ment 1. Library Date 05/02/95

SHEET) ETHICAL REVIEW COMMITTEE, ICDDR,B.

pal Investigator DR S. HAWKES Trainee Investigator (if any)

ation No. 95-005 Supporting Agency (if Non-ICDDR,B) ODA

of Study THE PREVALENCE OF RTIs IN MATLAB, BANGLADESH

Project status:
(X) New Study
( ) Continuation with change
( ) No change (do not fill out rest of form)

the appropriate answer to each of the following (If Not Applicable write NA).

urce of Population:
i) Ill subjects Yes (No)
ii) Non-ill subjects (Yes) No
iii) Minors or persons under guardianship Yes (No)

oes the study involve:
i) Physical risks to the subjects Yes (No)
ii) Social Risks Yes (No)
iii) Psychological risks to subjects Yes (No)
iv) Discomfort to subjects (Yes) No
v) Invasion of privacy (Yes) No
vi) Disclosure of information damaging to subject or others Yes (No)

oes the study involve:
i) Use of records, (hospital, medical, death, birth or other) Yes (No)
ii) Use of fetal tissue or abortus Yes (No)
iii) Use of organs or body fluids (Yes) No

e subjects clearly informed about:
i) Nature and purposes of study (Yes) No
ii) Procedures to be followed including alternatives used (Yes) No
iii) Physical risks Yes No N/A
iv) Sensitive questions (Yes) No
v) Benefits to be derived (Yes) No
vi) Right to refuse to participate or to withdraw from study (Yes) No
vii) Confidential handling of data (Yes) No
viii) Compensation &/or treatment where there are risks or privacy is involved in any particular procedure (Yes) No

5. Will signed consent form be required:
   (a) From subjects Yes (No)
   (b) From parent or guardian (if subjects are minors) Yes (No)
6. Will precautions be taken to protect anonymity of subjects (Yes) No
7. Check documents being submitted herewith to Committee:
   ___ Umbrella proposal - Initially submit an overview (all other requirements will be submitted with individual studies).
   ✓ Protocol (Required)
   ✓ Abstract Summary (Required)
   ✓ Statement given or read to subjects on nature of study, risks, types of questions to be asked, and right to refuse to participate or withdraw (Required)
   ___ Informed consent form for subjects
   ___ Informed consent form for parent or guardian
   ✓ Procedure for maintaining confidentiality
   ✓ Questionnaire or interview schedule *

* If the final instrument is not completed prior to review, the following information should be included in the abstract summary:
1. A description of the areas to be covered in the questionnaire or interview which could be considered either sensitive or which would constitute an invasion of privacy.
2. Examples of the type of specific questions to be asked in the sensitive areas.
3. An indication as to when the questionnaire will be presented to the Ctte. for review.

ree to obtain approval of the Ethical Review Committee for any changes ying the rights and welfare of subjects before making such change.

Sarah Hawkes
Principal Investigator

Trainee

Date 05/02/95

ENTERED 21 JUN 1995

REF
WC 140.JB2
H319p
1995

1. Principal Investigator:	Sarah Hawkes
2. Co -P.I.	Andres de Francisco, J.Chakraborty, John Albert, David Mabey, Richard Hayes
3. Title of Project:	The prevalence of reproductive tract infections in Matlab, Bangladesh
4. Advisors:	Not Applicable
5. Starting date:	July 1994 (budget opened) October 1994 (P.I. appointed)
6. Completion date:	June 1997
7. Total budget:	$432,666 (incl. overheads)
8. Funding source:	ODA (budget secured)
9. Head of Division:	Acting Divisional Director 7/2/95

PROPOSAL TO STUDY THE PREVALENCE OF REPRODUCTIVE TRACT INFECTIONS IN MATLAB, BANGLADESH

Dr. Sarah Hawkes

INTERNATIONAL CENTRE FOR DIARRHOEAL DISEASES RESEARCH, BANGLADESH

Dhaka, December 1994

Principal Investigators:

Dr. S. Hawkes, CHD, ICDDR,B
Dr. A de Francisco, CHD, ICDDR,B
Mr. J. Chakraborty, Matlab, ICDDR,B
Dr. J. Albert, LSD, ICDDR,B
Prof. D. Mabey, London School of Hygiene and Tropical Medicine
Dr. R. Hayes, London School of Hygiene and Tropical Medicine

Summary

The British Overseas Development Administration (ODA) has recently granted funding for a three-year project in the Matlab area of Bangladesh to investigate the prevalence of Reproductive Tract Infections (RTIs) and to formulate policy recommendations concerning the prevention and management of these infections. This study is to be carried out by the International Centre for Diarrhoeal Diseases Research, Bangladesh (ICDDR,B) which has a long history of providing health-care services in the Matlab area, and of carrying out operational and clinical research on site.

RTIs are currently receiving increasing attention from health-care providers and planners after many years of neglect. They are known to contribute highly to the disease burden experienced by many adults in the developing world (especially women), and untreated they compromise pregnancy outcome and infant survival. The HIV/AIDS pandemic has raised awareness about RTIs with the recognition that many RTIs are linked to the transmission of HIV.

This project aims to document the current prevalence of RTIs in the sexually active adult population of Matlab, and to look at risk factors for infection. The results of these surveys will then be used to inform current policy regarding the recognition and management of RTIs by health-care workers and potential prevention activities. The latter includes not just primary prevention activities within the community, but also secondary prevention and screening by health workers. The integration of screening and management policies into the existing health care structures (family planning and maternal health clinics, for example) will remain a major policy objective of this project.

OVERALL OBJECTIVES

(1) To determine the prevalence and aetiology of reproductive tract infections (RTIs) in a rural population of men and women, and investigate risk factors for infection.

(2) To determine the prevalence of morbidity and perceived ill-health related to infections of the reproductive tract, and to further understand health-care seeking behaviour in relation to RTIs.

(3) To ascertain the antimicrobial resistance patterns of the infections most commonly seen.

(4) To work towards the development of a replicable and sustainable programme of training health-care workers in the recognition, management and prevention (primary and secondary) of RTIs.

BACKGROUND

Much attention recently has been directed towards the development of an integrated reproductive health programme for both men and women at the primary health care level in the developing world. An integrated programme would include but not be limited to:

- management and prevention of RTIs/STDs/HIV
- access to contraceptive services
- access to safe abortions
- provision of antenatal and obstetric care
- management of gynaecological morbidity in women (including infertility) and the non-infective reproductive health care needs of men (e.g. infertility and impotence)

This project is concerned primarily with the first of these issues, namely the recognition and management of Reproductive Tract Infections (RTIs). It will not include any work on the management of HIV infection at the primary health care level (although the question of HIV prevalence is addressed), but will concentrate on the other RTIs/STDs. Reproductive Tract Infections can be broadly divided into three aetiologic categories:

- sexually transmitted diseases (STDs);
- endogenous infections caused by an overgrowth of flora normally present in the reproductive tract;
- iatrogenic infections secondary to (transcervical) medical procedures.

They are thought to exert a large disease burden throughout the world, but especially in the developing world where until recently they received scant attention from health-care providers and planners. In many parts of the world a lack of

diagnostic and treatment facilities combined with social and cultural barriers conspire to prevent many people either seeking or receiving adequate treatment for infections which are often amenable to simple antibiotics.

RTIs have their greatest impact on the health of women[1], and they are an important and *preventable* cause of infertility, ectopic pregnancy, genital neoplasias, fetal wastage and neonatal morbidity. Along with improving the health status of women through the prevention and correct management of RTIs, there is increasing evidence that control of RTIs may reduce the incidence of HIV in a population. There is a well recognised association between many RTIs and HIV, although the exact nature and strength of the relationship is not yet fully defined [2-4]. In a country such as Bangladesh, which is surrounded by regions with reportedly high HIV incidence rates (North-Eastern states of India and Myanmar), this latter point makes imperative a more detailed understanding of the current STD/RTI situation.

The problems faced by health planners and health care workers in much of the resource-poor world are:

- RTIs are often silent infections especially in women;
- their exact aetiology is often undefined;
- until recently they have not been a political priority and fully functioning STD/RTI control programmes do not exist[5];
- many health care workers are not trained to recognise, manage, or even consider the possibility of RTIs, or to understand their significance
- social and cultural pressures militate against patients seeking appropriate treatment;
- high population growth rates combined with increased child survival means that the proportion of young adults and adolescents will increase over the coming decades, thus increasing the total number of the sexually active and at-risk section of the population[5]
- the uncontrolled use of antibiotics means that infections such as gonorrhoea often show multi-resistant patterns to common and cheap antimicrobials

Current STD situation in Bangladesh

The Government of Bangladesh has given a high priority to the problem of RTIs: the Fourth Health Programme for Bangladesh considers RTIs/STDs as an important component of Maternal and Child Health (MCH) activities. The Programme document states that "recognition that family planning and population measures cannot be effective without a concurrent improvement in the general health status of women [and] led to the formulation of a co-ordinated strategy towards family planning and MCH goals."

Any programme to integrate RTI/STD management and control within the existing MCH/FP programmes requires a more detailed understanding of the prevalence of these infections both in clinic populations and in the general population, coupled

with improved staff training and additional resource allocation.

At the present time there have been few surveys of STD prevalence conducted in Bangladesh, and all of them have restricted entry criteria to symptomatic women. In 1984/5 Wasserheit and colleagues[6] working within the Matlab Treatment area of ICDDR,B examined 486 symptomatic women and found that 68% of them had evidence of vaginal, cervical or pelvic infection. Nineteen per cent (93/486) of symptomatic women who were examined had a diagnosis of gonococcal, chlamydial or mucopurulent cervicitis (this figure may be higher than the actual population prevalence as asymptomatic women were excluded. The actual number of infected women was 3.7% of the starting total of 2563).

A more recent study was carried out by the Bangladesh Women's Health Coalition[7] in their clinic in Mirpur during a three month period in 1992. The study population consisted of currently married women in the age range 18-40 years who were attending for a variety of health-care related procedures or treatments, and included pregnant and lactating women. Overall, 95% of 630 women reported abnormal symptoms related to a possible infection of the reproductive tract; this included 89% reporting vaginal discharge. On laboratory diagnosis 44% had bacterial vaginosis, 3.7% *Trichomonas vaginalis* (TV), 3.8% *N.gonorrhoeae* (GC) and 1% syphilis. In October 1992 Save the Children Fund held a 4-day open clinic in Rangunia Thana, Chittagong District[8], for treatment of women with suspected RTIs and reported that 52% of 980 women attending the clinic had symptoms and signs suggestive of a current STD/RTI. Of the 525 women examined, 5% had genital ulceration, 61% had an abnormal discharge and 4% had genital warts. A further 210 currently asymptomatic women with a suspected history of syphilis had serological testing and 26% were VDRL positive.

Whilst these studies are limited by their concentration on symptomatic women to the exclusion of asymptomatic women and men, they do provide valuable information in a setting where data is scarce. These figures can be compared with those reported from surveys of rural populations in Egypt[9] and India[10]. Prevalence of positive VDRL giving a diagnosis of syphilis was much higher in the Indian study (10.5%), than either the Egyptian (0.8%) or Bangladeshi studies (see above) have found. Gonorrhoea has been found more frequently in Bangladesh (0.3% in Indian study, 0% in Egypt). Although no recent data relating to the prevalence of *C.trachomatis* in Bangladesh has been published, the results from Egypt and many other countries suggest that chlamydia may be more prevalent than gonorrhoea, especially in younger populations. The studies from within this region and from a comparable survey in a rural Egyptian setting suggest that RTIs/STDs may be more prevalent in non-urban populations than was previously assumed. These studies also serve to highlight the necessity of carrying out a population-based survey in order to more fully understand the epidemiology of RTIs/STDs. As stated, up to 50% of women with an STD (such as TV, GC or chlamydia) are asymptomatic[11], thus the prevalence data which concentrate on the symptomatic clinic population may overlook many infected women. To fully understand the epidemiology of RTIs it is necessary to include asymptomatic and symptomatic women as well as men in a survey. Only with these results can decisions regarding the provision of screening

and case-finding facilities within existing programmes be made.

METHODOLOGY

This study has several components, of which the most important are the population-based surveys of the prevalence of RTIs, including STDs, in men and women. The results from population-based surveys will provide the most information regarding future programme implications. The sub-studies we hope to undertake over the coming years will provide further information on the prevalence and incidence of various RTIs including ophthalmia neonatorum and syphilis infections in pregnancy. The results from these sub-studies will be used to influence decisions concerning the questions of screening and prophylaxis of specific RTIs at a programme level.

