be two to three times less than clinical diagnosis and three to four times less than aetiological diagnosis (Islam *et al.* 1994).

The syndromic approach is generic and can easily be adapted to local conditions. In the Sultanate of Oman, where latent syphilis has been targeted and where male doctors are prohibited from performing vaginal examinations, their case management includes mandatory VDRL testing and the use of an algorithm for vaginal discharge that excludes vaginal examinations (Venkataram & Al-Suwaid 1997).

#### Disadvantages

Syndromic management of STDs is the preferred approach in resource-poor countries. However, a number of limitations hinder its wide acceptability, such as overtreatment of patients. However, the limitations of the other approaches mean that some patients with atypical clinical features, false negative results or with mixed infections will be inadequately managed. Such patients may have to return for further investigation, suffer prolonged morbidity and then be re-treated at further cost. Consequently, in the long term, the cost per patient cured by the concomitant syndromic approach may be cheaper (Islam *et al.* 1994).

The syndromic approach for vaginal discharge is poorly predictive of the presence of cervical chlamydia and/or gonococcal infection. Using three different algorithms for vaginal discharge in women presenting at an STD clinic in Jamaica, Behets *et al.* (1995) reported positive predictive values of 25–35% for diagnosing trichomoniasis and 42–43% for gono-

**Table 4** Sensitivity, specificity and positive predictive value of algorithms for vaginal discharge

Syndromic approach	Sensitivity	Specificity	Positive predictive value	Reference
Symptoms only	43%	58%	9%	Mayaud <i>et al.</i> (1995)
Symptoms + RA	69%	54%	12%	Mayaud <i>et al.</i> (1995)
Symptoms + VE ± Rx*	27%	82%	12%	Mayaud <i>et al.</i> (1995)
Symptoms + SpE	73%	55%	43%	Behets <i>et al.</i> (1995)
Symptoms + RA + SpE	84%	40%	43%	Behets <i>et al.</i> (1995)
Symptoms + RA	9%	96%	11%	Ronsmans <i>et al.</i> (1996)
Symptoms + RA + SpE	47%	56%	5%	Ronsmans <i>et al.</i> (1996)

RA, risk assessment; SpE, speculum examination; VE, vaginal examination; \*Rx, treatment if discharge is confirmed

coccal or chlamydial cervicitis (Table 4). The algorithm had a sensitivity of 9% for detecting chlamydial infection in a low-risk population of Turkish women (Ronsmans *et al.* 1996) and a sensitivity of 43% among pregnant women for chlamydia/gonococcal cervicitis in Tanzania (Mayaud *et al.* 1995). The introduction of risk assessment (e.g. age < 21 years, more than one partner, new partner in the last 3 months) by the WHO in an attempt to improve the sensitivity and specificity of the algorithm has not been very successful (Table 4). In one study, being unmarried or having more than two sexual partners in the past 5 years or the presence of vaginal/cervical discharge on examination had a sensitivity of 76%, a specificity of 42% and a positive predictive value of 5% for gonorrhoea (Gertig *et al.* 1997). Generally, the use of different algorithms, different study populations and different prevalences of syndromes limit comparison between studies.

As the syndromic approach is based on self-reported symptoms, it does not detect or treat patients with asymptomatic infections. Detection of asymptomatic infections remains one of the thorny problems in STD control. In rural Tanzania with a gonorrhoeal prevalence of 2.2% among males aged 15–44 years, only 15% of infected males were symptomatic (Grosskurth *et al.* 1996). Similarly, only 16% of pregnant women with gonococcal or chlamydial infection in rural Tanzania complained of a vaginal discharge (Mayaud *et al.* 1995).

The approach has not been easily acceptable to doctors who regard it as unscientific inferior medicine and feel threatened by any restriction on their freedom to prescribe. This is partly due to the emphasis placed by medical school training on microbiological diagnosis in the treatment of infections. The approach has been challenged by dermato-venereologists who cite among other reasons, the lack of specificity of signs and symptoms of GUD and the presence of mixed infections (Kumar *et al.* 1995). Yet, these are very reasons that justify the syndromic approach!

Another disadvantage is that no single algorithm is appropriate for every setting. In Papua New Guinea, where

chancroid is rare and most ulcers are caused by *Calymmatobacterium donovani* (Richens 1985), treatment should be directed at the latter rather than at both chancroid and syphilis, as practised in East Africa. Algorithms need to be evaluated for validity, feasibility, cost and acceptability to facilitate their effective use. In view of changing antimicrobial susceptibility patterns and continuing research, algorithms will need to be regularly updated. It is important that the simplistic nature of the algorithm is not misunderstood to imply automatic clinical response. The approach should not obviate the need for referral and full clinical investigation when required.

Other problems with syndromic case management relate to its implementation. Funds are often not available in resource-poor countries for initial and refresher training of doctors and primary health care workers. Often, training in syndromic management excludes clinicians in the private sector, pharmacists and other health care providers (Bosu 1997). There may be psychological and logistic barriers to changing reporting systems to reflect the STD syndromes. For countries interested in monitoring aetiological STDs, separate reporting forms for individual STDs and syndromes may be used (Venkataram & Al-Suwaid 1997). Where the types of antibiotics that can be prescribed are tied to the level of health care or cadre of prescriber, decentralising the syndromic approach demands a revision of such policies. Such a policy revision has recently been effected in Ghana, albeit at the risk of potential development of antimicrobial resistance if the use of STD programme drugs such as ciprofloxacin for enteric fever or other conditions is unchecked.

#### Getting the syndromic approach to work

The introduction of risk assessment to improve the algorithm for vaginal discharge has not been successful. There is an urgent need for simple, rapid, cheap tests for screening gonococcal and chlamydial infections in health facilities lacking laboratory support. Algorithms that are highly sensitive will

permit the treatment of the greatest number in the interest of public health and avert the potential sequelae of cervical infection. Training has been shown to improve STD case management (Hanson *et al.* 1997). It should emphasize appropriate referral in all cases. Owing to the large prevalence of asymptomatic infection, improving partner notification and management is essential. Ryan and Holmes (1995) recommend the use of tests such as polymerase chain reaction and ligase chain reaction as gold standards to assess the syndromic management of genital infections in women in resource-poor settings. Clinicians should refrain from medicalizing STD syndromes, as a holistic and intersectoral approach may sometimes be required for total care. Implementational support in the form of political stability, high staff morale, adequate remuneration, effective drug distribution systems and regular supervision are necessary to make syndromic treatment work (Mabey & Vos 1997).

### Monitoring and evaluation

Regular monitoring should make syndromic management more effective. It should cover variables related to management (e.g. number of training sessions, availability of drugs), health workers (e.g. number of trained health workers), patients (patient satisfaction) and germs (susceptibility patterns). Monitoring antimicrobial resistance for gonococci could be done on a selected sample of patients once a year. The evaluation of the algorithms could be undertaken every few years and assess cost-effectiveness of the approach in areas of gonococcal resistance where more expensive second or third-line drugs are given.

### Conclusion

The syndromic approach is a simple, attractive and effective approach for STD care particularly in resource-poor countries where laboratory facilities are unavailable. On balance, the advantages of the approach seem to outweigh its disadvantages. The approach is both rational and scientific. However, the decision to adopt the approach should be setting-specific considering the variations in STD epidemiology, operational issues, cost and acceptability.

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