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# Issues in the management of sexually transmitted diseases in Papua New Guinea

MEGAN PASSEY[1]

**Papua New Guinea Institute of Medical Research, Goroka**

## SUMMARY

**This paper outlines three important issues in the clinical management of sexually transmitted diseases (STDs) in Papua New Guinea which have, until now, gone unrecognized or been neglected. Suggestions for possible solutions are made. The high prevalence of both chlamydial and trichomonal infections in women cannot be ignored. Both of these infections have been shown to increase the transmission of HIV. The current algorithm for the treatment of vaginal discharges does not include treatment for trichomonal infection in the first instance, yet trichomoniasis has been shown to be the most common STD in community studies both here and elsewhere. Trichomoniasis is usually asymptomatic in men, but still increases the risk of HIV transmission; furthermore, it causes illness in their female partners and thus needs to be treated. The current recommended regimens for the treatment of gonococcal and chlamydial infection are complex due to the number of drugs recommended for gonorrhoea to combat the problem of drug resistance, and the length of therapy for chlamydia. Compliance with such a regimen is likely to be poor, particularly in asymptomatic partners. We need to consider the relative advantages provided by a drug which could be given as a single oral dose for chlamydia, and perhaps for both infections. Azithromycin is one possibility, as it has been shown to be effective for chlamydial infection in numerous studies, and has been found satisfactory for gonorrhoea where local isolates were susceptible. Testing of a small number of isolates from Papua New Guinea has shown that azithromycin may be suitable for use here, but further susceptibility testing needs to be performed. Utilization of services for STDs, particularly by women, is extremely low. This is due to a combination of factors involving limited knowledge of symptomatology and its significance, the asymptomatic nature of many infections, the structure of the services, health worker behaviour, and social attitudes. To address these issues we must make modifications to STD service provision, as well as provide widespread information about the potentially serious consequences of contracting STDs, including both infertility and AIDS. Possible modifications to the services are discussed, and include making routine screening available for women through currently existing services such as family planning and antenatal clinics and considering the possibility of establishing Women's Health Clinics which would provide all primary reproductive health services in an integrated manner.**

## Introduction

We are becoming increasingly aware of the importance of sexually transmitted diseases (STDs), including AIDS (acquired immune deficiency syndrome), as public health problems both in Papua New Guinea (PNG) and globally. STD control is considered to be one of the key strategies for the prevention of HIV (human immunodeficiency virus) transmission, and has been clearly demonstrated to be effective (1,2). While HIV infection causes AIDS, which is universally fatal, the other STDs both increase the risk of transmission of HIV and also cause considerable physical, emotional and social morbidity of their own. However, the successful management of STDs is difficult for a number of reasons, including the highly sensitive nature of discussions of sexual activity, the potential stigmatization of those with these diseases by both health workers and

[1] Papua New Guinea Institute of Medical Research, PO Box 60, Goroka, EHP 441, Papua New Guinea

other members of the community, and the fact that the infection is often asymptomatic, particularly in women. Nonetheless, given the potentially serious consequences of these infections, it is vital that this problem be addressed urgently.

Here I would like to discuss three important issues in the clinical management of STDs which have, until now, gone unrecognized or been neglected. These are the importance of trichomonal and chlamydial infections, and the need to treat them adequately; the complexity of the current standard treatment regimen for gonococcal and chlamydial infection and the compliance problems this creates; and the barriers to the use of STD services. While it is clearly imperative that intensive energy and resources be channelled into primary prevention through education and awareness raising and through condom promotion, these issues will not be addressed here, where my focus is on some of the current deficiencies in our clinical management. This paper is not a blueprint, but is intended to provoke thought and stimulate discussion. It is also a plea for action.

**Chlamydial and trichomonal infections**

Chlamydial infection, caused by *Chlamydia trachomatis*, is the commonest bacterial STD worldwide. It is frequently asymptomatic, particularly in women, but may also cause acute cervicitis, salpingitis, urethritis and epididymitis. In the long term it can result in chronic pelvic inflammatory disease, infertility and ectopic pregnancy, even in women who were previously asymptomatic. Perinatal transmission may also occur and lead to neonatal conjunctivitis and pneumonia (3,4).