(1) POPULATION-BASED SURVEY OF WOMEN

As outlined above, there have been a small number of studies already undertaken in Bangladesh which have looked at the prevalence of RTIs in women. However, these studies have been clinic-based and hence restricted to generally looking at women with symptoms suggestive of an RTI. Whilst recognising that it is often difficult to persuade asymptomatic women to have an internal examination, if the reasons for the examination are clearly explained (asymptomatic carriage, and prevention of fetal infection) then many women may accept such screening procedures. In this study we aim to provide sexual health screening as part of a more comprehensive medical check-up. This will have several benefits both for the study participants and for the research, viz:

- the women recruited to the study will be offered a "well woman" check-up which will include a general physical examination as well as an internal examination. They will be screened for a number of common ailments including anaemia and hypertension, as well as for specific infections of the genital tract. Any non-RTI problem will be treated according to the usual clinical guidelines currently in use.

- the study will yield results about the prevalence of diseases other than RTIs, and will have the advantage that it is population-based and not restricted to looking at symptomatic or pregnant women (unlike much previous work). Data on female morbidity is currently lacking in this area, and this study may provide valuable information relating to the health of non-pregnant women.

Study site

The study will be based in the Matlab Treatment area, a rural area of Bangladesh located approximately 55 kilometres south-east of Dhaka. This study site has been chosen because it offers unique facilities for the investigation of health-care issues in a rural population. The International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) has been working within this area for the past thirty years, and has extensive experience in both the investigation of disease epidemiology and

population demographics. The Treatment area has a population of approximately 100,000 which includes about 18,000 women of reproductive age. The area is divided into four study blocks, each with one quarter of the total population. Each study block has a staff of 20 community health workers (CHWs).

The organisation of the Treatment/study area is based on the provision of health services at the household level with referral on to one of four local sub-centres or one central hospital (in Matlab). Each household in the study area is visited by a trained female CHW twice a month - the first visit being targeted at children and the second at women. The CHWs are trained in the administration of family planning methods in the home, and the provision of education and advice on contraception. They also undertake immunisation services, provision of safe delivery kits and the management of acute but non-severe illnesses of women and children in the home.

A great advantage of carrying out this study within the Matlab intervention area is that the central hospital has a large and well-equipped microbiology laboratory with facilities to carry out simple microbiological and serological investigations. There is also daily transport to Dhaka for specimens which require the more sophisticated facilities of the ICDDR,B laboratory in Dhaka.

Sampling frame

The study aims to determine the prevalence of RTIs in a population-based sample of women. We will use a random sampling technique to recruit women from within the Matlab study area. Within each block there are approximately 4,500 women of reproductive age served by 20 CHWs, thus each CHW sees around 200-225 women of reproductive age each month.

The aim is to recruit approximately 800 non-pregnant married women of reproductive age (15-45 years) into the study (see below for calculation of sample size). Women fulfilling these criteria will be selected at random from the DSS data set. Approximately 14 women per CHW will be selected, and the CHWs will be asked to encourage all selected women to participate. Thus, before the woman is asked to come to the hospital at Matlab she will be visited on several occasions by her own CHW who will explain the nature of the study to her, and will speak to any members of her family as may be required in some situations. The CHW will accompany all participating women to the central hospital at Matlab and will stay with her for the duration of her visit. The women will be seen by a trained physician and a health assistant in Matlab, and will be accompanied back to their homes by a CHW.

These figures assume a refusal rate of approximately 25%, which is compatible with that in the study by Wasserheit et al. in 1985[6].

Calculation of Sample Size

The sample size of 800 non-pregnant women has been calculated in order to measure the prevalence of each infection with acceptable precision. Assuming that 1% of women are infected with syphilis, 3% with gonorrhoea, 5% with chlamydia and 30% with bacterial vaginosis, (see introduction for the previous survey results from which these estimates are derived), this will give us the following expected numbers of cases:

PREVALENCE	95% C.I.	EXPECTED CASES
1%	0.3-1.7	8
3%	1.8-4.2	24
5%	3.5-6.5	40
30%	26.8-33.2	240

Participation of women

The aims and objectives of the study will be fully explained to every woman in her home, and each woman who agrees to participate will be offered both a full general health screening and a more specific sexual health screening to be carried out by a trained female physician. This latter will include a speculum and bimanual examination to screen for infections of the genital tract. The physical examinations and collection of clinical samples will be complemented by a detailed questionnaire asking details of general health, reproductive health, health-care seeking behaviour and basic demographics with the aim of determining risk factors for infection (see Appendix 2). This latter part will be conducted by a female health assistant. Each woman will be offered free treatment for whichever general health or reproductive health problems she is found to have - see below. All participants will receive a small renumeration to compensate for their time spent.

In order to increase the participation rate of asymptomatic women (essential for determining the population-based prevalence), the women will be visited by their own CHW at home to explain the nature of the study. The CHW will also be available to talk to the women's family members if this is required.

At all times each woman will be informed that her participation is entirely voluntary and she will continue to be offered medical services through ICDDR,B's normal channels even if she declines to take part in the study. All clinical specimens taken as part of the study will be labelled with a patient number which is unique to this study, and no other patient- identifying information will be included on specimens reaching the laboratory. Only the Principal Investigator and participating clinician will have access to all the study numbers linked with patients' names. However, each woman will be informed that the results of her investigations will be given to her CHW so that treatment can be administered and compliance monitored. If a woman

does not wish her CHW to know the results then she will be given the opportunity to inform the clinician of this and collect her results/treatment herself - see below. In this way we aim to conserve the highly confidential nature of the results.

Investigations to be undertaken

As outlined in the preceding section, each woman will be offered both a general examination and a specific screening of the reproductive tract. The laboratory investigations to be undertaken are outlined in Appendix 1. All clinical samples will be collected during the visit of the women to the Matlab central hospital, thus no transport of specimens will be required on a daily basis for this section of the study. The only samples which will need to be analysed outside Matlab are those collected for detailed virological analysis.

All women will also be offered a blood test. This will be used to screen for anaemia and syphilis. A small sample of serum will also be stored for use at a later date. The use of dried blood spots for the diagnosis of certain virological infections which can be transmitted sexually is currently under investigation, and it is hoped that this new technique will be in use within the coming year. With the participation of a diagnostics company in the United Kingdom, we aim to test the usefulness of this new technique. The results from this will be especially useful in a setting such as this rural area where the collection and transport of whole venous blood samples can be a logistical problem.

Treatment of Infected Women

All symptomatic women or women with signs indicating an RTI will be treated according to current WHO algorithms for the management of RTIs/STDs in primary health care settings. Any revision of this management (e.g. the discovery of an STD in an asymptomatic woman) will be based on the laboratory results, most of which will be available within one week. An infected woman discovered on laboratory testing will receive appropriate medication - this will be administered to her in her home by the CHW who normally visits her, thus obviating the necessity for her to visit the health centre twice. The CHW will also monitor compliance rates. The exception to this will be if a woman is found to be infected with an STD such as syphilis or gonorrhoea. In these cases each woman will be followed up actively by the CHW and advised to return for a check-up to monitor both compliance and to look for any treatment failures. If a woman has requested that her results be known only to the study personnel and not to her CHW then she will be advised to return to the health centre on a given date.

All women will receive advice at their first visit concerning the primary prevention of RTIs, and the recognition of symptoms which may indicate an RTI.

A cornerstone for the control of STDs at a public health level remains the treatment

of the sexual partners of infected persons. Every woman found to be infected with a sexually transmitted disease will be advised that her husband also requires treatment. The best method for achieving partner notification and partner compliance remains to be determined in most countries, and will be looked at within this project. Each woman will be offered a variety of options for partner notification/treatment and will be asked to choose the most appropriate one for her own situation. See page 17.

Any woman found to suffering from a more general medical problem will receive the appropriate treatment as usually offered by medical services within the Matlab Treatment area.

(2) POPULATION-BASED SURVEY OF MEN

At present, very little is known about the illnesses experienced by men within the Matlab area, and even less is known about the prevalence of STDs, or the health-care seeking behaviour of symptomatic men. In order to understand the epidemiology of STDs within the total population, it is optimal to carry out a population-based survey of men. This is particularly important in an area such as Matlab which has a large number of men working outside their home villages in areas such as Dhaka or the Middle East, but who return home to their families at regular intervals.

Using the DSS census, households within 2 blocks (see sections (i) and (ii) below) will be chosen at random with the aim of recruiting all men over 15 years of age within a particular household. Two male health assistants will be recruited to work with this study and they will survey approximately 1 household each per day. The health assistant may have to work early in the mornings in order to recruit the men before they go to work. The aim is to recruit all men in a household to participate in a simple screening exercise by asking them to provide an early morning urine sample each which can then be tested immediately using a leucocyte esterase dipstick (LED). Any man with a positive LED will be informed of the result and offered further investigation (a urethral swab). This swab will be sent back to Matlab for culture, and the urines will be stored in Matlab for further investigation - detection of chlamydial antigen through PCR.

The use of LED dipsticks as screening tools has been evaluated in both the industrialised and developing worlds, and it is judged to be a more cost-effective method of population-based screening when compared to screening men by urethral culture alone[15-17].

Each man will also be asked to provide a finger-stick blood sample which will then be used to test for syphilis. No venous blood sample will be required from any participating men. This study will provide us with valuable information about the prevalence of syphilis in a population of men. Such population-based data is scarce

in all parts of the world, especially in the non-industrialised world. Any man who participates in the study may, of course, refuse either of these screening tests, but will be eligible for inclusion as long as he agrees to be screened using at least one test.

All men participating in the study will be asked a small number of questions relating to their symptomatology, illness experience, health-care seeking behaviour and beliefs about STDs (see Appendix 2).

As with the study of women, participation of men will be entirely voluntary and informed consent will be obtained in all cases. Samples obtained from men will be number-coded before being sent to the laboratory in order to ensure confidentiality. Any symptomatic man will be given treatment according to current WHO clinical algorithms for syndromic management. Any subsequent revision of this management (e.g. through the discovery of asymptomatic carriage) will be based on laboratory results, and will be administered by the male health assistant who will also assess treatment compliance rates in infected men. Again, all infected men will be advised that their wives require treatment, and the best method for partner notification will be discussed with the man (see page 17).

Sample size: We aim to recruit approximately 800 men to the study, and thus will need to select approximately 170 households in each block assuming that each household contains on average 3 men (>15 years), and allowing for a refusal rate of 25% . Men in each selected household who are working away from home will be asked to participate in the study when they are next visiting their village. This latter group may be particularly important in the study of possible routes of STD transmission.

(3) SURVEYS OF SPECIFIC SUB-GROUPS

(i) Pregnant Women

Within the Matlab Treatment area there are approximately 2000 births per annum. All pregnant women are currently seen by a CHW for an antenatal check at least once during pregnancy, usually after the 5th month. It is recognised that many RTIs can have a significant negative impact on the outcome of the pregnancy and the health of the infant. RTIs occurring during pregnancy and remaining untreated can lead to fetal wastage, low birth weight or congenital infection. For example, if syphilis is left untreated throughout the pregnancy 1 in 5 babies are stillborn, 1 in 10 suffer death in the neonatal period, and 1 in 3 will have congenital syphilis[12]. Case-finding for syphilis in pregnant women is one of the targets for STD control as recognised by the WHO. At present, pregnant women in Matlab are not screened for the presence of RTIs; only pregnant women presenting requesting a check-up or treatment for specific symptoms currently receive management of possible RTIs. It is thought that the cultural difficulty of screening asymptomatic pregnant women is mainly due to the intrusive nature of a speculum examination, and the concern that a negative pregnancy outcome will be attributed to medical intervention. This

should not, however, preclude performing serological tests for syphilis. A programme of case-finding for syphilis has been found to be cost-effective in the prevention of congenital syphilis in many parts of the world, even when the prevalence rates are as low as 0.01%[13].

For reasons of logistical ease, this study will be carried out in 2 of the 4 divisional blocks of the Matlab Treatment Area. All pregnant women in these 2 blocks will be eligible for participation in the study.

Four health workers (2 in each block) will be trained to take finger-stick samples from pregnant women, for subsequent syphilis serology. These health workers will ensure that all pregnant women within the 2 blocks are told of the screening programme for syphilis, and the importance of the test for the health of the baby and the woman herself will be emphasised. Participation in this screening will be entirely voluntary and refusal to participate will not affect the woman's right to antenatal and medical services. Women who agree to participate will be seen at her home and a finger-stick sample collected for syphilis serology.

