



## Global view

# Sexually transmitted infections in a basic healthcare clinic in Dhaka, Bangladesh: syndromic management for cervicitis is not justified

### Demographic data

A cross sectional sample of 1879 consecutive new female clients, aged 13-49 years, in a basic health clinic in Dhaka, Bangladesh, between 1996 and 1998 (98% Moslim, 98% married, and 2% widowed/divorced/separated) was studied. They were grouped as follows: antenatal care (AC, n=243), family planning (FP, n=555), pregnancy interruption (PI, n=592), expanded programme on immunisation (EPI, n=144), vaginal discharge (VD, n=345).

### Methods

#### PATIENTS

After obtaining informed consent, socio-demographic data and information about risk factors for reproductive tract infection/sexually transmitted infection (RTI/STI) were obtained in a standard interview. Physical examination of genitalia was performed. A WHO recommended algorithm based on clinical signs without risk assessment was used for management of vaginal/cervical discharge.<sup>1</sup>

#### LABORATORY METHODS

Culture of *Neisseria gonorrhoeae* from the endocervix was performed according to recommended methods, detection of *Chlamydia trachomatis* was done by an ELISA technique with blocking assay. Bacterial vaginosis (BV) was diagnosed according to the Nugent criteria.<sup>2</sup> Vaginal candidosis was

demonstrated by microscopic examination and Gram staining, *Trichomonas vaginalis* infection by fresh microscopic examination of vaginal fluid.

#### VALIDATION OF THE ALGORITHM, STATISTICS

For validation of the algorithm the outcome of clinical examination was compared with the results of the laboratory tests. Considering a 70% sensitivity and 10% precision of the algorithm, 81 proved infections are required.<sup>3</sup> The Yates's corrected  $\chi^2$  test (when appropriate) was applied to assess differences in proportions for statistical significance. The odds ratio (OR) was used for measuring associations. Logistic regression was performed on variables showing a significant association in bivariate analysis.

### Results

Symptoms and signs of RTI as well as laboratory findings were strictly comparable among women attending the AC, FP, PI, and EPI groups. Therefore, data were pooled and compared with those obtained among women attending the clinic with complaints of vaginal discharge (VD group) (table 1).

Among women with and without signs of abnormal vaginal discharge the relative frequency of *T vaginalis*, vaginal candidosis, and bacterial vaginosis was 7% v 1% (OR, 7.08;  $p < 0.001$ ), 21% v 6% (OR, 4.30;  $p < 0.001$ ), and 29% v 19% (OR, 1.78;  $p < 0.001$ ) respectively. The frequency of gonococcal/

chlamydial cervicitis was 2.7% v 2.1% ( $p = 0.60$ ).

The sensitivity of the algorithm for bacterial vaginosis/*T vaginalis* infection and vaginal candidosis was 84% (79/94) and 69% (42/61) respectively, with corresponding positive predictive values (PPV) of 37% (79/215) and 55% (42/76).

Fourteen (5%) of 283 women with cervical mucopus versus 26 (2%) of 1558 without mucopus had gonococcal/chlamydial cervicitis. The sensitivity, specificity, and PPV of the algorithm were 35%, 85%, and 5% respectively. A husband not living at home or spending the night outside the house (n=200) as well as a husband suspected of being unfaithful (n=88) were the only two indicators associated with gonococcal/chlamydial cervicitis. However, only 6% and 8% of the corresponding women had cervicitis. A polygamous marriage (n=151) was significantly associated with cervicitis in a bivariate analysis, the association did not remain after logistic regression analysis. No association was observed between cervicitis and age, income, occupation of woman or husband, a symptomatic partner, vaginal douching after sexual intercourse, the number of marriages of both the husband and woman, symptoms of lower abdominal pain, or the use of contraceptives.

### Comment

The prevalence of gonococcal/chlamydial cervicitis in the present study was comparable with the prevalence obtained recently in a population based sample of married women, including symptomatic women, in rural Bangladesh.<sup>4</sup> Cervicitis was equally frequent among the different client groups as well as women with and without signs of abnormal vaginal discharge.