Although trichomonal infections generally cause less pathology than chlamydial infections, they are nonetheless a serious problem. The causative protozoan, *Trichomonas vaginalis*, is exclusively a human parasite, virtually always transmitted sexually, and is thought to persist indefinitely in the vagina unless treated. In men the infection is usually asymptomatic and self-limited, but can cause urethritis, and chronic carriage may also develop. In women, *T. vaginalis* causes vaginitis, which may be severe but is usually mild, and is associated with a watery discharge and often mild dyspareunia. Vaginal infection during pregnancy has also been found to be associated with preterm birth and low birthweight, but perinatal transmission is rare (3).

A recent community-based study in the Asaro Valley revealed that 46% of women had trichomonal vaginal infection, and 26% of women and 25% of men had genital chlamydial infection, as confirmed by appropriate laboratory tests (5). 58% of women in the study had one or more STDs. Table 1 compares the prevalence of various STDs among women in the Asaro Valley with both high-risk and low-risk populations elsewhere (adapted from references 3 and 5). The high-risk groups include sex workers, transport workers and the military, while the low-risk groups are from antenatal and family planning clinics (usually urban) and community surveys (usually rural). While the prevalences of both gonorrhoea and syphilis were found to be relatively low in the rural communities studied in PNG, the rates for both chlamydial and trichomonal infections are among the highest reported. In considering these results it is important to recognize that the PNG study involved a randomly selected group of rural women, who would normally be considered at very low risk of acquiring STDs, yet have alarmingly high rates.

As these people were randomly selected from the community, and as the majority of them were either asymptomatic or had not recognized the significance of their symptoms (6), they are not likely to be representative of patients presenting to STD clinics, who would be expected to have much higher prevalences of gonorrhoea and syphilis, both of which are frequently symptomatic. However, there is no reason to assume that STD clinic patients would have any less chlamydial or trichomonal infection, and may actually have more. Nor is there any reason for complacency in other areas of the country. A study by Jenkins and her research team has demonstrated that high-risk behaviour is common throughout all regions (7). Further, we have an increasingly mobile population with frequent circular migration between the highlands and the coast, including Port Moresby. The inevitable result is that infections from one area will be spread to others, and hence we can expect that similar

**TABLE 1**

PREVALENCE OF STDS IN DEVELOPING COUNTRIES

| Disease | High-risk population Prevalence (%) Median (Range) | Low-risk population Prevalence (%) Median (Range) | Asaro Valley Prevalence (%) |
|---|---|---|---|
| Chlamydial infection | 14 (2 – 25) | 8 (1 – 29) | 26 |
| Gonorrhoea | 24 (7 – 66) | 6 (0.3 – 40) | 1 |
| Trichomoniasis | 17 (4 – 20) | 12 (3 – 50) | 46 |
| Syphilis | 15 (4 – 32) | 8 (0.01 – 33) | 4 |

Data adapted from references 3 and 5

**TABLE 2**

INCREASED RISK OF HIV TRANSMISSION ASSOCIATED WITH STDS

| Disease | Relative risk estimate Median (Range) |
|---|---|
| Chlamydial infection | 4.5 (3.2 – 5.7) |
| Gonorrhoea | 4.7 (3.5 – 8.9) |
| Trichomoniasis | 2.7 |
| Genital ulcers | 4.7 (3.3 – 18.2) |
| Syphilis | 3.0 (2.0 – 9.9) |
| Genital herpes | 3.3 (1.9 – 8.5) |
| Anogenital warts | 3.7 |

Data adapted from reference 3

levels of infection will exist in many parts of the country.

Considerable research has been conducted to determine the role of other STDs in the transmission of HIV. All STDs so far investigated have been demonstrated to increase the risk of transmission (3). This is detailed in Table 2 (adapted from reference 3), which indicates that trichomonal infections probably increase the risk by a factor of 2.7 and chlamydial infections by 4.5. With the high prevalence of chlamydial and trichomonal infections found in PNG, HIV infection is likely to run rampant throughout the population unless immediate measures are taken to reduce this risk. This single issue, the increased risk of transmission of HIV (even without all the other suffering caused by STDs), should be sufficient to galvanize us to immediate action.