Any woman with a positive serology on syphilis screening will be offered free treatment, and will be given advice on prevention as well as on the importance of regular check-ups of herself and the baby. These women will be advised to attend the Matlab central hospital for treatment, and a short questionnaire will be completed on the visit of any women found to be infected with syphilis: see Appendix 2. Again, each woman with syphilis will be advised that her husband also requires treatment, and the most effective method of ensuring that the partner receives treatment will be assessed within the project (see page 17).

Sample size: There are approximately 2,000 births per annum in the Matlab Treatment Area, thus concentrating on 2 blocks we hope to see 1,000 women during the year of the study. It is predicted that the refusal rate among these women will be lower than might be expected in the first part of the study as they are already having blood taken for detection of anaemia.

(ii) Newborn Infants

Ophthalmia neonatorum (ON) is a sight-threatening disease which is entirely preventable through the use of appropriate and cost-effective prophylaxis at birth even in areas of low prevalence of *Neisseria gonorrhoeae* in pregnant women. Studies have shown that the use of silver nitrate ointment prophylactically is cost-effective even when maternal prevalence of gonorrhoea is as low as 0.5%[14].

Since we will not be screening pregnant women for any sexually transmitted infections except syphilis (see above), we will concentrate on case-finding in new-born infants. There is no current estimate of the incidence of ON in this population,

and no current provision for eye prophylaxis at birth. However, unlike in many settings in the developing world, all new-borns are seen by a CHW within 2 weeks of birth. Using the same four female health workers who will co-ordinate the study of syphilis in pregnant women, they will also be trained to take swabs for Gram stain and ELISA from all new-borns with suspected neonatal conjunctivitis. Thus, accompanying the regular CHW on her first post-natal visit, our health workers will be able to record the incidence of neonatal conjunctivitis. During the one year of the study approximately 1000 newborn infants will therefore be seen, and it is estimated that 20-30% of them may have symptoms of conjunctivitis - a small percentage of these cases will be due to N.gonorrhoeae or C.trachomatis.

This visit will also allow the health workers to record any abnormal symptoms related to a possible RTI that the mother might be experiencing in the post-natal stage, and to recommend appropriate management or referral. These interventions will only be carried out after consent is obtained from the mother.

The mothers and fathers of infected infants will be advised to attend the Matlab central hospital for treatment. Likewise, any woman seen post-natally who has symptoms of a post-partum infection will be advised to attend the hospital at Matlab. On attendance at Matlab, a short questionnaire will be completed: see appendix 2.

The results of this survey will allow us to estimate the cost-effectiveness of giving eye prophylaxis at birth to all infants. It will also inform on the policy recommendations for training traditional birth attendants in the recognition and prevention of ON including the provision of silver nitrate ointment in all kits given to Traditional Birth Attendants (TBAs).

(iii) Symptomatic Women

In order to inform decisions regarding the management of symptomatic women at the Primary Health Care level, it is necessary to understand both the epidemiology of RTIs (which can best be determined from a population-based survey, as outlined above), and the likelihood that certain symptoms and signs in women are associated with the presence of an RTI. This part of the study aims to address this second question. Current WHO guidelines recommend the use of clinical algorithms for the management of symptomatic women (and men) at the primary health care (PHC) level. These algorithms have not been fully evaluated for use in Bangladesh, where, as previous studies have shown, a high percentage of women have self-perceived symptoms related to the genital tract (especially vaginal discharge).

In the Matlab treatment area, women with symptoms of an RTI who present for treatment are seen either at home by a CHW or at one of the sub-centre blocks by a health assistant. According to recent data collected in Matlab, approximately 3,500 women have been diagnosed as having an RTI over the past three years, and have received treatment according to principles of syndromic management of STDs. Whilst this may involve a speculum examination by a trained health-care worker, it

does not usually involve taking swabs for culture or ELISA, or any other diagnostic evaluation beyond the use of pH paper when available. Thus, the majority of women receive a diagnosis of either candidiasis or *Trichomonas vaginalis* (TV). Whilst this may be appropriate for some women, this approach may also result in the inadequate treatment of women with other infections. Information on the proportion of symptomatic women who currently go elsewhere for treatment and never present at the subcentres is not available.

The subcentre of Block C (one of the four administrative blocks of the Matlab treatment Area) is located within a reasonable distance of the central hospital at Matlab, and thus will be the focus of this part of the study. All women seen by their CHW in Block C who have symptoms of an RTI are currently recommended to attend the subcentre for treatment. We will be asking them to attend on a specific day of the week (assuming that their symptoms do not require urgent and immediate treatment, in which case they will be treated as per current guidelines) at the subcentre. On this day each week, one of the two female physicians attached to the study will work at the subcentre and will clinically assess the women, take clinical samples, and ask a short questionnaire. No woman will be included in the study who would not usually require a speculum examination for assessment of her symptoms. The women will be treated according to current WHO guidelines of syndromic management of RTIs, and any revision of management will be based upon laboratory results.

Clinical samples will be transported back to the laboratory at Matlab for analysis. Appendix outlines which samples will be taken from women at the subcentre level.

The management of these women will follow similar guidelines to those developed in the section assessing the population-based prevalence of RTIs/STDs. Thus, they will be given the option of returning to the subcentre to collect their results, or their results will be given to their CHW for administering medication. Treatment compliance rates will be assessed by the CHWs, and the most appropriate method of partner notification will be discussed with each woman (see Page). Again each woman will be given information relating to the primary prevention of RTIs/STDs.

Participation in this part of the study is entirely voluntary, and any woman who does not wish to be included in the study will receive appropriate management according to current guidelines in use in Matlab, and will be assured that her declining to participate in no way affects the quality of care she can expect to receive.

Sample size: During the course of one year, approximately 800-1000 women are seen in the Matlab Treatment area and who receive a diagnosis of an RTI. Thus, concentrating on 1 sub-centres we hope to screen approximately 200 women.

(4) HEALTH BELIEFS AND ILLNESS EXPERIENCE

An integral part of any clinical and aetiological survey of RTIs is the inclusion of studies to assess the impact of health beliefs and health-care seeking behaviour on the illness experience of affected individuals. RTIs, perhaps more than any other human disease, are accompanied by social and cultural factors which influence illness experience. For example, a sense of shame or guilt may lead an individual to avoid contact with trained health care professionals through embarrassment, fear of being recognised by community members, and fear of sanctions in other fields of health care needs.

With the recent establishment of the Social and Behavioural Sciences Programme at ICDDR,B the possibility of conducting qualitative ethnographic and behavioural research into health-care seeking behaviour and RTIs has increased. Social scientists have recently commenced a survey of health-care seeking behaviours within the Matlab control area through the use of in-depth qualitative interviews. These surveys already include behaviour relating to symptoms such as vaginal discharge. It is hoped to collaborate with the social and behavioural science programme in a way which will complement both. For example, qualitative interviews could be conducted with sub-groups of the participating study populations. This will encompass both uninfected and infected people. Included in this latter group will be symptomatic and asymptomatic women, symptomatic men, and mothers of children with ON. All men and women who agree to be interviewed will be asked questions covering the following topics:

- health-care seeking behaviour (including the referral network and use of other sources of information);
- beliefs concerning the aetiology of RTIs
- personal assessment of risk of infection
- recognition of the significance of symptoms which may be associated with an RTI;
- lifetime experiences of RTIs.

The interviews will be completely confidential and recorded in a way which does not include any identifying features.

These interviews will not be conducted by staff from the RTI project, but by members of the social and behavioural sciences (SBS) team. The data from the RTI project will be used to identify persons with RTIs and those who are uninfected in order that focused ethnographic interviews can be undertaken.

Prior to the commencement of the clinical surveys, the SBS team will be conducting focus group discussions with the CHWs (all are women) with the aim of learning more about their clinical experience of RTIs and the local terms in use for describing RTIs, including ophthalmia neonatorum. These discussions will form part of the more formalised training programme on RTIs which all CHWs will be invited to attend before the project starts. The results of these discussions will be incorporated into the interviews on health-care seeking behaviour which will be carried out as part of each clinical study.

(5) URBAN PROJECT

The importance of studying RTIs/STDs in an urban setting lies in the recognition that worldwide, RTIs and especially STDs (including HIV) are more frequent in urban areas. The larger number of people living in cities in conjunction with a generally less rigid social structure and higher numbers of young single people (some of whom may be selling sex either as a primary or supplementary source of income), combine to provide more opportunities for the spread of STDs. This picture may be true in the cities of Bangladesh as it is true in other cities in south Asia and most of the rest of the world. Indeed, there are known to be 22,000 registered female commercial sex workers (CSWs) in Bangladesh (most of them working in or near Dhaka). This figure is undoubtedly an underestimate of the true number of women involved in commercial sexual activity as the majority may not be registered; and it does not take into account the number of men engaged in commercial sexual activity. However, this data serves to highlight the importance of understanding the epidemiology of RTIs and especially STDs in Dhaka and other urban settings. Without such information, the planning of both clinical services and primary prevention campaigns in cities is operating from a position of guesswork.

We are currently working in close partnership with the Government and NGO structures already working in the city, as well as working with urban-based projects within ICDDR,B itself. Current areas of collaboration in the urban setting include:

(1) Working with the Bangladesh Women's Health Coalition (BWHC) who have 10 clinics providing reproductive health services for women. Three of the BWHC clinics are within the Dhaka area, and there are proposals to develop another clinic to serve female commercial sex workers in Dhaka, and for clinical services to be offered within a garment factory. BWHC have asked for technical assistance and co-operation from staff in this project and it is expected that we shall carry out the following within their clinics:

- epidemiological monitoring of RTI prevalence in clinic-based populations
- provision of laboratory facilities for RTI/STD diagnosis
- development of intervention packages to inform clients
- evaluation of interventions to reduce STD/RTI incidence
- staff training in syndromic management

(2) Collaboration with the Institute for Epidemiology and Disease Control Research (IEDCR). We are currently working with IEDCR to develop a national training programme on the syndromic management of STDs, and have already hosted one national workshop. This programme will be developed and strengthened over the lifetime of the project.

(3) Collaboration with urban project in ICDDR,B
Staff at ICDDR,B are currently involved in a project to assess levels of maternal anaemia in pregnant women in an urban area. This involves the collection of finger-prick blood samples from these women. We aim to use the same samples and to test these women for syphilis. The women would be asked the same questions as

those involved in the Matlab study of pregnant women (with minor modification relating to place of residence), and would be treated according to the same protocol.

(6) PARTNER NOTIFICATION

The stated aims of partner notification are:

- to prevent re-infection of the index case;
- to control community spread as it allows identification and treatment of asymptomatic and pre-symptomatic individuals, who may not otherwise seek treatment;
- to facilitate the provision of primary prevention messages to both the client and his/her sexual partner(s).

Whilst the last objective of partner notification may be regarded as an ideal, the first two aims are fundamental to the control of STDs at an individual and public health level. However, the best method for achieving partner notification remains to be determined within each clinical and social setting. In some countries, notification is client-initiated, in others it is initiated by the health-care providers; others employ a mix of the two approaches.

Within this proposal there is the opportunity to investigate the most appropriate method for partner notification in a rural area such as Matlab. Any person diagnosed with a sexually transmitted disease at any of the points of the study will be advised that his/her partner also requires treatment. The methods of partner notification will be explained to the client, viz:

- the infected client is asked to bring their sexual partner to the clinic;
- the CHW visits the sexual partner in their home to provide treatment
- the infected client is given treatment for him/her-self and his/her sexual partner to be taken concurrently.

The client will then be asked to choose which method is most appropriate for his/her own situation and will be given help as appropriate to enable the partner to be notified and treated if necessary.

At the end of the study year we will collate the information on partner notification along the following lines:

- the most popular method chosen by clients
- the compliance rates with each method of notification
- the treatment failure rates according to the method of notification chosen.

The system of regular visits by a CHW to every household in the study area will allow assessment of both partner notification and partner compliance rates in each of the three methods. The results of the assessment will be used to inform subsequent policy recommendations in Matlab.

(7) OPERATIONAL RESEARCH

Throughout much of the developing world, the question of integration of STD/RTI management into the existing primary health care structures is being addressed by researchers and poilcy planners alike. Questions are being raised concerning which policies are appropriate at the primary health care level, and how workers at this level can be trained to recognise and manage these conditions. Some of these issues will be addressed within this project.