The algorithm had a good sensitivity for bacterial vaginosis/*T vaginalis* infection and vaginal candidosis, with a poor PPV. Since these infections are highly prevalent and often clinically misclassified, abnormal vaginal discharge should be treated simultaneously for all vaginal pathogens, irrespective of the discharge characteristics. The PPV of the algorithm for cervicitis was extremely low. The incorporation of sociodemographic and behavioural risk factors in the algorithm, such as young age, being single, a new sex partner in the past 3 months, or a symptomatic partner, is often recommended in the literature to identify women with a higher risk for STI. This seems to be impracticable in the sociocultural context of Bangladesh. Unmarried women represent only a fraction of women in the age groups studied and do not attend basic health clinics which focus exclusively on married women and children under 5 years old. The vast majority of women do not have sexual relationships before or

Table 1 Characteristics of women attending a basic healthcare clinic in Dhaka, Bangladesh

Characteristics	Mean age (SD) and percentage of clients with corresponding characteristics			
	Client groups			
	Vaginal discharge (n=345)	AC, FP, PI, and EPI (n=1534)	OR	p Value
Mean age (years)	27.9 (6.5)	25.2 (6.2)		<0.001
Symptoms				
Change in vaginal discharge	75	29	7.46	<0.001
Speculum examination*				
Abnormal vaginal discharge	33	12	3.53	<0.001
Cervical mucopus	33	11	3.86	<0.001
Laboratory findings				
Cervical pathogens				
<i>N gonorrhoeae</i>	0.6	0.5	1.11	1.00
<i>C trachomatis</i>	2.0	1.8	1.11	0.97
Any cervical pathogen	2.3	2.3	1.08	0.99
Vaginal pathogens				
<i>T vaginalis</i>	3.8	1.6	2.46	0.01
Yeasts†	17	23	0.70	0.32
Bacterial vaginosis†	30	28	0.90	0.92
BVTV†	32	32	0.99	0.94
Any vaginal pathogen	47	54	0.74	0.26

AC = antenatal care, FP = family planning, PI = pregnancy interruption, EPI = expanded programme on immunisation, BVTV = bacterial vaginosis or *T vaginalis* infection.

\*No information for 11 vaginal discharge and 27 clients of the other group.

†Women with abnormal vaginal discharge.

outside the marriage, in contrast with men. Interviewing about sexual behaviour is a very sensitive issue, unlikely to yield relevant information in a busy routine medical practice. An additional major problem is the perception of symptoms and signs of RTI/STI in the society. Women classify genital itching, ulceration, leucorrhoea, and genital prolapse as the same group of disorders whereas men perceive nocturnal emission, white urethral discharge, and premature ejaculation as "urethral discharge." The confusion between the local perception of RTI/STI symptoms and the biomedical reality may in part explain the lack of association between reported symptoms and gonococcal/chlamydial infection. The non-hierarchical incorporation of the two predictors in the algorithm increased the sensitivity to 66%, with a decrease in specificity to 70%. Because of the very low prevalence of gonococcal/chlamydial infection, even among women "at risk," the PPV of the algorithm remained unchanged at 5%. Therefore, the widespread use of a clinical decision model, based on signs or risk factors, will lead to massive overtreatment for cervicitis and stigmatising of patients. A fortiori, any model based on

reported symptoms should be avoided as long as the significance of these symptoms is not understood.<sup>6</sup> The syndromic approach for vaginal or cervical discharge at the primary healthcare level in Bangladesh should focus on vaginal infections and not on cervicitis.

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- 1 World Health Organisation. Management of patients with sexually transmitted diseases. *WHO Technical Report Series*. Geneva: WHO, 1991:810.
- 2 Nugent RP, Krohn MA, Hillier SL. Reliability of diagnosing bacterial vaginosis is improved by a standardised method of Gram stain interpretation. *J Clin Microbiol* 1991;29:297-301.
- 3 Vuylsteke B, Meheus A. In: Gina Dallabetta, Marie Laga, Peter Lamptey, eds. *Control of sexually transmitted diseases. A handbook for the design and management of programs. Chapter 8. STD syndrome management*. AIDSCAP/Family Health International. 1996;149-68.
- 4 Hawkes S, de Francisco A, Chakraborty J, et al. Population-based surveys of RTI/STI prevalence in rural Bangladesh. In: International Congress of Sexually Transmitted Diseases, Program and Abstracts, Seville, Spain 19-22 October 1997:115.
- 5 Naved RT. RTI/STD and risky sexual behavior in a "conservative" society. Working paper. Bangladesh Field Office: Save the Children (USA), 1997.
- 6 Lambert H. Methods and meanings in anthropological, epidemiological and clinical encounters: the case of sexually transmitted disease and human immunodeficiency virus control and prevention in India. *Trop Med Int Health* 1998;3:1002-10.