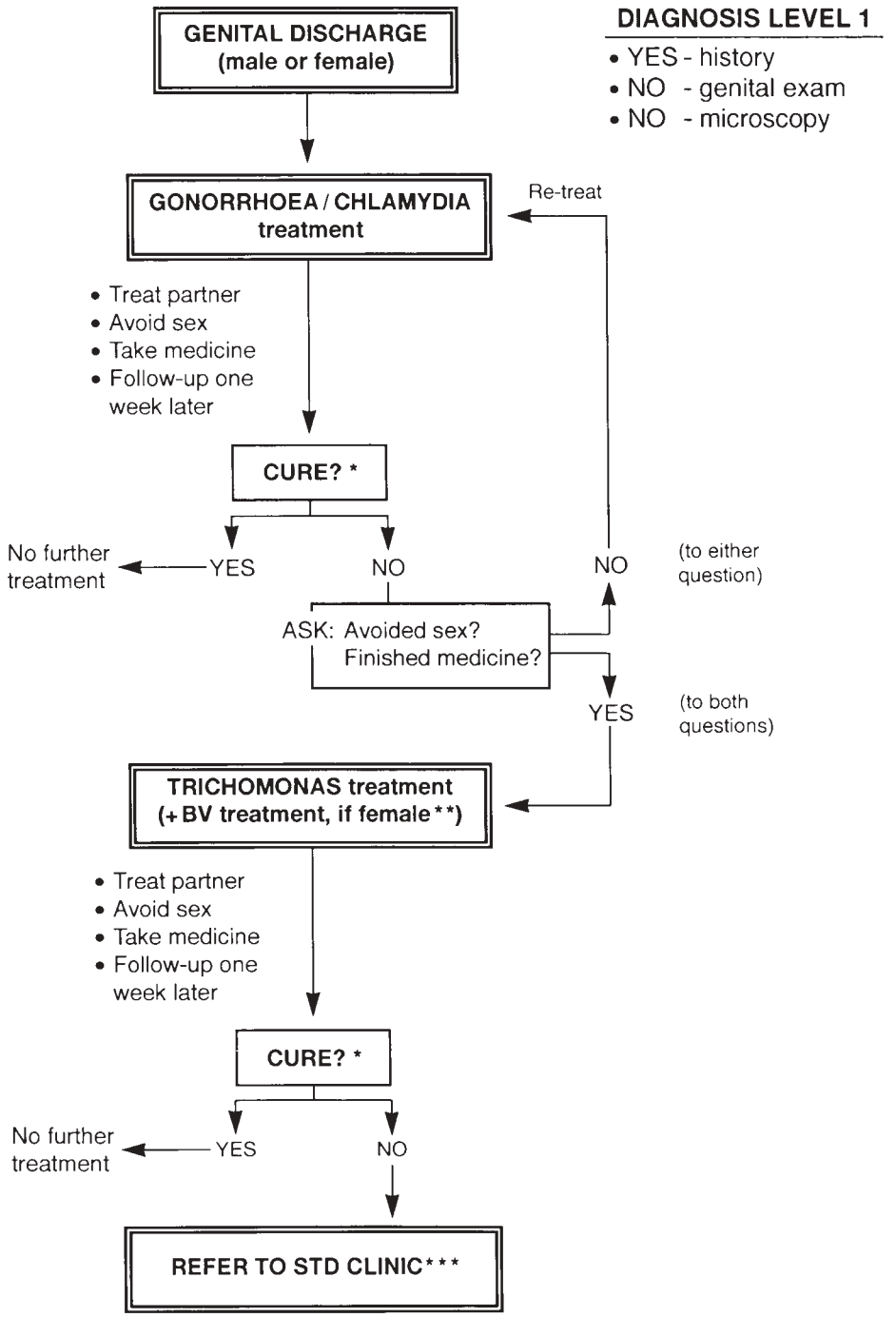
Given the seriousness of this situation, are trichomonal and chlamydial infections being adequately treated? The simple answer is clearly no or we would not have a situation where over half the adult female population in a rural area is infected with at least one of them. There are a number of reasons for this. One of these, the low utilization of STD services, particularly by women, will be discussed in more detail below. Another likely reason is the recommended protocol for treating vaginal discharge.

The STD/AIDS Unit for the national Department of Health has produced an excellent booklet on the diagnosis and management of the common STD syndromes (8). This book uses a clear and simple format to guide the user in the differential diagnosis of the different syndromes, and gives the recommended treatments. It is most useful in those situations where a proper clinical examination is possible, but also gives guidelines for diagnosis and treatment based on history alone (the most common scenario in health facilities). Unfortunately, when it was written, the frequency of trichomonal infections was not recognized, and although chlamydial infections appear adequately covered, trichomonal infections are not. Following the algorithm intended for use when examination is not available, every male or female with a genital discharge should be treated for gonococcal and chlamydial infection as the first line of treatment (Figure 1). Only if the discharge persists after one week, and both partners have completed their treatment, avoided sex and returned for follow-up, will treatment for trichomonal infection be given. Although this recommendation is entirely appropriate in situations where trichomonal infections are not common, when nearly half the adult women have trichomoniasis every opportunity should be taken to eliminate the infection. Although not all health personnel around the country are following these recommendations, it is my experience that the deviation from the guidelines is usually in the direction of giving less medication, often omitting doxycycline, rather than giving more.