A fundamental part of this research proposal involves training CHWs and the paramedics based in Matlab and the four subcentres in the recognition and management of sexual health problems. Current practice in Matlab involves using a syndromic approach for case management, but there is no provision for active case finding. The syndromic algorithms presently in use were developed 10 years ago, and have not been evaluated or revised since that date. As stated above (see page 13), approximately 1000 women per annum present to one of the 4 subcentres with symptoms suggestive of an RTI. Most of these women receive a diagnosis of candidiasis or trichomoniasis, and are not investigated for cervical infections, for example. During the first year of this project we shall analyse existing data available in Matlab concerning the 3500 women who have presented with possible RTIs during the period 1990-1993. Measurable parameters include diagnoses, compliance rates, and rates of partner notification and treatment. These results will inform initial recommendations concerning management of patients at the subcentre level.

Current WHO guidelines for the syndromic management of STDs are somewhat simpler to use than the existing guidelines in Matlab, and these will form the basis of the teaching schedule to raise awareness RTIs/STDs among all staff. During the first year, all CHWs and paramedics in Matlab, along with physicians attached to the project, will receive training in RTI management and control. As part of ICDDR,B's commitment to improve staff training and understanding in the field of HIV/AIDS, this topic will be covered in the CHW/paramedic training. The subject will be approached not just from the position of protection of health-care workers and prevention of spread in the clinical setting, but the CHWs will also be asked the most suitable methods of informing the communities they work with about HIV/AIDS. Staff in this project will give them every assistance to put into practice their suitable strategies for disseminating messages about HIV and AIDS.

At the end of the one year period of data collection (projected to be approximately 18 months after the start of the study in October 1994), the results of the population-based surveys will give information on RTI prevalence and aetiology. The surveys conducted among symptomatic women will inform any revision of the clinical algorithms currently in use and will yield more detailed information concerning antimicrobial resistance patterns. The results of these surveys and laboratory analyses will then be used to make recommendations concerning the integration of RTI screening, management and control into the current MCH/FP

programme operating within Matlab. This will include:

- syphilis screening for pregnant women;
- provision of ON prophylaxis in TBA kits;
- policy guidelines for the management of symptomatic women presenting to health-care services;
- the appropriateness of screening asymptomatic but "at-risk" women who attend MCH/FP health-care services;
- the most effective and acceptable method of partner notification in this community;
- the opportunities for disseminating primary prevention messages within the current health-care setting.

It is anticipated that these findings will be of interest to service agencies outside the Matlab area, and, indeed, several outside agencies have already expressed an interest in the results of these surveys in order to inform their own policy guidelines.

REFERENCES

(1) Wasserheit JN. The significance and scope of reproductive tract infections among Third World women. Int J Gynecol Obstet, 1989, **Suppl.3**:145-168.

(2) Wasserheit JN. Epidemiological synergy:interrelationships between HIV infection and other STDs. Sex Transm Dis 1992;**19**(2):61-77.

(3) Moses S, Plummer FA, Ngugi EN, Nagelkerke NJD, Anzala AO, Ndinya Achola JO. Controlling HIV in Africa: effectiveness and cost of intervention in a high-frequency STD transmitter core group. AIDS 1991;**5**(4):407-411.

(4) Cameron DW, D'Costa LJ, Maitha GM, et al. Female to male transmission of HIV-1: risk factors for seroconversion in men. Lancet 1989;**2**:403-407.

(5) Piot P, Laga M. Current approaches to STD control in developing countries. Document written for Study Group on Integrated Behavioural Research for Prevention and Control of STDs. Bethesda, April 1990.

(6) Wasserheit JN, Harris JR, Chakraborty J, Kay BA, Mason KJ. Reproductive tract infections in a family planning population in Bangladesh. Studies in Family Planning 1989;**20**(2):69-80.

(7) Bangladesh Women's Health Coalition: Results from a study of the prevalence of RTIs in a BWHC clinic in Mirpur. Information presented in October 1994 at joint BWHC/ICDDR,B meeting.

(8) Bhatta P, Biellik R. STD treatment and preventive approaches: Findings from a clinic in Rangunia Thana, Chittagong District, Bangladesh. Oral presentation, IXth International Conference on AIDS/STDs, Berlin, June 1993.

(9) Younis N, Khattab H, Zurayk H, El-Mouelhy M, Amin MF, Farag AM. A community study of gynaecological and related morbidities in rural Egypt. Studies in Family Planning 1993;**24**(3):175-186.

(10) Bang RA, Baitule M, Sarmukaddam S, Bang AT, Choudhary Y, Tale O. High prevalence of gynaecological diseases in rural Indian women. Lancet 1989;(i):85-88.

(11) Holmes KK, Mardh PA, Sparling PF, Wiesner PJ (eds.) Sexually Transmitted Diseases, 2nd Edition. McGraw-Hill Publications 1990.

(12) Schulz KF, Murphy K, Patamasucon P, Meheus AZ. Congenital syphilis. In: Sexually Transmitted Diseases, KK Holmes et al. (eds). McGraw-Hill Publications 1990.

(13) Stray-Pedersen B. Economic evaluation of maternal screening to prevent congenital syphilis. Sex Transm Dis 1983;4:167-172.

(14) Laga M, Plummer FA, Piot P, et al. Prophylaxis of gonococcal and chlamydial ophthalmia neonatorum. N Engl J Med. 1988;**318**:653-657.

(15) Shafer MA, Schachter J, Moscicki B et al. Urinary leucocyte esterase screening test for asymptomatic chlamydial and gonococcal infections in males. JAMA 1989;**262**:2562-2566.

(16) McNagny SE, Parker RM, Zenilman JM, Lewis JS. Urinary leucocyte esterase test: a screening method for the detection of asymptomatic chlamydial and gonococcal infections in men. J Inf Dis 1992;**165**:573-576.

(17) Mayaud P, Changalucha J, Grosskurth H, et al. The value of urine specimens in screening for male urethritis and its microbiological aetiologies in Tanzania. Genitourin Med 1992;**68**:361-365.

APPENDIX 1:

LABORATORY INVESTIGATIONS TO BE UNDERTAKEN (FOR RTIs)

1(a) Population-based survey of women

Organism	Method	Site
1. N.gonorrhoeae[1]	Culture and isolation Antibiotic susceptibility	Matlab
2. C.trachomatis[2]	Antigen detection - enzyme immunoassay	Matlab
3. T.pallidum[3]	RPR test card Quantification if +ve Confirmation by TPHA	Matlab
4. T.vaginalis	Direct wet mount	Matlab
5. C.albicans	Direct wet mount	Matlab
6. Bacterial vaginosis[4]	Clinical picture pH vaginal fluid Whiff test with KOH Gram stain of vaginal fluid	Matlab
7. H.ducreyi[8]	Polymerase chain reaction	LSHTM
8. Herpes simplex virus[5]	Clinical Serology	Matlab UK
9. Molluscum contagiosum	Clinical	
10. Human papilloma virus[6]	Clinical PAP smear	 Dhaka
11. Hepatitis B[5]	Serology	UK
12. HIV[5]	Serology	UK

1(b) Population-based survey of men

Organism	Method	Site
1. C.trachomatis[7]	LCR	LSHTM
2. N. gonorrhoeae[1]	Culture and isolation	Matlab
3. T. pallidum[3]	Trust card RPR Quantification TPHA	Matlab

1(c) Symptomatic-women

All investigations will be carried out as appropriate depending on the clinical picture. Thus, only women with genital ulceration will be tested for the aetiological organisms of this condition, for example.

Organism	Method	Site
1. N.gonorrhoeae[1]	Culture and isolation Antibiotic susceptibility	Matlab
2. C.trachomatis[2]	Antigen detection - enzyme immunoassay	Matlab
3. T.pallidum[3]	RPR test card Quantification if +ve Confirmation by TPHA	Matlab
4. T. vaginalis	Wet mount from transport medium	Matlab
5. C.albicans	Wet mount from transport medium	Matlab
6. Bacterial vaginosis[4]	Clinical picture pH vaginal fluid Whiff test with KOH Gram stain of vaginal fluid	Matlab
7. H.ducreyi[8]	Polymerase chain reaction	LSHTM
8. Herpes simplex virus	Clinical	Matlab
9. Molluscum contagiosum	Clinical	

Notes relating to tests used in microbiological diagnosis:

- All tests are carried to be out following the published WHO guidelines on the diagnosis of STDs/RTIs (Reference: *Laboratory diagnosis of sexually transmittable infections* E. Van Dyck, AZ Meheus, P.Piot, WHO publication, 1994 .)

- A small number of clinical samples will be sent to the WHO reference laboratories in Geneva for quality control.

- The microbiologist appointed to work with this project will be sent to the UK for two months' training in RTI/STD diagnostics. Funding for this has been secured from the British Council.

1. Swabs for N.gonorrhoeae will be directly inoculated onto appropriate growth medium (modified Thayer Martin). As we are aiming to determine basic patterns of antimicrobial susceptibility, antibiotic sensitivities will be assessed using the agar dilution method (the reference method for the MIC determinations of gonococci). The suitability of this procedure for use in Matlab is awaiting assessment. If it is deemed unsuitable then we shall use the disk diffusion method.

2. C.trachomatis can be isolated through cell culture. however, this technique is costly and has many technical difficulties. We shall therefore be using ELISA tests which in numerous studies throughout the world have been shown to have a sensitivity of 90% and a specificity of 97% in populations with low-intermediate prevalence of infection (reference: Stamm WE, Mardh PA: Chlamydia trachomatis in "Sexually Transmitted Diseases", KK Holmes et al. (eds), McGraw Hill Publications 1990).

3. Any person presenting with a genital ulcer will have specimens taken for dark-ground microscopy. All other tests for syphilis will be based on serological tests. RPR tests will be used as these can be read macroscopically. Confirmatory testing will be carried out using TPHA (treponema pallidum haemagglutination assay).

4. We will not be attempting to isolate the individual organisms which may be the cause of bacterial vaginosis. Recognising that BV is a discrete clinical entity, the objective is for us to identify BV as simply as possible, but with the highest degree of sensitivity and specificity. Correct diagnosis of clinical symptoms and signs, along with interpretation of Gram stains for the presence of clue cells has been shown to give an acceptably high degree of both sensitivity and specificity (Reference: CA Spiegel, *Bacterial Vaginosis.* Clin Micro Rev 1991; 4(4):485-502).

5. There is the possibility of sending dried blood spot eluates to the UK for diagnosis using techniques for serological diagnosis of viral infections as developed by Murex Diagnostics, Dartford, Kent. Confirmation of this is awaited. If it is not possible to use this facility then serum will be tested for HIV in the Government facilities in Dhaka when these are fully established. All samples will be completely anonymous when sent to either of these laboratories, and will not be linked to the original study

numbers. This latter option would not afford us the opportunity to test for other viral infections, but we would gain valuable epidemiological information relating to HIV prevalence.

6. PAP smears will be sent to ICDDR,B's histopathologist in Dhaka to be read. A subset of these will be also sent to an expert cytopathologist in the UK for quality control.

7. The use of ligase chain reaction (LCR) for the diagnosis of C.trachomatis infections has recently been shown to have a sensitivity of 93.8% and a specificity of 99.9% when compared with an "expanded gold standard" (culture , direct fluorescent antibody staining and a second LCR). (Reference: HH Lee, MA Chernesky, J Schachter, Diagnosis of C.trachomatis genitourinary infection by LCR assay of urine. Lancet 1995;345:213-216). This test is not yet widely available, however, we are hoping to receive some test kits free of charge this year. If these kits are unavailable, however, we shall collect urethral swabs from men with a positive result on LED and analyse these swabs using ELISA techniques.

8. H.ducreyi is a notoriously difficult organism to isolate, requiring complex media and growth conditions, thus making culture difficult. However, new DNA amplification technique using polymerase chain reaction (PCR) have been developed for H. ducreyi. These techniques are currently in use at the London School of Hygiene and Tropical Medicine, and their use has recently been evaluated (Reference:B West, SM Wilson, J Changalucha et al. A simplified PCR for the detection of Haemophilus ducreyi and diagnosis of chancroid. Submitted to J Clin Micro). The number of specimens requiring this technique is expected to be very low as the incidence of genital ulcer disease is anecdotally low in this population.

Appendix 2

QUESTIONNAIRE TO BE ADMINISTERED TO EVERY PARTICIPATING WOMAN IN POPULATION - BASED SURVEY

1. CID Number

   RID Number

2. Study Number

3. Occupation

4. Ever worked outside village
   Currently employed outside village Y/N

5. Age at first marriage
   Number of marriages in lifetime
   Current marital status:

single	= 1
married	= 2
divorced/separated	= 3
widowed	= 4

Number of wives that husband currently has

Length of current marriage (years)

6.Husband's occupation

Where does husband currently work?

village	= 1
town/city	= 2
out of Bangladesh	= 3

Does husband live at home? Y/N

If "yes", does his job take him away from home at night Y/N
If "no", how long has he been away? (months)

Health Questions

7. Compared to one year ago, is your current state of health:

the same	= 1
better	= 2
worse	= 3

8 . Any diarrhoea in the last 3 days? Y/N
Any fever in the past one week? Y/N
In the past one month, any cough productive of sputum? Y/N
In the past one week, has she taken any antibiotics? Y/N*
Is she menstruating now? Y/N*

* If "yes" to either of these questions, then ask to return in one week.

9. Current method of contraception:

none	= 0
oral contraceptive pill	= 1
injectable hormone	= 2
IUD	= 3
condoms	= 4
sterilisation	= 5
vasectomy	= 6
other barrier methods	= 7
other methods (specify)	= 8

10. Date of LMP?

11. Age at first menstruation

12. Age at which she first met with her husband

13. Length of menstrual cycle (days)
Number of days she bleeds for

14.Concerning her LMP, was it:

same amount of bleeding as usual	= 1
heavier bleeding than usual	= 2
less bleeding than usual	= 3
not applicable, amenorrhoeic	= 4

15. Concerning her LMP, was it:

same amount of pain as usual	= 1
more painful than usual	= 2
less painful than usual	= 3
no pain	= 4

16. Does she ever spend time in bed because of pain when bleeding? *Y/N
* If "yes", how many days each period does she spend in bed?
<1
1<2
>2

17. Does she ever pass any clots? Y/N

18. What does she use as sanitary protection?

nothing	= 1
towels bought from shop	= 2
tampons bought from shop	= 3
towels made at home*	= 4
tampons made at home*	= 5

*If she makes her own sanitary protection, what does she make it from (specify)?

19.When she is menstruating, how many times in one day does she change her sanitary protection?

20. Does she ever wash inside her vagina during menstruation? *Y/N
Does she ever wash inside her vagina after menstruation? *Y/N

*If "yes" to either of these questions, what does she use to wash herself inside

water	= 1
soap and water	= 2
herbs and water	= 3
other (specify)	= 4

21. Does she ever wash inside her vagina after sexual intercourse? *Y/N

*If "yes" to this question, what does she use to wash herself inside

water	= 1
soap and water	= 2
herbs and water	= 3
other (specify)	= 4

22. Vaginal Discharge:

(a) During the past one month, has the amount of vaginal discharge:

been the same as usual	= 1
been more than usual	= 2
been less than usual	= 3
no vaginal discharge present	= 4

(b) If she has a vaginal discharge, what is the colour today?

white = 1
yellow = 2
brown = 3
other colour = 4

(c) Does her vaginal discharge smell offensive? *Y/N

*If "yes" During the past one month, has the smell:

stayed the same = 1
become worse = 2
become less = 3

(d) Has she ever stopped meeting with her husband because of her vaginal discharge? Y/N

(e) Has she ever sought treatment/advice for her vaginal discharge? *Y/N

*If "yes", where did she go for treatment/advice (specify)?

Did the treatment help her? Y/N*

*If "no", where did she go next for treatment/advice (specify)?

Did the treatment help her? Y/N

If she has a problem with a vaginal discharge but has never sought treatment/help for it, is it because:

no time to go for advice/treatment = 1
treatment is too expensive = 2
symptoms not severe enough = 3
she treats herself at home = 4
did not know where to go for treatment = 5
other reason (specify) = 6

23. Lower abdominal pain.

(a) Does she have any lower abdominal pain at the present time? *Y/N

* If "no", go to question 24.

If "yes", how long has the pain been present? (days and months)

(b) Has she ever sought treatment/advice for her lower abdominal pain? Y/N

If "yes", where did she go for treatment/advice (specify)?

Did the treatment help her? Y/N*

*If "no", where did she go next for treatment/advice (specify)?

Did the treatment help her? Y/N

(c) If she has a problem with lower abdominal pain but has never sought treatment/help for it, is it because:

no time to go for advice/treatment	= 1
treatment is too expensive	= 2
symptoms not severe enough	= 3
she treats herself at home	= 4
did not know where to go for treatment	= 5
other reason (specify)	= 6

24. Lower back pain.

(a) Does she have any lower back pain at the present time? *Y/N

* If "no", go to question 25.

If "yes", how long has the pain been present? (days and months)

(b) Has she ever sought treatment/advice for her lower back pain? Y/N

If "yes", where did she go for treatment/advice (specify)?

Did the treatment help her? Y/N*

*If"no", where did she go next for treatment/advice (specify)?

Did the treatment help her? Y/N

(c) If she has a problem with lower back pain but has never sought treatment/help for it, is it because:

no time to go for advice/treatment	= 1
treatment is too expensive	= 2
symptoms not severe enough	= 3
she treats herself at home	= 4
did not know where to go for treatment	= 5
other reason (specify)	= 6

25. The last time she met with her husband, was it painful? *Y/N

* If "no", go to question 26

If "yes", was the pain:

superficial (external genitalia)	= 1
deep (in the abdomen)	= 2

26.(a) In the past one week, has she suffered with any pain whilst passing urine? *Y/N

(b) In the past one week, has she been passing urine:

the same frequency as usual	= 1
more often than usual	= 2
less often than usual	= 3

(c) Has she ever sought treatment/advice for problems passing urine? *Y/N
* If "no", go to question 27

If "yes", where did she go for treatment/advice (specify)?

Did the treatment help her? Y/N*
*If "no", where did she go next for treatment/advice (specify)?

Did the treatment help her? Y/N

(d) If she has a problem with passing urine but has never sought treatment/help for it, is it because:

no time to go for advice/treatment	= 1
treatment is too expensive	= 2
symptoms not severe enough	= 3
she treats herself at home	= 4
did not know where to go for treatment	= 5
other reason (specify)	= 6

27.(a) Does she suffer with any genital prolapse? *Y/N

* If "no", go to question 28.

(b) If "yes" has she ever sought treatment/advice for genital prolapse? *Y/N
If "yes", where did she go for treatment/advice (specify)?

Did the treatment help her? Y/N*
*If "no", where did she go next for treatment/advice (specify)?

Did the treatment help her? Y/N

(c) If she has a problem with genital prolapse but has never sought treatment/help for it, is it because:

no time to go for advice/treatment	= 1
treatment is too expensive	= 2
symptoms not severe enough	= 3
she treats herself at home	= 4
did not know where to go for treatment	= 5
other reason (specify)	= 6

28.(a) Does she have any genital ulcer at the present time? *Y/N
*If "yes", is it painful Y/N

Has she had a genital ulcer before **Y/N
**If "yes", how long ago was the last time (days/months/years)

(b) Has she ever sought treatment/advice previously for her genital ulcer? *Y/N

*If "yes", where did she go for treatment/advice (specify)?

Did the treatment help her? Y/N*

*If "no", where did she go next for treatment/advice (specify)?

Did the treatment help her? Y/N

(c) If she has a problem with a genital ulcer but has never before sought treatment/help for it, is it because:

no time to go for advice/treatment	= 1
treatment is too expensive	= 2
symptoms not severe enough	= 3
she treats herself at home	= 4
did not know where to go for treatment	= 5
other reason (specify)	= 6

29.(a) In the past one month, has her husband suffered from:

pain on passing urine	*Y/N
abnormal discharge from the penis	*Y/N
genital ulcer	*Y/N

*(b) If her husband has any of these symptoms:

did he stop meeting with her because of this problem(s)	Y/N
did he seek treatment	Y/N
did she have any treatment	Y/N

CLINICAL EXAMINATION OF WOMEN

1. Temp. --.- °C

2. Mucous membranes:
   - pale Y/N
   - mouth ulcer(s) Y/N

3. Lymphadenopathy (>0.5cm) Y/N
   If "yes", site:

4. Blood pressure ---/---
   Is she: normotensive
   hypotensive
   hypertensive

5. Chest
   Clinically clear: Y/N
   If not clear, list abnormal signs

6. Heart sounds:
   Normal Y/N
   If "no", list abnormality

7. Examination of abdomen:
   - splenomegaly Y/N
   - hepatomegaly Y/N
   - other abdo. masses Y/N
   - guarding Y/N
   - rebound tenderness Y/N
   - any other problem

8. Skin:
   - scabies Y/N
   - fungal infection Y/N
   - acne Y/N
   - vitiligo Y/N
   - psoriasis Y/N
   - eczema Y/N
   - other abnormalities (specify)

9. External genitalia:

genital ulcer present	*Y/N
genital warts present	*Y/N
inguinal lymphadenopathy	Y/N
tinea cruris	Y/N
pubic lice	Y/N
Bartholin's cyst	Y/N
vulval candidiasis	Y/N
other abnormality (specify)	

* if these are present, mark site on diagram

10. Speculum Examination

vaginal discharge normal	Y/N
cervical mucopus present	Y/N
cervical friability	Y/N
cervical ectopy present	Y/N
cervical/vaginal ulcer	Y/N

other cervical or vaginal abnormality (list)

11. Colour of discharge:

no discharge	= 0
white	= 1
yellow	= 2
brown	= 3
other (state)	= 4

12. Consistency of discharge:

no discharge	= 0
clumpy/curd like	= 1
thin/watery	= 2
thick	= 3

13. pH of discharge

ph < 4.5	= 1
pH > 4.5	= 2

14. Bimanual examination

Uterine size (weeks)	
Cervical motion tenderness	Y/N
Adnexal mass present	*Y/N

If "yes", site:	right	Y/N	tender	Y/N
	left	Y/N	tender	Y/N

15. Genital prolapse:

uterine descent	Y/N	degree (1,2,3)
rectocoele	Y/N	
cystocoele	Y/N	

16. Any other problems (specify)

17. Treatment given (specify)

18. Treatment for partner needed? *Y/N

* If "yes", client to choose either:

medication given to client for distribution	= 1
partner to contact CHW	= 2
CHW to contact partner	= 3
other (specify)	= 4

19. Follow-up visit needed? *Y/N

* If "yes", at follow-up visit complete form B again, and ask additional questions:

(a) is she symptomatic? Y/N

(b) is she: the same = 1
better = 2
worse = 3
compared to last visit?

(c) did she take medication as prescribed Y/N
If "no", why not (specify)

(d) did partner take treatment Y/N
If "no", why not (specify)

Further action required (specify)

note to interviewer: fill in patient study number and date and send this page and samples to laboratory

LABORATORY RESULTS, POPULATION-BASED SURVEY OF WOMEN

Patient Study Number

Date

organism	**result**	**not done**
N. gonorrhoeae	pos/neg antibiotic susceptibility (outline)	
C. trachomatis	pos/neg	
RPR	pos/neg	
TPHA		
T. vaginalis	pos/neg	
candida albicans	pos/neg	
B.V.	pos/neg	
H. ducreyi	pos/neg	
HSV	pos/neg	
PAP smear	Grade of result (outline)	
HIV	pos/neg	
Hep B	pos/neg	

QUESTIONS TO BE ASKED OF SYMPTOMATIC WOMEN

1. CID Number

   RID Number

2. Study Number

3. Occupation

4. Ever worked outside village
   Currently employed outside village Y/N

5. Age at first marriage
   Number of marriages in lifetime
   Current marital status:

single	= 1
married	= 2
divorced/separated	= 3
widowed	= 4

Number of wives that husband currently has

Length of current marriage (years)

6. Husband's occupation

Where does husband currently work?

village	= 1
town/city	= 2
out of Bangladesh	= 3

Does husband live at home? Y/N

If "yes", does his job take him away from home at night Y/N
If "no", how long has he been away? (months)

Health Questions

7. Any diarrhoea in the last 3 days? Y/N
   Any fever in the past one week? Y/N
   In the past one month, any cough productive of sputum? Y/N
   In the past one week, has she taken any antibiotics? Y/N
   Is she menstruating now? Y/N

8. Current method of contraception:

none	= 0
oral contraceptive pill	= 1
injectable hormone	= 2
IUD	= 3
condoms	= 4
sterilisation	= 5
vasectomy	= 6
other barrier methods	= 7
other methods (specify)	= 8

9. How many days ago was the first day of her LMP?

10. Which symptoms is the woman suffering from?

abnormal vaginal discharge	Y/N
genital itching	Y/N
genital ulceration	Y/N
lower abdominal pain	Y/N
lower back pain	Y/N
pain during sexual intercourse	Y/N
pain on passing urine	Y/N
genital prolapse	Y/N
other (please specify)	

If a woman has any of the above symptoms then please ask the following questions. **If she does not have the symptoms, do not ask the questions.**

11. ***Vaginal Discharge:***

(a) During the past one month, has the amount of vaginal discharge:

been the same as usual	= 1
been more than usual	= 2
been less than usual	= 3
no vaginal discharge present	= 4

(b) What is the colour of her vaginal discharge today?

white	= 1
yellow	= 2
brown	= 3
other colour	= 4

(c) Does her vaginal discharge smell offensive? Y/N

If "yes" During the past one month, has the smell:

stayed the same	= 1
become worse	= 2
become less	= 3

(d) Has she ever stopped meeting with her husband because of her vaginal discharge? Y/N

(e) Has she ever sought treatment/advice previously for her vaginal discharge? Y/N

If "yes", where did she go for treatment/advice (specify)?