**Treatment regimen for gonococcal and chlamydial infections**

A related topic is the currently recommended regimen for the treatment of suspected gonococcal and chlamydial infections. Here my concern is that the treatment regimen involves many different tablets and extends for at least a week. The recommended first line of treatment is augmentin 1.25 g, amoxycillin 2 g and probenecid 1 g to be taken orally, all at once, for the treatment of gonorrhoea; all of which amounts to 8 to 12 tablets, depending on the strength of the amoxycillin. In addition the person is meant to take a course of doxycycline 100 mg twice daily for 7 days to treat chlamydial infection. The reason for the multidrug treatment of gonorrhoea is the well-documented resistance to penicillin among gonococcal isolates in PNG, with a recent study involving 5 STD clinics finding that 44% of gonococci isolated were penicillinase-producing (9). The automatic treatment for chlamydial infection is based on the epidemiological evidence of a high prevalence of chlamydial infection which frequently occurs concurrently with gonococcal infection (9,10), combined with the difficulties of diagnosis of chlamydial infection: it is virtually impossible to diagnose clinically, and laboratory confirmation is not routinely available in government health facilities.

Thus it would seem that the current recommendations are well justified. Unfortunately, however, they are rarely




* : Clinical cure = no discharge, no symptoms.
** : If thick white itchy vaginal discharge, consider CANDIDIASIS (yeast).
*** : May try an alternative Gonorrhoea/ Chlamydia treatment before referral.

Figure 1. Algorithm for the treatment of genital discharge based on history alone.

followed. Many clinicians outside the specialized STD clinics appear to be unaware of the need for augmentin and probenecid, and prescribe amoxycillin by itself for gonorrhoea, and frequently also omit the doxycycline. A further problem arises because many health centres and aid posts do not routinely carry augmentin, probenecid or doxycycline, thus making provider compliance with the recommendations completely impossible.

From the client perspective, this regimen may also seem unpalatable and unrealistic. Several patients who have been given the standard treatment have complained to me of the large number of tablets they must consume simultaneously, and have needed to be reassured that indeed all the tablets are necessary. I have also been told that, with a previous episode, the full course of doxycycline was not completed once the symptoms resolved. It is even more difficult to imagine an asymptomatic contact completing the full course.

Given these problems for both the provider and the client, it is likely that a large proportion of those infected do not complete a full course of the recommended drugs. With inadequate treatment, not only are we promoting the selection of drug-resistant strains of the organism, but many of the patients may remain infected and subsequently pass the infection on to yet another person, thus increasing rather than decreasing the problem.

For these reasons, and recognizing the high prevalence of chlamydial infections, it may be time to consider the relative benefits of a drug such as azithromycin for the treatment of chlamydial infection, as is currently the practice in many other parts of the world. Azithromycin achieves high intracellular concentrations, has good tissue availability and a tissue half-life of 2 to 4 days (11). When given as a single oral dose of 1 g, it has been shown to be as effective as a 7-day course of doxycycline in the treatment of genital chlamydial infections (12,13). Furthermore, in some communities it has also been found to be effective against *Neisseria gonorrhoeae* (14). Although the susceptibility of local isolates of gonococci to azithromycin is unknown, preliminary testing on 13 isolates suggested that it may be suitable for treatment of gonorrhoea in PNG (Dr John Tapsall, personal communication). Further testing is needed to verify these results, but if resistance of gonococci to azithromycin is minimal, it may even be feasible to consider introducing a single oral dose of azithromycin as the first line of treatment for both gonorrhoea and chlamydial infections. Even if it proves to be unsuitable for the treatment of gonorrhoea, a single dose of azithromycin is worth considering instead of the 7-day course of doxycycline currently used for chlamydia, in order to improve compliance. Despite the higher cost of azithromycin, given the poor compliance with doxycycline and thus the risk of subsequent transmission of infection to others, azithromycin may prove to be the more cost-effective drug. Although this would further increase the number of tablets to be taken simultaneously, with adequate explanation this should not be too great a problem. Meanwhile, it is important that all health care providers are aware of the resistance patterns in local gonococci, and the need to include augmentin and probenecid as well as amoxycillin in the treatment.