Did the treatment help her? Y/N*
*If "no", where did she go next for treatment/advice (specify)?

Did the treatment help her? Y/N

(f) If she has a problem with a vaginal discharge but has never before sought treatment/help for it, is it because:

no time to go for advice/treatment	= 1
treatment is too expensive	= 2
symptoms not severe enough	= 3
she treats herself at home	= 4
did not know where to go for treatment	= 5
other reason (specify)	= 6

12. ***Genital itching***

(a) How long has she been suffering from genital itching (days/months)

(b) Has she ever sought treatment/advice previously for her genital itching? Y/N

If "yes", where did she go for treatment/advice (specify)?

Did the treatment help her? Y/N*
*If "no", where did she go next for treatment/advice (specify)?

Did the treatment help her? Y/N

(c) If she has a problem with a genital itching but has never before sought treatment/help for it, is it because:

no time to go for advice/treatment	= 1
treatment is too expensive	= 2
symptoms not severe enough	= 3
she treats herself at home	= 4
did not know where to go for treatment	= 5
other reason (specify)	= 6

13. ***Genital ulcer***

(a) How long has she had a genital ulcer? (days/months)
Is it painful Y/N
Has she had a genital ulcer before *Y/N

*If "yes" how long ago was the last time (days/months/years)

(b) Has she ever sought treatment/advice previously for her genital ulcer? Y/N
If "yes", where did she go for treatment/advice (specify)?

Did the treatment help her? Y/N*
* If "no", where did she go next for treatment/advice (specify)?

Did the treatment help her? Y/N

(c) If she has a problem with a genital ulcer but has never before sought treatment/help for it, is it because:

no time to go for advice/treatment	= 1
treatment is too expensive	= 2
symptoms not severe enough	= 3
she treats herself at home	= 4
did not know where to go for treatment	= 5
other reason (specify)	= 6

14. ***Lower abdominal pain.***
(a) If she has lower abdominal pain, how long has the pain been present? (days and months)

(b) Has she ever previously sought treatment/advice for her lower abdominal pain? Y/N
If "yes", where did she go for treatment/advice (specify)?

Did the treatment help her? Y/N*
* If "no", where did she go next for treatment/advice (specify)?

Did the treatment help her? Y/N

(c) If she has a problem with lower abdominal pain but has never before sought treatment/help for it, is it because:

no time to go for advice/treatment	= 1
treatment is too expensive	= 2
symptoms not severe enough	= 3
she treats herself at home	= 4
did not know where to go for treatment	= 5
other reason (specify)	= 6

15. ***Lower back pain.***

(a) If she has lower back pain, how long has the pain been present? (days and months)

(b) Has she ever before sought treatment/advice for her lower back pain? Y/N

If "yes", where did she go for treatment/advice (specify)?

Did the treatment help her? Y/N*

*If "no", where did she go next for treatment/advice (specify)?

Did the treatment help her? Y/N

(c) If she has a problem with lower back pain but has never before sought treatment/help for it, is it because:

no time to go for advice/treatment	= 1
treatment is too expensive	= 2
symptoms not severe enough	= 3
she treats herself at home	= 4
did not know where to go for treatment	= 5
other reason (specify)	= 6

15. ***Pain during sexual intercourse***

(a) If she is complaining of pain during sexual intercourse (meeting with her husband), is the pain:

superficial (external genitalia) Y/N

deep (in the abdomen) Y/N

(b) How long has she been suffering from pain during sexual intercourse (days/months/years)

(c) Has she ever sought treatment/advice for pain during sex? Y/N

If "yes", where did she go for treatment/advice (specify)?

Did the treatment help her? Y/N*

*If "no", where did she go next for treatment/advice (specify)?

Did the treatment help her? Y/N

(d) If she has a problem with pain during sex but has never sought treatment/help for it, is it because:

no time to go for advice/treatment	= 1
treatment is too expensive	= 2
symptoms not severe enough	= 3
she treats herself at home	= 4
did not know where to go for treatment	= 5
other reason (specify)	= 6

16. ***Pain passing urine***

(a) How long has she had pain on passing urine? (days/months)

(b) In the past one week, has she been passing urine:

the same frequency as usual	= 1
more often than usual	= 2
less often than usual	= 3

(c) Has she ever sought treatment/advice for problems passing urine? Y/N
If "yes", where did she go for treatment/advice (specify)?

Did the treatment help her? Y/N*
If it did not help, where did she go next for treatment/advice (specify)?

Did the treatment help her? Y/N

(d) If she has a problem with passing urine but has never sought treatment/help for it, is it because:

no time to go for advice/treatment	= 1
treatment is too expensive	= 2
symptoms not severe enough	= 3
she treats herself at home	= 4
did not know where to go for treatment	= 5
other reason (specify)	= 6

17. ***Genital prolapse***

If she suffers with genital prolapse, how long has this been present (days/months/years)

(b) Has she ever before sought treatment/advice for genital prolapse? Y/N
If "yes", where did she go for treatment/advice (specify)?

Did the treatment help her? Y/N*
*If "no", where did she go next for treatment/advice (specify)?

Did the treatment help her? Y/N

(c) If she has a problem with genital prolapse but has never sought treatment/help for it, is it because:

no time to go for advice/treatment	= 1
treatment is too expensive	= 2
symptoms not severe enough	= 3
she treats herself at home	= 4

did not know where to go for treatment = 5
other reason (specify) = 6

18.(a) In the past one month, has her husband suffered from:

pain on passing urine *Y/N
abnormal discharge from the penis *Y/N
genital ulcer *Y/N

*(b) If her husband has any of these symptoms:

did he stop meeting with her because of this problem Y/N
did he seek treatment Y/N
did she have any treatment Y/N

CLINICAL EXAMINATION OF WOMEN

1. Temp. --.- °C

2. Mucous membranes:
   - pale Y/N
   - mouth ulcer(s) Y/N

3. Examination of abdomen:
   - splenomegaly Y/N
   - hepatomegaly Y/N
   - other abdo. masses Y/N
   - guarding Y/N
   - rebound tenderness Y/N
   - any other problem (list) Y/N

4. External genitalia:
   - genital ulcer present *Y/N
   - genital warts present *Y/N
   - inguinal lymphadenopathy Y/N
   - tinea cruris Y/N
   - pubic lice Y/N
   - Bartholin's cyst Y/N
   - vulval candidiasis Y/N
   - other abnormality (specify)

* if these are present, mark site on diagram

5. Speculum Examination
   - vaginal discharge normal Y/N
   - cervical mucopus present Y/N
   - cervical friability Y/N
   - cervical ectopy present Y/N
   - cervical/vaginal ulcer Y/N
   - other cervical or vaginal abnormality (list)

6. Colour of discharge:
   - no discharge = 0
   - white = 1
   - yellow = 2
   - brown = 3
   - other (state) = 4

7. Consistency of discharge:
   - no discharge = 0
   - clumpy/curd like = 1
   - thin/watery = 2
   - thick = 3

8. pH of discharge

ph < 4.5	= 1
pH > 4.5	= 2

9. Bimanual examination

Uterine size (weeks)	
Cervical motion tenderness	Y/N
Adnexal mass present	*Y/N

If "yes", site:	right	Y/N	tender	Y/N
	left	Y/N	tender	Y/N

10. Genital prolapse:

uterine descent	Y/N	degree (1,2,3)
rectocoele	Y/N	
cystocoele	Y/N	

11. Any other problems (specify)

12. Treatment given (specify)

13. Treatment for partner needed? *Y/N

* If "yes", client to choose either:

medication given to client for distribution	= 1
partner to contact CHW	= 2
CHW to contact partner	= 3
other (specify)	= 4

14. Follow-up visit needed? *Y/N

* If "yes" at follow-up visit complete form D again, and ask additional questions:

(a) is she symptomatic? Y/N

(b) is she: the same = 1
better = 2
worse = 3
compared to last visit?

(c) did she take medication as prescribed Y/N
If "no", why not (specify)

(d) did partner take treatment Y/N
If "no", why not (specify)

Further action required (specify)

note to interviewer: fill in study number and date, and send this page with clinical samples to the laboratory

LABORATORY RESULTS, SURVEY OF SYMPTOMATIC WOMEN

Study Number

Date

organism	result	not done
N. gonorrhoeae	pos/neg antibiotic susceptibility (outline)	
C. trachomatis	pos/neg	
RPR	pos/neg	
TPHA		
T. vaginalis	pos/neg	
candida albicans	pos/neg	
B.V.	pos/neg	
H. ducreyi	pos/neg	
HSV	pos/neg	
PAP smear	Grade of result (outline)	
HIV	pos/neg	
Hep B	pos/neg	

QUESTIONS TO BE ASKED OF MEN

1. Study Number

2. Age

3. Years of completed schooling:

4. Occupation

5. Ever worked outside village Y/N
   Currently employed outside village *Y/N
   If "yes", does he work in:
   - nearby town = 1
   - Dhaka = 2
   - other major town/city in Bangladesh = 3
   - outside Bangladesh = 4

   Does his work mean that he lives away from home:
   - most of the time = 1
   - some of the time = 2
   - spends occasional nights away from home = 3

6. Current marital status:
   - single = 1
   - married = 2
   - divorced/separated = 3
   - widowed = 4

7. Age at first marriage

8. Number of wives that he currently has

9. Number of living children that he has

10. Has he ever used condoms?

11. Wives' occupation(s)

12. Age at first sexual intercourse.

13. During his lifetime, how many women has he had sexual intercourse with (including his wife)
    If he has had sexual intercourse with a woman other than his wife, did he ever pay for sex?

Health Questions

14. Compared to one year ago, is his current state of health:
    the same
    better
    worse

15. (a) Does he have any pain passing urine? Y/N
If yes, how long has this been present (days/months/years)

(b) Has he ever sought treatment/advice for this problem? Y/N
    If "yes", where did he go for treatment/advice (specify)?

    Did the treatment help him? Y/N*
    *If "no", where did he go next for treatment/advice (specify)?

    Did the treatment help him? Y/N

(c) If he has a problem with dysuria but has never sought treatment/help for it, is it because:

no time to go for advice/treatment	= 1
treatment is too expensive	= 2
symptoms not severe enough	= 3
he treats himself at home	= 4
did not know where to go for treatment	= 5
other reason (specify)	= 6

16. (a) Does he have any urethral discharge? Y/N
If yes, how long has this been present (days/months/years)

(b) Has he ever sought treatment/advice for this problem? Y/N
    If "yes", where did he go for treatment/advice (specify)?

    Did the treatment help him? Y/N*
    *If "no", where did he go next for treatment/advice (specify)?

    Did the treatment help him? Y/N

(c) If he has a problem with urethral discharge but has never sought treatment/help for it, is it because:

no time to go for advice/treatment	= 1
treatment is too expensive	= 2
symptoms not severe enough	= 3
he treats himself at home	= 4
did not know where to go for treatment	= 5
other reason (specify)	= 6

18. (a) Does he have any genital ulcer? Y/N

If yes:

how long has this been present (days/months/years)

is it painful Y/N

has he had this problem before? Y/N

(b) Has he ever sought treatment/advice for this problem? Y/N

If "yes", where did he go for treatment/advice (specify)?

Did the treatment help him? Y/N*

If "no", where did he go next for treatment/advice (specify)?

Did the treatment help him? Y/N

(c) If he has a problem with genital ulceration but has never sought treatment/help for it, is it because:

no time to go for advice/treatment	= 1
treatment is too expensive	= 2
symptoms not severe enough	= 3
he treats himself at home	= 4
did not know where to go for treatment	= 5
other reason (specify)	= 6

19. Does his wife have any similar problems of the genital tract? Y/N

If he has received treatment for his symptoms, was his wife treated as well? Y/N

Clinical Examination

20. External genitalia only:

urethral discharge	Y/N
genital ulcer present	*Y/N
genital warts present	*Y/N
inguinal lymphadenopathy	Y/N
tinea cruris	Y/N
pubic lice	Y/N
candidiasis	Y/N
other abnormality (list)	

* if these are present, mark site on diagram

LED Result *POS/NEG

*If pos then do urethral swab for Gram stain.

* If pos then client needs treatment:

1. Treatment given (specify)

2. Treatment for partner is also needed

Client is to choose either:

medication given to client for distribution	= 1
partner to contact CHW	= 2
CHW to contact partner	= 3
other (specify)	= 4

3. Follow-up visit is needed.

At follow-up visit complete form D again, and ask additional questions:

(a) is he symptomatic? Y/N

(b) is he: the same = 1
better = 2
worse = 3
compared to last visit?

(c) did he take medication as prescribed Y/N
If "no", why not (specify)

(d) did partner take treatment Y/N
If "no", why not (specify)

Further action required (specify)

note to interviewer: fill in study number and date and send this form with clinical samples to the laboratory

Results from survey of men:

Patient Study number

Date

LED Result:	Pos/Neg
C. trachomatis PCR	Pos/Neg
Gram stain for GC	Pos/Neg
RPR	
TPHA	

QUESTIONS TO BE ASKED OF PREGNANT WOMEN

1.CID Number
RID Number

2. Study Number

3. Occupation

4. Ever worked outside village Y/N

Currently employed outside village Y/N

5. Age at first marriage
Number of marriages in lifetime
Current marital status:

single	= 1
married	= 2
divorced/separated	= 3
widowed	= 4

Number of wives that husband currently has

Length of current marriage (years)

6.Husband's occupation

Where does husband currently work?

village	= 1
town/city	= 2
out of Bangladesh	= 3

Does husband live at home? *Y/N**

*If "yes", does his job take him away from home at night Y/N
**If "no", how long has he been away? (months)

9. Does she have a genital ulcer at the present time? Y/N
How long has she had a genital ulcer? (days/months)
Is it painful Y/N
10. Has she had a genital ulcer at any time previously Y/N
*If "yes",how long ago was the last time (days/months/years)

Syphilis serology result?

Treatment needed? Y/N

Date treatment given

Dates for follow-up

Partner

Client to choose how partner is notified:

client herself to inform = 1
CHW to inform = 2

Blood taken from partner? Y/N

Syphilis serology result of partner Pos/Neg

Treatment needed? Y/N

Date treatment given

Outcome of pregnancy

miscarriage = 1
normal baby = 2
stillbirth = 3
baby born with congenital abnormality = 4
neonatal death = 5

Note to interviewer: fill in study number and date seen and send this page plus clinical sample to the laboratory

Interviewer

Date seen

Syphilis serology result Pos/Neg

DATA COLLECTION FROM THE FOLLOWING WOMEN:

WOMEN WHOSE INFANTS ARE FOUND TO HAVE O.N. = 1
WOMEN SUFFERING FROM POST-PARTUM INFECTIONS = 2

1. CID Number
   RID Number

2. Study Number

3. Age

4. Years of completed schooling:

5. Occupation

6. Ever worked outside village Y/N
   Currently employed outside village Y/N

7. Age at first marriage
   Number of marriages in lifetime
   Current marital status:
   - single = 1
   - married = 2
   - divorced/separated = 3
   - widowed = 4

Number of wives that husband currently has

Length of current marriage (years)

8. Husband's occupation

Where does husband currently work?
- village = 1
- town/city = 2
- out of Bangladesh = 3

Does husband live at home? *Y/N**

*If "yes", does his job take him away from home at night Y/N
**If "no", how long has he been away? (months)

9. How many days ago did she give birth?

10. Outcome of pregnancy

normal baby	= 1
stillbirth	= 2
baby born with congenital abnormality	= 3
baby unwell since birth	= 4
baby has ARI	= 5
neonatal death	= 6

11. Does she have any of the following symptoms:

foul-smelling vaginal discharge	Y/N
lower abdominal pain	Y/N
fever	Y/N
pain on passing urine	Y/N
other (please list)	

If she has any of these symptoms,

Has she sought treatment/advice for this problem? Y/N

If "yes", where did she go for treatment/advice (specify)?

Did the treatment help her? Y/N*

*If "no", where did she go next for treatment/advice (specify)?

Did the treatment help her? Y/N

(c) If she has a problem but has not sought treatment/help for it, is it because:

no time to go for advice/treatment	= 1
treatment is too expensive	= 2
symptoms not severe enough	= 3
she treats herself at home	= 4
does not know where to go for treatment	= 5
cannot leave the household until days after the birth	= 6
other reason (specify)	= 7

12. In the past one month, has her husband suffered from:

pain on passing urine	*Y/N
abnormal discharge from the penis	*Y/N
genital ulcer	*Y/N

If he has had any of these problems, has he sought treatment for them?

Y/N

CLINICAL EXAMINATION OF WOMEN

1. Temp. --.- °C

2. Examination of abdomen:

splenomegaly	Y/N
hepatomegaly	Y/N
other abdo. masses	Y/N
guarding	Y/N
rebound tenderness	Y/N
any other problem	

3. External genitalia:

genital ulcer present	*Y/N
genital warts present	*Y/N
inguinal lymphadenopathy	Y/N
tinea cruris	Y/N
pubic lice	Y/N
vulval candidiasis	Y/N
other abnormality (list)	

* if these are present, mark site on diagram

4. Speculum Examination

vaginal discharge normal	Y/N
cervical mucopus present	Y/N
cervical/vaginal ulcer	Y/N
other cervical or vaginal abnormality (list)	

5. Colour of discharge:

white	= 1
yellow	= 2
brown	= 3
other (state)	= 4
no discharge	= 0

6. Consistency of discharge:

clumpy/curd like	= 1
thin/watery	= 2
thick	= 3
no discharge	= 4

7. pH of discharge

ph < 4.5

pH > 4.5

8. Bimanual examination

Uterine size (weeks)	
Cervical motion tenderness	Y/N
Adnexal mass present	*Y/N

If "yes", site: right Y/N tender Y/N
left Y/N tender Y/N

9. Any other problems

Interviewer

Date seen

Diagnosis

Date and type of treatment given

Dates for follow-up

Partner

Treatment needed? *Y/N

* If "yes", client to choose either:

medication given to client for distribution	= 1
partner to contact CHW	= 2
CHW to contact partner	= 3
other (specify)	= 4

AT FOLLOW-UP:

At follow-up visit complete form again, and ask additional questions:

(a) is she symptomatic? Y/N

(b) is she: the same = 1
better = 2
worse = 3
compared to last visit?

(c) did she take medication as prescribed Y/N
If "no", why not (specify)

(d) did partner take treatment Y/N
If "no", why not (specify)

Further action required (specify)

Note to interviewer: fill in study number and date and send this page plus clinical samples to the laboratory

LABORATORY RESULTS FROM THE FOLLOWING WOMEN:

WOMEN WHOSE INFANTS ARE FOUND TO HAVE O.N. = 1
WOMEN SUFFERING FROM POST-PARTUM INFECTIONS = 2

Study Number

Date

organism	**result**	**not done**
N. gonorrhoeae	pos/neg antibiotic susceptibility (outline)	
C. trachomatis	pos/neg	
T. vaginalis	pos/neg	
candida albicans	pos/neg	
B.V.	pos/neg	

Appendix 3

STATEMENT TO BE READ TO WOMEN ASKED TO PARTICIPATE IN POPULATION-BASED SURVEY

We are asking you to take part in a study looking at the health of women who are not pregnant. The reason for this is to help us decide what type of health services should be provided for women such as yourself.

If you agree to take part in this study we will be asking you a number of questions about your health in general, and especially about your reproductive health. We will also be asking you to have a health check-up. This will be carried out by a female doctor who will examine you for a number of diseases, including diseases of the reproductive tract. This means that we would like to do an internal examination. This is a relatively painless procedure and is the only way we can discover whether you have any infections of the reproductive tract. We would like to do this whether or not you have any symptoms. We have previously found out that some women have infections without any symptoms, but the infections can still cause problems. For example, they can cause infertility or cause illness in newborn babies. The examinations we are going to carry out will not cause you any illness or harm. We will not do anything that causes you to stop having babies if you want them in the future.

We will also be asking you for a small amount of blood to test for infections. Again we know that some women can have a silent infection in their blood which if untreated can cause significant harm to herself or her unborn babies. All the tests we carry out and the questions we ask will be entirely confidential. No-one will know the results except you, the doctor and your community health worker. If you do not want your community health worker to know the result, please tell the doctor and she can arrange for you to come back for the results. If we find that you have an infection that needs treatment we will give you treatment free of charge. This treatment will not cause you any harm.

Please ask the doctor or community health worker any questions you may have about this study. If you decide not to take part, this will in no way affect the care or treatment you or your family receive from ICDDR,B in the future.

THANKYOU FOR YOUR HELP

STATEMENT TO BE READ TO PREGNANT WOMEN

We are going to ask you for a small sample of blood today. This will be used to see whether you are suffering from any infections which may harm the baby. we have previously seen that some women can carry an infection in their blood without any symptoms, but the infection can harm the baby before it is born, or make it ill when it is newborn. These infections can also harm the mothers if they are left without treatment.

The blood sample we are going to take is a very small amount from your finger. The blood will be sent to our laboratory, and you will have the result very quickly. You can be sure that the result will be entirely confidential, and will only be known to you, a doctor at the hospital and your community health worker. Before we take the blood you will be asked a small number of questions about yourself and your family.

If we discover that you have an infection in your blood, we will be offering you treatment free of charge. This treatment will not cause any harm to you or the baby.

Please ask the community health worker if you have any questions about this test. If you decide that you do not wish to have the test done, this will in no way affect the care that you or your family receive from ICDDR,B in the future.

THANKYOU FOR YOUR HELP

STATEMENT TO BE READ TO MOTHERS OF BABIES WITH POSSIBLE OPHTHALMIA NEONATORUM

Your baby has an infection in its eye. I would like to take a small swab today to see what type of infection this is so we can give the baby the correct treatment. We have previously seen that if a baby has an eye infection after birth this can cause damage to the baby's eyesight if it is left without treatment. The swab I am going to take will in no way harm the baby, and will not cause him/her any problems in the future.

I would also like to ask you some questions about your health as we know that in some cases the baby gets this infection from the mother's birth canal whilst it is being born. This may mean that you need treatment as well. We can decide this when we have the results of the tests.

If either you or the baby need treatment this will be given free of charge, and will not cause any problems to either of you.

THANKYOU FOR YOUR HELP

STATEMENT TO BE READ TO MEN

We are currently carrying out a study to look at the question of genital problems experienced by men. This means, for example, pain when passing urine, a burning sensation, or a urethral discharge. We know that in some men these problems can be caused be infections, and we would like to test you for these infections. We have also seen that some men can carry these infections without any symptoms, but they can pass them on to their wives who may then have more serious problems such as infertility or ill-health of newborns.

The tests we are going to carry out are very simple and involve testing a sample of your urine, and collecting a finger-stick sample of your blood. We will also be asking you some questions about yourself and your family. The results of these tests and the answers to the questions will be entirely confidential, and will only be known to you, the health assistant and the doctor at the hospital.

If we discover that you have an infection we will be offering you treatment free of charge. This treatment does not cause you any harm.

Please ask the health assistant if you have any questions about this study. If you decide not to take part in this study, this will in no way affect the health care that you or your family receive from ICDDR,B in the future.

THANKYOU FOR YOUR HELP

STATEMENT TO BE READ TO SYMPTOMATIC WOMEN

During your visit today you have complained of symptoms that may indicate that you have an infection in the reproductive tract. We would like to examine you carefully to see whether you have any infections. This involves carrying out an internal examination so we can see the possible site of the infection clearly. This is a relatively painless procedure and will not cause any problems to you now or in the future. We will not be carrying out any procedures that could stop you having babies in the future.

We would also like to ask you some questions about your symptoms, and about yourself. All the information that you give us, and the results of all your tests will be entirely confidential. The only people who will know your results are the health assistant, the doctor at ICDDR,B and you.

If we discover that you have an infection, we will be giving you treatment free of charge. This treatment will not harm you in any way.

Please ask the doctor or the health assistant if you have any questions about these tests. If you decide that you do not want these tests to be carried out, this will in no way affect the treatment that you receive from ICDDR,B either now or in the future.

THANKYOU FOR YOUR HELP

Appendix 4

PROCEDURE FOR MAINTAINING CONFIDENTIALITY

All participants in the various arms of this study will be given a study number alongside their usual CID and RID numbers. It is the study number which will be used on all clinical samples sent to the laboratory. Names will NOT be used on any laboratory samples.