**Barriers to the use of STD services**

My final concern is with the poor utilization of STD services (or other health services for the treatment of STDs) by those in need, particularly women. Interviews with over 400 women during the STD study referred to previously (5) revealed that the vast majority had not been to an STD clinic or consulted a health worker regarding genital symptoms despite the fact that 63% had a laboratory-confirmed reproductive tract infection, with 57% having a laboratory-confirmed STD (one or more of trichomoniasis, syphilis, gonorrhoea or chlamydial infection). Although the data on service utilization have not yet been formally analyzed for patterns and correlations with specific infections or sociodemographic data, I consider the problem sufficiently urgent to warrant discussion of the trends revealed and our impressions gained from conducting the interviews.

While some infected women were completely asymptomatic, the most common reason given for nonattendance by symptomatic women was that they thought the symptoms were normal, or too trivial to be

worth going through the shame and embarrassment, as well as the cost, of attending the clinic. Many women thought that pain on intercourse was perfectly normal, and had never considered seeking health care for it, or for their watery vaginal discharge. None of the women were aware of the connection between STDs and infertility. The lack of awareness of the significance of their symptoms among many of the women is obviously a huge barrier to seeking treatment, but one which is entirely amenable to change. With adequate, appropriate reproductive health education at the community level, the majority of those at risk could achieve an understanding of the symptoms of STDs, their consequences and the importance of treatment, as well as the means of prevention. While this is a massive task, it is important if we ever hope to achieve any sort of STD control in PNG. The need for health education and an example of one such program are discussed in another paper in this issue (6).

For those women who are completely asymptomatic, detection of infections can only be achieved through either contact referral or screening. Contact referral will only work in the cases where the man is symptomatic, seeks and receives appropriate treatment, and is willing to refer all his contacts, who then also seek and receive appropriate treatment. This is an unreliable process and is clearly not working. The alternative is to consider screening for STDs at other clinics which women attend, particularly family planning and antenatal clinics. Screening may be as simple as just asking a few key questions, followed by examination if indicated. If a pelvic examination is possible, this would be considerably more useful. Trichomonal vaginitis is readily detected by examination, backed up where possible with a wet mount: a quick, inexpensive and easy-to-perform microscopic examination. While laboratory tests for chlamydial infection are not routinely available, development of a screening algorithm for women with likely chlamydial infection may be possible.

Unfortunately, lack of understanding of symptomatology is only a part of the problem; there is also the question of perceived quality of service. Even among women who had quite severe symptoms or were fully aware that their symptoms indicated that they were suffering from an STD, the majority had not sought treatment. When asked why not, they cited reasons which I have classified in two broad groups: access difficulties and barriers of fear and shame, although for most women it seemed to be a combination of factors from both groups which had deterred them from seeking help.

One of the commonly cited difficulties with access was the anticipated cost, which included payment for transportation, health centre fees and, if attending the STD clinic, the cost of a special STD clinic book, which they were required to purchase for K1.50 from a local store more than a kilometre from the clinic. To this would be added the costs of contacts also attending, and the mandatory follow-up visit. Women also reported that they would be refused treatment unless they brought their contact(s) with them. For many this was a problem as they were afraid to broach the subject with their husbands for fear of being beaten, even when they believed that they had acquired the infection from their husbands. Others verified these fears, reporting physical abuse from their husbands as well as refusal to attend. Finally, two women reported having made previous unsuccessful attempts to obtain treatment and having been sent from one place to another all over the hospital, without success.

Despite these access difficulties, it was my impression that women would have overcome them had they found the services more appealing. In PNG, as in most places, STDs are highly stigmatized, particularly for women. This results in health workers frequently behaving in a judgemental, unfriendly manner with their patients. Women complain of being yelled at, scolded and insulted and made to feel as though they were prostitutes. The extent to which this actually happens is debatable, but it is certainly the perception that women have, and is sufficient to deter them from seeking treatment. They are also concerned that, because of the public siting of the STD clinic, others will see them there and realize the reason for their attendance, subsequently gossiping about them with others. This can be particularly embarrassing and shaming, and may result in considerable stigmatization, as well as possible beatings from husbands, brothers or other male kin. Women particularly

complained about having to attend the same clinic as men, and the fear that they may even be examined by a man.

Another issue which inhibits use of services is the belief that female genital fluids are dangerous, particularly to men. Again, this perception is virtually universal, although not always overtly expressed, and may be more pronounced in PNG than other places. While this belief is undergoing modification among some people, I believe it contributes to the embarrassment and discomfort women suffer when undergoing a pelvic examination. Traditionally women did not have their genitals touched by others, other than during sexual intercourse, except possibly during childbirth. Understandably, women are embarrassed and uncomfortable when exposing themselves and having others examine them in this way, particularly if they (and the examiner) believe that it is dangerous. This would be compounded if they also believed themselves to be 'diseased'.

As with all the health services, the STD clinics were established using a western biomedical model of disease, and have failed to incorporate consideration of these cultural norms into their practice. While I do not wish to suggest that people should not be examined, a little more sensitivity to these issues may make the services more acceptable. Such simple measures as having separate clinics for men and for women, making the clinics less public and ensuring that people are examined by those of the same sex, would help. As health workers, we need to be sensitive to fears of the danger of female fluids, as well as the general embarrassment women (and men) suffer when undergoing a genital examination. In my experience, explanation of the procedure, including a demonstration of the speculum and some information on what you are looking for, goes a long way toward relaxing women who have never had a pelvic examination before. If this is combined with reassurance that you do not find it disgusting and are wearing gloves to protect yourself, most women will find the whole experience considerably less distressing. While changes in health worker attitudes and behaviour may be more difficult to achieve than reorganization of clinics, until we eliminate judgemental, moralizing behaviour and come to realize that as health care professionals we are meant to be compassionate caregivers, people will continue to see us as unapproachable bullies, and avoid seeking help for their reproductive tract problems.

## Conclusions and recommendations

I have attempted to describe three of the problems that I think require urgent consideration, discussion and action in order to improve our clinical management of STDs. These are:

1 The high prevalence of trichomonal and chlamydial infections, which not only cause their own morbidity but also increase the risk of transmission of HIV. While current recommendations for treatment of vaginal discharge appear to adequately cover chlamydial infection, trichomonal infections remain largely neglected.

2 The current recommendation for suspected gonococcal and chlamydial infection requires a large number of tablets to be taken simultaneously followed by a week of twice daily doxycycline. Problems with availability of drugs, knowledge of health workers and patient compliance combine to create a situation where many people do not receive adequate treatment.

3 Utilization of services for STDs, particularly by women, is extremely low. This is due to a combination of factors involving limited knowledge of symptomatology and its significance, the asymptomatic nature of many infections, the structure of the services, health worker behaviour, and social attitudes.

There are other important issues to be considered in our overall program for the control of STDs, but my focus here has been on a few of the important issues involved in clinical management rather than primary prevention. While community-level reproductive health education may fit more into prevention than clinical management, I have included mention of it here because of its role in increasing the use of services. It can make an important, independent contribution, since many of the other factors which inhibit treatment seeking are clearly related to the quality of service provided.

I recommend the convening of a working group, coordinated by the STD/AIDS Unit, to discuss these and other urgent issues. This group should be empowered to make modifications to our current STD control program. Some changes that may be considered would include:

1 Revision of the algorithms for treatment of STDs, particularly treatment of vaginal discharge.

2 Reconsideration of the recommended treatment regimens for gonococcal and chlamydial infections.

3 A review of current STD clinics to assess their fee-charging strategies and hidden costs for clients; their physical location and layout with particular attention to privacy and discretion, and the need for separate clinics for men and women with appropriate staffing; staff attitudes and behaviour, with consideration given to replacement of judgemental staff by others with more sympathetic attitudes, and the need to encourage staff to improve their approach to patients, with appropriate explanations and sensitivity, in particular when conducting pelvic examinations.

4 Development and implementation of reproductive health education programs for communities and schools.

5 Introduction of STD screening programs into other health services, particularly family planning and antenatal clinics.

6 Introduction and piloting of clinics specifically designated to deal with women's reproductive health. These Women's Health Clinics could offer a range of services including family planning, STD and possibly antenatal services, as well as providing general advice and checkups regarding reproductive health for women. They would be staffed exclusively by women and should create an environment in which women feel safe and are not too intimidated to seek help.

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