The results of any positive samples will be communicated back to the principal investigator and study physician. If the participant has indicated that s/he does not wish her/his usual CHW to know the results then this will be respected, and the CHW will only be informed that the participant should be asked to come back to the central hospital. In all other cases, the CHW will be informed of the result and will be asked to give the appropriate treatment to the participant and her/his spouse.

All questionnaires will be kept in a locked filing cabinet, to which only the principal investigator and participating physician will have access. The CID and RID numbers will not be used during data entry.

TIMETABLE

Budget commenced July 1994, therefore finishes June 1997.

Development of proposal: October - December 1994

Recruitment of staff commences: October 1994

Submission to internal referees: November 1994

Submission to external referees: December 1994

Submission to research committee: February 1995

Submission to ethical committee: March 1995

Microbiologist to be appointed: February 1995

Microbiologist to be sent to UK for 2 months' training in RTI/STD diagnostics: March 1995

Purchase of stock commences: January 1995

Training of CHWs and Health Assistants in RTIs: March - April 1995

Development of questionnaires and printing of questionnaires: January - February 1995

Planned start date: May 1995 (one month's pilot study)

Data collection starts: June 1995
Data collection finishes: June 1996
Data entry and data analysis: from start - September 1996
Development of interventions and methods of evaluation: October 1996 - July 1997

October 1995 onwards:
Development of concurrent plans to work within urban areas, both for interventions and research.

SUMMARY BUDGET RTI PROJECT 1994-1997

	Year 1	Year 2	Year 3	Total
Local salaries	24381	24381	20000	68762
International salaries	65000	68900	73034	206934
Consultants	1500	2000	4000	7500
Local travel	1000	1000	0	2000
International travel	2500	2740	2500	7740
Supplies and materials	19750	18350	11300	49400
Other contractual services	2500	2100	1700	6300
Inter-departmental services (incl. transport)	2800	10000	2321	15121
Capital expenditure	15700	0	0	15700
Total operating cost (US $)				**379457**

S.H
7/2/95

RESPONSE TO COMMENTS FROM EXTERNAL REVIEWERS

REVIEW 1

Point 1. With the staff based in Matlab, we have discussed at length the possible non-participation of women in the population-based part of the survey. The staff in Matlab feel that the most suitable method of data collection is to bring women into the central hospital in Matlab. Before any visit, however, each woman will be visited on several occasions by her usual CHW who will fully explain the nature of the study to her and will emphasise the voluntary and confidential nature of the study. If we have a particularly high level of refusal during the pilot stage of the study, we will revise this approach as necessary.

Point 2. The exact methodology of specimen testing was not included for reasons of space. However, we have received advice from an expert consultant in the diagnostics of STDs who is due to visit Matlab and Dhaka this month. The exact test kits to be used will be discussed with her, and the current proposal includes the general principles of testing methodology.

Points 3/4. These comments have been noted and incorporated into the proposal.

Point 5. The method of partner notification will be left for the individual concerned to decide. We feel that in this way, participating clients are empowered to make the most appropriate choice for their own circumstances. At each follow-up visit, the success of partner notification will be assessed by asking the client whether their partner was treated, and the exact reasons for non-treatment. This open-ended question will allow the interviewer to explore questions relating to the impact of partner notification on an individual's own circumstances.

Point 6. ON will not be provided as the aim of the study is to determine the incidence of this infection and determine whether this is a cost-effective intervention for use in Bangladesh.

REVIEW 2

As with the first review, we have noted the comments form the reviewer on the need to prioritize the research questions. Thus, we have rationalised the research to concentrate on determining the epidemiology of RTIs/STDs in a population-based sample.

We feel that the issue of treatment seeking behaviour can be addressed within the study as it stands, but further questions concerning the ethnography of behaviour relating to RTI/STD risk is probably best looked at by the Department of Social and Behavioural Sciences within ICDDR,B. This point is emphasised within the protocol.

Any revision of the time frame may become apparent as the study is underway. At the present time, however, the staff in Matlab feel that this is an achievable goal (13 months of data collection including a one-month pilot study). The project staff have enough money for one extra year to try and develop links within the urban area, as noted in the protocol.

EXTERNAL

Review (1)

Detailed comments on "Proposal to study the prevalence of reproductive tract infections in Matlab, Bangladesh"

This proposal includes an exhaustive list of very interesting studies on STD epidemiology and control in Matlab, Bangladesh. In view of the scarcity of such data in Asia, these studies are very important and will certainly contribute to a better understanding and planning of STD control activities in the region. The research questions asked in the different studies are relevant and original, and the study designs proposed to answer the questions are appropriate. The methodology of the first three studies listed in the proposal are well developed, while for the projects on urban MCH-FP, Partner Notification and Operational Research more detailed information on how this research will be carried out (sampling ? what outcome variables are to be expected ? etc) should be added.

The investigators propose a set of 7 studies, which include several sub-studies. Since information on budget was not available it is impossible to judge if the money to be allocated for these activities is appropriate. But I am still worried that with regard to manpower and time table, this proposal is too ambitious. It would be more realistic to prioritize.

I would put the emphasis on the "Population based survey on Women in Matlab" and "Surveys on specific groups" first, because this part is best developed and will provide the necessary base line data to allow planning. The Partner Notification (PN) study is also extremely important, especially because data on this topic from developing countries are lacking. At this stage however the first priority is to develop the protocol further. It is not clear to me what the outcome measures of this research are, how many people will participate, where the study participants will be recruited etc. To evaluate a complex problem such as the feasibility and role of PN in STD control, a more sofisticated research protocol is required.

In conclusion, this proposal contains a number of important research projects on epidemiology and control of STD which are original, feasible and will certainly provide new knowledge relevant for public health actions in STD control.

The protocols of some sub-studies should however be better developed, and it may be unrealistic and too ambitious to carry out all these studies within the time frame foreseen.

Title: Proposal to study the prevalence of reproductive tract infections in Matlab, Bangladesh

Summary of Referee's Opinions: Please see the following table to evaluate the various aspects of the proposal by checking the appropriate boxes. Your detailed comments are sought on a separate, attached page.

	Rank Score		
	High	Medium	Low
Quality of Project	X		
Adequacy of Project Design	X		
Suitability of Methodology	X		
Feasibility within time period		X	
Appropriateness of budget			
Potential value of field of knowledge	X		

? Budget not known

CONCLUSIONS

V I support the application:

a) without qualification ☐

b) with qualification ☐

- on technical grounds ☒

- on level of financial support ☐

I do not support the application ☐

Please briefly provide your opinions of this proposal, giving special attention to the originality and feasibility of the project, its potential for providing new knowledge and the justification of financial support sought; include suggestions for modifications (scientific or financial) where you feel they are justified.

(Use additional pages if necessary)

Title: Proposal to study the prevalence of reproductive tract infections in Matlab, Bangladesh

External Review (2)

Proposal to Study the Prevalence of Reproductive Tract Infections in Matlab, Bangladesh: review

eneral comments:

ıe investigators propose a large, multi-facetted study of an extremely important and under-plored topic, reproductive tract infections (RTIs) in Bangladesh. By highlighting the links tween these infections and both HIV transmission and compromised reproductive function, they ovide an excellent rationale for the project. In addition, pre-existing data on RTIs in ngladesh are clearly summarized and many of the weaknesses of prior studies are addressed. nceptual strengths of the proposal include the focus on translation of research findings to stainable programs and the emphasis on a reproductive health model that integrates prevention infection with family planning and antenatal or maternal health. The principal concern is the pe of the proposal. It will be very difficult to complete all six components (and sub-mponents) of the study, involving approximately 4,000 subjects in various settings, within 18 nths in such a way that useful data will result. A more narrowly defined initial effort is likely to more productive, unless ICDDR,B is prepared to make a commitment to the intensive staffing t such a large, complex project will demand.

ecific comments:

Strengths

The population-based survey will enroll women regardless of symptom status and, by ering a "well woman" check-up, will screen asymptomatic, as well as symptomatic women for Is.

The study will enroll men and begin to explore the prevalence and perceptions of RTIs ong men, a group that is likely to be critical to sustaining transmission of STDs and critical to cessful implementation of any program to reduce RTIs in Bangladesh.

The investigators will provide training and education to the CHWs on HIV infection and DS. By introducing these issues in the context of the RTI Study, the investigators will be able mphasize the important biological, as well as behavioral links between HIV infection and other Ds.

Concerns and Suggestions

Study participation: On the basis of prior work on RTIs among Matlab women, one of biggest challenges faced by the investigators will be to promote participation, particularly ng asymptomatic women. Speculum examinations may be especially frightening to village nen who have never before experienced this type of exam.

It is very important that these issues be dealt with in developing the study. For example, it may be helpful to conduct focus groups with village women, their husbands, and their mothers-in-law (each in separate groups) in preparation for the study to anticipate and address, to the extent possible, the concerns that will limit participation.

A related issue is the decision to conduct examinations at the central hospital at Matlab. This may be the most feasible location, however this choice should be carefully weighed against the advantage of conducting examinations at the subcenters in terms of client convenience and familiarity.

2) Laboratory Studies: Insufficient detail is provided on the laboratory methods that are to be used in the study, including specimen collection, specimen transport, specimen storage, testing, and quality assurance procedures. These issues are pivotal to the validity and interpretability of the study. As a minor point, will a "whiff test" be performed (using 10% KOH) as part of the clinical diagnosis of bacterial vaginosis?

3) Questionnaire Data: In order to be able to evaluate risk factors for RTIs, a stated objective of the study, it is important that the questionnaire incorporate questions on individual behaviors and sociocultural parameters that may be related to RTI risk. For example, while it may not be possible to ask women directly about their own or their husbands' sexual behaviors, surrogate questions may be acceptable (e.g., "Do you think that many of the married men in Matlab have sex with women other than their wives?"; "Do you think that many of the married women in Matlab have sex with men other than their husbands?"; etc).

Any such questions, as well as questions about SES, religion, and other sociocultural parameters, are particularly critical areas for focus group work and pilot testing in questionnaire development.

) Physical Examination: The physical examination in women should provide specific information (quantitative, where appropriate) on relevant issues including the location and severity of abdominal tenderness; the presence of rebound tenderness; the size and location of abdominal and pelvic masses; the color, consistency, location and quantity of vaginal discharge; the presence of genital ulcers; the size of the zone of ectopy, and the presence of friability.

In men, a complete genital examination should also be documented.

) Partner Notification: As is highlighted by the investigators, partner notification is a key, but under-explored component of STD management, particularly in developing countries. This study will make an important contribution by examining this issue using a randomized design. However, it is not clear what outcome measures will be used to assess the efficacy of the three approaches and whether the "safety" of the methods will also be compared (e.g., impact on marital relationship, association with domestic violence, etc.).

5) Ophthalmia Neonatorum: It is not clear to me whether prophylaxis for ophthalmia neonatorum (ON) will be provided in this portion of the study and, if so, what regimen is planned. If they do plan to provide prophylaxis, the investigators should be aware that delay of more than four hours after birth is associated with a four to five-fold increase in gonococcal ON and that some studies suggest a marginal advantage to the use of tetracycline ointment compared with silver nitrate drops both for gonococcal and for chlamydial ON. CDC currently recommends treatment of established gonococcal ON using systemic therapy with intravenous or intramuscular ceftriaxone in light of the high incidence of penicillin resistance.

Title: Proposal to study the prevalence of reproductive tract infections in Matlab, Bangladesh

Summary of Referee's Opinions: Please see the following table to evaluate the various aspects of the proposal by checking the appropriate boxes. Your detailed comments are sought on a separate, attached page.

	Rank Score		
	High	Medium	Low
Quality of Project	✓		
Adequacy of Project Design		✓	
Suitability of Methodology		✓	
Feasibility within time period			✓
Appropriateness of budget	no budget provided		
Potential value of field of knowledge	✓		

CONCLUSIONS

I support the application:

a) without qualification ☐

b) with qualification ☑

- on technical grounds ☐

- on level of financial support ☐

I do not support the application ☐

Name of Re

Signature:

Position:
Institutio

✓ copy for Dr Hawkins

Detailed Comments

Please see attached.

Please briefly provide your opinions of this proposal, giving special attention to the originality and feasibility of the project, its potential for providing new knowledge and the justification of financial support sought; include suggestions for modifications (scientific or financial) where you feel they are justified.

(Use additional pages if necessary)

Title: Proposal to study the prevalence of reproductive tract infections in Matlab, Bangladesh

PI:

Reviewer: