

IMPROVING REPRODUCTIVE HEALTH: INTERNATIONAL SHARED EXPERIENCE

The Population Council

*Proceedings of a
Two-Day International Workshop*

*4-5 December, 1997
Bogor, West Java, Indonesia*

[inside cover]

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Population Council, Jakarta

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University of Indonesia
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USAID Jakarta

We would also like to warmly thank our guest facilitators who kept the discussion rolling and on track while providing an abundance of insightful guidance and valuable input: Dr. John Moran, of HAPP/CDC; Dr. John Townsend, of Population Council, New Delhi; Dr. George Schmid, of CDC-Atlanta; and Dr. Christopher Elias, of Population Council, Thailand.

I would especially like to thank Dr. John Moran for his support and extensive input in the planning of this workshop and for recommending the participation of Dr. George Schmid of CDC-Atlanta. An extra big thank you is due to Dr. Schmid for coming all this way to present and facilitate discussion, particularly on issues of cost in RTI management.

Similarly, Dr. Rachmi Untoro, Dr. Ardi Kaptiningsih, and Dr. Sigit Prihutomo from the Ministry of Health and Dr. Hasan M. Hoesni from the National Family Planning Coordinating Board, have provided indispensable input and guidance.

I would also like to thank Dr. Singh, Dr. Bambang and Dr. Sundari from Koja Hospital for their enthusiastic participation, both in attending this workshop and in collaborating with Population Council, Jakarta, on our RTI Service Integration Study presented here. In addition, I extend our thanks to our collaborators at the Dermatovenereology and Microbiology Laboratories of Cipto Mangokusomo Hospital for their technical support in our study.

Finally, thank you to our MC and organizer, Subadra Indrawati Molyneaux, and to Jane Patten for preparing this proceedings document, and to all my tireless staff who were up late nights and early mornings to make the workshop happen (Tetty, Nurul, Wati, Anis, Lila, Mercy, Sofyani and Gunawan).

Thank you!

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PREFACE

The purpose of this workshop was to share experiences in the study and management of reproductive health conditions, specifically focusing on the diagnosis of reproductive tract infections and sexually transmitted disease and their management in developing countries. Almost all of the Population Council offices in the Asia and Near East Region have recently implemented studies on Reproductive Tract Infections (RTIs) and Sexually Transmitted Diseases (STDs), in follow-up to priorities which emerged from the 1994 International Conference on Population and Development (ICPD, Cairo), particularly in relation to integration of services. This workshop provided a valuable opportunity to compare notes and learn from the various insights, successes and mistakes of each others' studies. There were also presentations from MotherCare Indonesia and from the University of Indonesia and from CDC-Atlanta.

The first day of the meeting was devoted to an overview of RTI/STD prevalence and diagnostic issues, with a focus on chlamydia and gonorrhea, in addition to presentations from all Population Council country representatives on their reproductive health projects and studies, ending with a panel discussion on issues of integrating RTI/STD services into existing primary health care services.

On the second day, we began with three Indonesian RTI/STD related studies, from the Population Council, the University of Indonesia, and MotherCare, and continued with a focus on cost issues, with presentations from CDC-Atlanta, and Population Council India, Philippines, and Jakarta. We devoted half a day to cost issues in reproductive health, because the collection, analysis and utilization of cost data is key to the feasibility, implementation and sustainability of any improved reproductive health initiatives in the developing world, with particular relevance for governments and international aid agencies.

Overall, the intention was to facilitate academic discussions at every opportunity on recent initiatives and findings, future priorities and policy implications in the field of reproductive health. Most of all, this was planned as a forum for open discussion of all our unanswered questions, in order to maximize the opportunities for learning from each other over the two-day period.

Looking at the output from this meeting, we may not have answered all of our questions, but we have explored many issues and have emerged with a rich set of reference papers and data collected here in these proceedings. We have also all made new friends and valuable contacts to assist us in furthering our efforts to conduct "good science" and implement appropriate interventions towards the improvement of reproductive health for population with unmet needs in the developing world.

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I. INTRODUCTION

1 The Spectrum of RTIs/STDs and their Comparative Epidemiology¹

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SUMMARY

The term STD denotes a loosely defined group of infectious organisms and the clinical syndromes they cause that are epidemiologically heterogeneous but have in common the fact that they are always or at least often sexually transmitted. The STDs also have in common the fact that they are difficult to study epidemiologically because of their association with sexual behavior (especially extramarital sexual behavior) and the fact that diagnosis often requires a genital examination. Although STDs vary enormously in their prevalence, transmissibility, and in the severity of the morbidity they cause, their control is based on efforts to reduce the frequency of unprotected contact between infectious and susceptible individuals and to reduce the average duration of infectiousness by finding and curing infectious individuals. Several sexually transmitted organisms have become relatively rare in industrialized countries in the past 50 years. The challenge to public health professionals is to extend STD control to less developed countries.

The term "STD" is used to denote infections caused by a wide variety of viral, bacterial and parasitic diseases when they are transmitted sexually. Handsfield lists 12 groups of viruses, 13 genera of bacteria, three species of protozoa, and two ectoparasites².

Table 1. Major Sexually Transmitted Pathogens and Associated Syndromes

<i>Treponema pallidum</i>	<i>Chlamydia trachomatis</i> (types L1, L2, L3)
primary syphilis	lymphogranuloma venereum
secondary syphilis	<i>Hemophilus ducreyi</i>
latent syphilis	chancroid
tertiary syphilis	<i>Trichomonas vaginalis</i>
congenital syphilis*	vaginitis
<i>Neisseria gonorrhoeae</i>	Herpes simplex virus type 2
cervicitis	herpes genitalis
urethritis	neonatal herpes*
ophthalmia neonatorum*	Human papillomavirus
<i>Chlamydia trachomatis</i>	venereal warts
cervicitis	
urethritis	
ophthalmia neonatorum*	

* Not sexually transmitted

² Handsfield, H.H., *Color Atlas and Synopsis of Sexually Transmitted Diseases*. New York, McGraw-Hill, Inc., 1992.

Included as STDs are also a variety of syndromes caused by sexually transmitted pathogens, and some reproductive tract infections that are not sexually transmitted. Handsfield lists 18 clusters of STD clinical symptoms and complications.³

Table 2. Major Sexually Transmitted Disease Syndromes and Associated Pathogens

Vaginitis	multiple pathogens*	Non-gonococcal urethritis	multiple pathogens
Pelvic inflammatory disease	multiple pathogens	Cervical cancer	human papillomavirus
Mucopurulent cervicitis	multiple pathogens		

* Not always sexually transmitted

The relative importance of the sexual route of transmission is different for different STDs. Some sexually transmitted pathogens are so rarely transmitted between adults by any means other than sexual intercourse that all the syndromes they cause are thought of as STDs. Examples are *Neisseria gonorrhoeae* and *Treponema pallidum*. Other pathogens may have other important routes of transmission, such as parenteral routes in populations where injection drug use is common. Examples are hepatitis B virus (HBV) and Human Immunodeficiency Virus (HIV). For other organisms, sexual transmission may be more the exception than the rule; examples are *Entamoeba histolytica* and hepatitis A virus.

It is important to remember that most pathogens that are transmitted sexually are also transmitted from mothers to their infants.

Measuring RTI/STD Incidence

Several factors impair our ability to quantify the occurrence of STDs in most populations. **Incidence data** on new infections are reliable only when (1) **all persons becoming infected seek care** and (2) **all care providers report all cases**. For infections that are often asymptomatic (such as *many* STDs among women), the number of reports from providers are likely to be less than the true incidence because many of those infected will never be aware of their infection. Even when patients have symptomatic infections, they may not seek care from a provider who reports cases. In countries with few medical resources, STD patients may attempt self-treatment, seek treatment from providers who do not report cases, or may simply wait for symptoms to resolve and thus their infections may never be reported.

In practice, the numbers of cases of STDs reported in developing countries are not only likely to be underestimates of actual disease occurrence but are also likely to be unreliable as indicators of trends in incidence as well. This is because in countries where medical resources are scarce, changes in the numbers of cases reported typically reflect changes in the cost and availability of care from reporting providers rather than changes in disease incidence.

An example of STD incidence data is shown in Figure 1 below. This graph shows reported early infectious syphilis cases in Sri Lanka from 1969 to 1989. It shows a dramatic drop in reported cases between 1976 and 1982, from 30 cases per 100,000 population to only 5 cases per 100,000. It is hard to imagine what could have caused a true 83% drop in syphilis incidence over just six years. However, it was in 1976 that laws governing the private practice of medicine were liberalized in Sri Lanka, allowing persons with STDs to seek care from sources other than government STD clinics. Much or even all of the drop could be due to an increasing proportion of STD patients seeking care from private practitioners rather than government clinics if private practitioners are less likely to report STD cases than are government clinics.

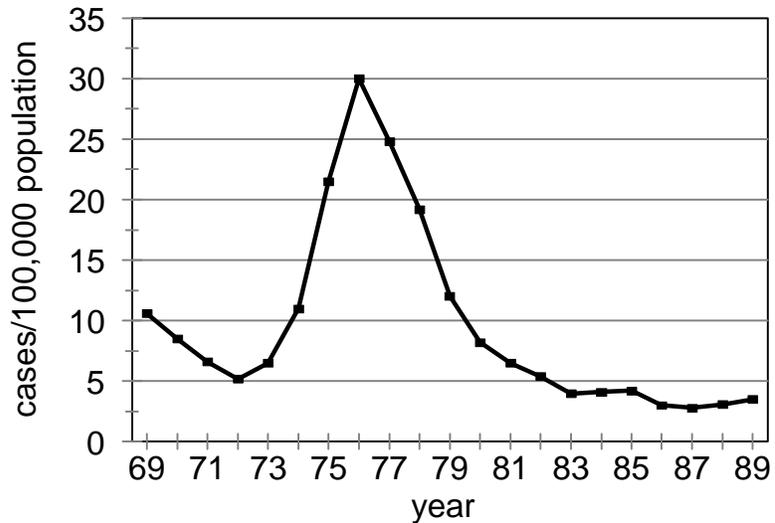


Figure 1 Incidence of primary and secondary syphilis reported in Sri Lanka, 1969-1989

Theoretically, the best source of incidence data should be for diseases that usually produce obvious and intolerable symptoms (such as gonorrhoea in men) in populations that have ready and constant access to affordable and convenient care (such as some groups of soldiers, students, or factory workers).

Measuring RTI/STD Prevalence

Few reliable STD prevalence data are available. Such data are not easily collected because **diagnosing STDs typically requires asking very intimate questions and performing a genital examination.**

The most suitable populations for STD prevalence studies are persons undergoing medical examination for other purposes. In general, pregnant women undergoing examination as part of their antenatal care form such a population. They tend to have higher prevalences of most STDs than men (since they are less likely to have symptoms and to have sought care than men). In countries where family planning is not widely used, young pregnant women (20-24 or 15-29 years of age) are likely to be fairly representative of all young women and thus to be a suitable population to monitor as a means of following trends in the general population. Pregnant

women much younger than 15 or 20 or much older than 24 or 29 are more likely to constitute a biased sample.

An example of STD surveillance data based on the routine monitoring of STD prevalence among antenatal patients is shown in Figure 2 below. It shows the prevalence of syphilis among women attending a sample of antenatal clinics in Sri Lanka in 1969 and from 1974 to 1990. Except for a particularly low prevalence reported in 1975, the prevalence appears fairly stable from 1969 to 1978 then it gradually declines through 1989 with a single upturn in 1986. Compare these data with the incidence data reported in Figure 1.

Prevalence data are most likely to be meaningful when collected from well-defined populations. For example, the prevalence of an STD in an antenatal clinic population in an area where 90% of pregnant women make an antenatal visit is likely to be representative of the prevalence in the general population while the prevalence rate in a prostitute population tells little about disease occurrence in the general population and is often not even predictive of disease prevalence in other prostitute populations. Even when prevalence data are carefully obtained from studies of well-defined populations, changes in prevalence may reflect changes in the availability of curative care, rather than changes in disease incidence, since prevalence is a function of both incidence *and* duration of infection (which, for treatable STDs, can go up and down with availability of care).

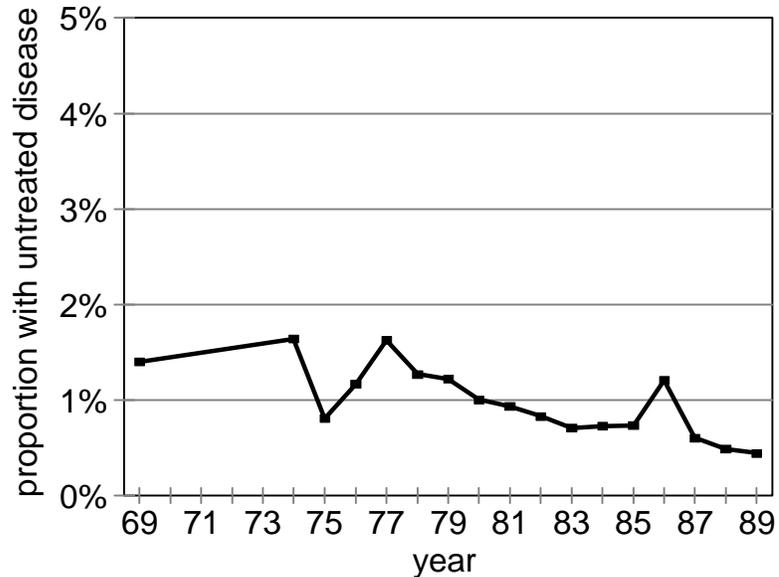


Figure 2 Prevalence of syphilis among women attending antenatal clinics in Colombo, Sri Lanka, 1969-1989

Measuring the Cumulative Incidence of Infection: Age-Specific Antibody Prevalence

In addition to the data on the incidence and prevalence of sexually transmitted infections, another measure of disease occurrence can be useful: the measurement of the prevalence of antibodies to sexually transmitted pathogens. Some STDs cause the production of detectable antibodies that persist after the infection has been cleared serving as a marker for the individual's exposure of his or her lifetime. By studying the age-specific prevalence of antibodies to HIV, *T.*

pallidum, and herpes simplex type 2 for example, some estimates of the incidences of these diseases can be made.

Figure 3 on the right shows the prevalences of markers for exposure to HIV1/HIV2, syphilis, and herpes simplex type 2 among prenatal patients in a Central African country, a West African country, and an Asian country. The prevalence of markers for all three infections is lowest in the Asian country and highest in the Central African country. The high prevalence of markers for past herpes simplex type 2 infection in the central African population suggests that other viral, sexually transmitted diseases with a similar ecological niche, such as HIV1 and HIV2 could spread in this population. In fact, the prevalence of HIV1 in this population is close to 10%.

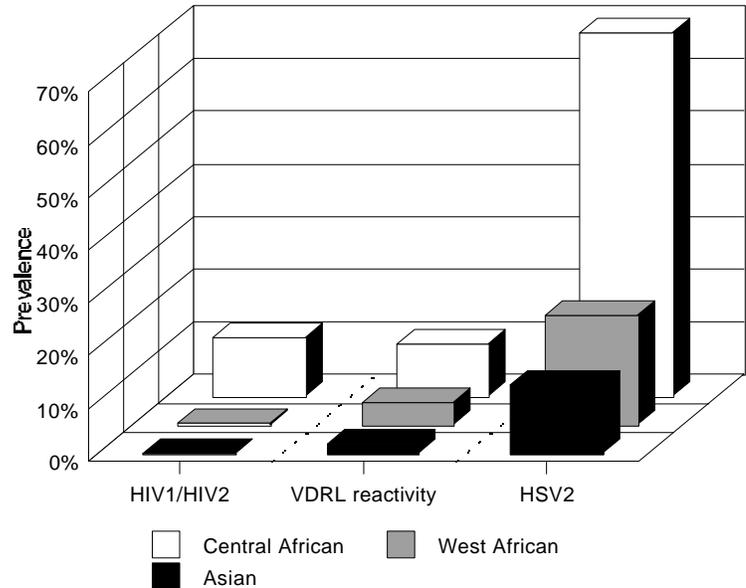


Figure 3 Prevalence of serological markers of STDs among antenatal clinic attenders in three countries. (HIV1/HIV2 = prevalence of antibody to either HIV1 or HIV2; VDRL reactivity = prevalence of reactive VDRLs; HSV2 = prevalence of antibody to herpes simplex virus type2)

The Comparative Ecology of STDs

Data on the occurrence of STDs in developing countries have rarely been collected systematically. However the data available do suggest that (1) some sexually transmitted organisms tend to be more prevalent than others in almost all populations, (2) the sexually transmitted organisms that tend to be the least prevalent are the least widespread (most focal) in their occurrence, and (3) many developing country populations suffer from high rates of STDs.

In the diagram below, sexually transmitted organisms are listed in rank order of their prevalence in most populations.

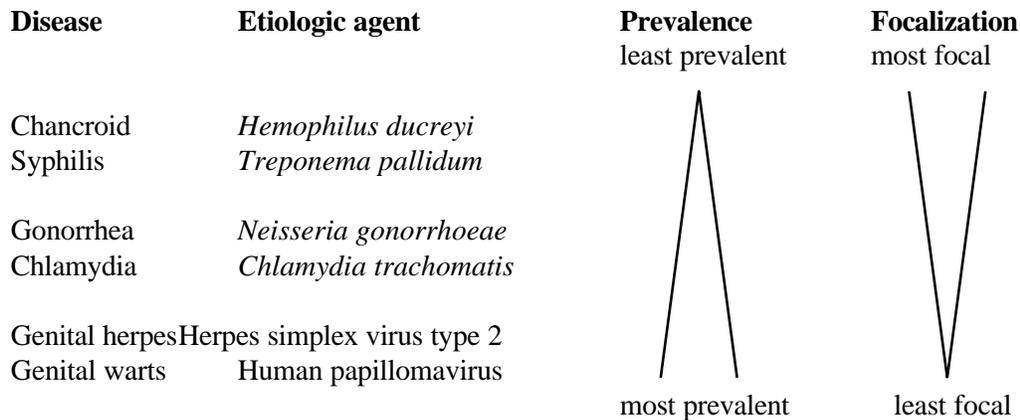


Figure 4 Sexually transmitted agents listed in order of their prevalence in most populations.

Understanding the distribution of STDs may help us improve our strategies for STD control. The viruses, bacteria and parasites that cause STDs, like all other living organisms, have their own ecological niches. They survive and prosper only where conditions are favorable. Where conditions are unfavorable, they die out. Some STDs, such as chancroid and the LGV strains of *C. trachomatis* seem to require special conditions that are rare outside of a limited number of geographic foci. Other STDs, such as human papillomavirus, are much more widespread. One model that can help us think about the distribution of STDs is:

$$R_0 = c\beta D$$

where R_0 is the "reproductive number" defined as the **number of new infections produced by an existing infection**. When the reproductive number is one, prevalence remains constant.

"c" is a measure of the **frequency of contact between infectious and susceptible persons**. It is a composite factor reflecting (1) the **frequency of partner change**, (2) the **frequency of unprotected sexual contact**, (3) the **diversity of partner selection**, and (4) the **prevalence of infection**.

" β " is a measure of the **transmissibility of the infectious agent**. It is usually a characteristic of the particular agent

"D" is a measure of the **average duration of infectiousness**. For curable diseases, it can be shortened through public health interventions that result in finding and treating infected persons

This model can help explain STD epidemiology. As mentioned earlier, there are several STDs that are common and widespread. Examples are infection with human papillomavirus (HPV) and herpes simplex virus type 2 (HSV2). Both are viral diseases that have very long durations of infectiousness. Organisms that are intermediate in their distribution are *N. gonorrhoeae* and *T.*

pallidum. Even when gonorrhea and syphilis are not treated, they remain infectious only for a limited time. With treatment, they can be readily cured; they have become rarer in industrialized countries in the past half century as screening and treatment programs have caused a decrease in their average duration of infectiousness. The least successful STD organisms are those that have lost ground in most of the industrialized world and are now found mainly in a limited number of areas where conditions are suitable for their propagation, i.e., where patterns of sexual behavior favorable to their transmission coexist with a lack of STD prevention and treatment programs. Examples are *Hemophilus ducreyi*, which causes chancroid, and the *Chlamydia trachomatis* immunotypes that cause lymphogranuloma venereum.

The $R_0 = c\beta D$ equation also implies the concept of "core groups." Subpopulations that can sustain a relatively high prevalence of an STD (where the $R_0 \geq 1$) are considered to be core groups. Transmission in "the core" sustains the STD in the larger population in which the $R_0 < 1$. Whereas any new infection in a core group member is likely to result in more than one new infection, the infections that spread outside of the core are likely to be "dead ends."

Core groups must include persons having a high frequency of partner change. Prostitutes and their clients two groups that are often considered to be "core groups". In the U.S., young people 15 to 24 years of age can be considered to be a "core group" for some STDs.

Figure 5 (below right) illustrates how an age group can be a core group. In this illustration, the 20-29 year-olds have a high prevalence and incidence of disease and infect persons younger and older than themselves ($R_0 > 1$). Some members of the younger, 10-19 year old, and older, 30-39 year old, age groups become infected and spread infection to other members of their age group and occasionally to members of other age groups but most of their infections are "dead end" so that the R_0 of the infection in those age groups is < 1 . Thus there is a net "flow" of infection from the 20-29 year old group to other age groups. This flow sustains the infection in the population as a whole. Because young adults between the ages of approximately 15 and 29 tend to acquire and transmit STDs much more frequently than younger or older persons, the size of this age group relative to the overall population affects the prevalence of STDs in the population overall. Countries with a rapidly growing population, where a large percentage of the population is made up of young adults, are much more favorable sites for

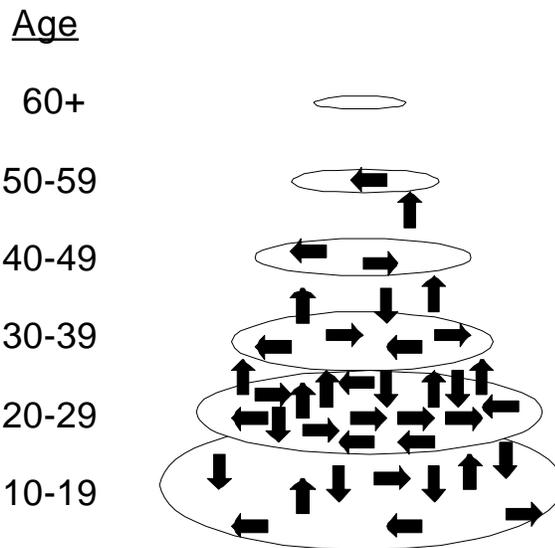


Figure 5 Diagrammatic representation of 20-29 year-olds as a "core group" for a sexually transmitted infection. Arrows represent instances of transmission. Elipses represent age groups.

any STD to become established and spread than are countries with stable populations where young adults make up a smaller proportion of the overall population.

Different STDs have different core groups. The size of the core group for an STD seems to be determined mainly by D , the duration of infectiousness and by β , the transmissibility. For viral diseases, the duration of infectiousness tends to be long, because no cure is possible. For bacterial diseases, the duration of infectiousness is usually shorter. For curable diseases, the duration of infectiousness depends on the availability of diagnostic and treatment services.

The most common and widespread STDs include most of the viral STDs. They tend to have very long duration of infectiousness. An example is human papillomavirus, which typically produces an asymptomatic, latent infection remaining infectious for many years. It seems to be very widespread with almost the entire population comprising the core group. Another example is herpes virus type 2, which often produces an asymptomatic, latent infection that remains infectious for many years; it too is widespread with a very large core group.

STDs intermediate in their distribution include curable diseases with a duration of infection related to availability of care. Examples are genital chlamydia infection, gonorrhea, and syphilis. *Chlamydia trachomatis* often produces an asymptomatic infection that may last for months. It is less widespread than herpes virus type 2 but in industrialized countries much more widespread than gonorrhea.

Gonorrhea in men typically produces symptoms which cause men to seek prompt treatment. In women, gonorrhea is often asymptomatic, but even when untreated, gonococcal infection does not persist for more than a few months. Since the implementation of a mass screening campaign to find and treat asymptomatic infected women in the mid 1970's (to decrease D , the average duration of infectiousness), gonorrhea incidence has been declining in the U.S. and it has become uncommon in many areas.

Syphilis frequently produces symptoms, is detected by screening programs, and, even when not treated, is contagious for only a limited time. Among heterosexuals in the U.S., the core group for syphilis is limited to distinct populations.

Chancroid is rare in the U.S., with only a few foci of infection. Its reproductive number seems to reach one only under circumstances that are rare in industrialized countries. It is, however, fairly common in a few developing countries.

Conclusion

STDs have in common the fact that their transmission can be limited by the avoidance of unprotected sexual contact outside of mutually monogamous relationships. STDs have little else in common. Some are rare, some are widespread; some are deadly, some are mere nuisances; some can be cured, some cannot. These epidemiologically important differences between STDs require that different strategies (beyond condoms and "safe sex") be applied to their control. It

makes no more sense referring to “STD” control (ignoring differences between hepatitis B and trichomoniasis) than referring to “viral disease” control (ignoring difference between polio and the common cold).

Our understanding of STDs/RTIs, their epidemiology and their consequences has advanced markedly in the past few years with progress in prevention, diagnosis, and treatment. Simultaneously the AIDS epidemic has spurred research leading to a better understanding of human sexual behavior, its epidemiology and determinants. It is now up to us to use our increased understanding to reduce the burden of STDs and RTIs in populations where they are important public health problems.

* * *

Discussion:

In the discussion, Dr. Moran gave clarification that “ecological environment” of disease includes behavioral and age factors, as well as the ease of transmission. Behavioral factors such as promiscuity vary widely in different cultures. The main point for intervention is in relation to “D”, the average duration of infectiousness, which depends on availability of medical care for both viral and bacterial diseases. You could picture the gonococcus as a frog, Dr. Moran said, in that it does better or worse in different environments, like in a desert or in New York City. Bacterial infections in particular can be very influenced by the factor of access to care. Chancroid tends to die out, it is not easily self-sustained, that’s why prevalence rates are generally low everywhere. While, chlamydia on the other hand is everywhere - it is easily transmitted, it has a high “ β ”. In this case, the best control would be screening to detect asymptomatic infection, which is common although transmissibility remains high. For chlamydia, the “D” could be decreased through screening, which would be advisable especially in high populations. But screening for chlamydia is expensive. As for the “D” of various infections, the average duration of infections, obviously for viral infections, there is no cure and victims remain carriers for life. However, different infections have different “ β ” (transmissibility), so, for example, HSV is more common than HIV since it is more readily transmitted (higher “ β ”).

Clearly the concept of the “core group” is important in management of STDs. How do we handle the issue of prioritizing interventions for core groups and the general population? What do we spend our money on? Well, for a start, according to Dr. Moran, there needs to be access to care, especially for any people with symptoms. Screening is ideal. Dr. Elias of PC Bangkok commented that both population groups need to be addressed, interventions with different groups are complementary, and people working in public health and STD prevention have different jobs - ideally there will be interventions for all groups with needs.

As for whether we should look at core groups first, Dr. Moran reminds us that we need to consider the size and significance of the different core groups and especially to remember to talk about specific STDs, each of which is not actually very similar to the other. We can’t group them all together when talking about intervention strategies.

II. FOCUS ON CHLAMYDIA AND GONORRHEA

1. An Overview of Prevalence, Diagnosis and Treatment of Chlamydia and Gonorrhea in Selected Countries (Available data presented by country representatives)

Bangladesh

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Program Officer, Population Council - Bangladesh

In Bangladesh there is no national prevalence data on RTIs or STI. The limited number of prevalence studies point to an alarmingly high number of women with confirmed infections, as shown in Table 1.

Table 1: Ranges of RTI rates from various studies, Bangladesh, 1992-1997.

Syphilis	Gonorrhea	Chlamydia	BV (clue cells)	Trichomoniasis	Candidiasis	Yeast	Hepatitis B	Hepatitis C	HIV
0.5-2% (A) 5-11% (O)	0.5-4%	0.5-12%	20-45%	2-4%	4-12%	14%	3-8%	3.4%	83

Clinic based: Chowdury et al., (1995) reported the RTI prevalence among contraceptive users as approximately 60%: among these women nearly 4% had gonorrhea and less than 1% had syphilis. But a follow-up study conducted in BWHC clinic found significantly lower rates of RTIs and STIs (30%) (Bogaerts et al., 1997).

Population Based: One study found 56% of women had RTIs, 13% of which were STIs (Hossain et al., 1996). Studies conducted in ICDDR, B project areas reported that 22% of the rural women had RTI symptoms and 68% of them had clinical and laboratory evidence of infection (Wasserheit et al., 1989).

CSWs: A study among commercial sex workers (CSWs) found that about 60% of them were TPHA positive and 7% were VDRL positive (Sawrup et al., 1997). Findings also suggest 27% of the women were positive for either chlamydia or gonorrhea and none was positive for HIV (Sawrup et al., 1997).

HIV/AIDS: According to the WHO, Bangladesh is a high risk but low prevalence country for HIV/AIDS. As of October 1997, the total HIV infections reported by the Government during 10 years (since the first case) is only 83 including 10 AIDS cases (NAC 1997). Bangladesh's neighbors, India and Myanmar, are already experiencing an epidemic of HIV/AIDS.

Other Infections: It is important to mention that other STIs like Chancroids, Genital warts, LGV, and Donovanosis (GI). are rarely seen in Bangladesh. A high prevalence of Hepatitis B and Hepatitis C even among pregnant mothers is a concern for vertical transmission.

Diagnosis

Table 2: The most common laboratory methods used for diagnosis of RTI/STIs, Bangladesh

Pathogens/Diseases	Methods
Neisseria gonorrhea	Gram Stain & Culture, PCR
Chlamydia trachomatis	Geimsa stain, ELISA & PCR
Treponema pallidum	Dark field microscopy, RPR or VDRL & TPHA
Trichomonas vaginalis	Saline Wet mount
Bacterial vaginosis	Saline Wet mount for Clue cell, Gram staining, Vaginal fluid pH, KOH test (fishy odor)
Candidiasis	Saline Wet mount, Culture
Yeast infections	KOH Wet mount/Gram Stain
Hepatitis B & Hepatitis C	ELISA
HIV	Screening test (PAT, HIV Check, Serocard, ELISA, Western blot)

Facilities: For most studies, testing is specially arranged. Facilities to test urine for gonorrhea and chlamydia with polymerase chain reaction (PCR) are not available at most laboratories and the test is also extremely costly. Laboratory testing facilities are limited in the government sector, particularly in rural areas.

Symptoms: Vaginal discharge is the most common complaint among clients who were seeking care from the health centers (Ara et al., 1997). Among the RTIs, endogenous infections (Candida and bacterial vaginosis) were most common in rural areas (Hawakes et. al., 1997; and Ara et al., 1997). It is interesting to note that about two-thirds of the women with candidiasis, bacterial vaginosis and gonorrhea were reported to have “watery discharge” rather than “whitish” or “purulent” discharge by the consulting physicians (Chowdhury et al., 1995).

Diagnostic discrepancy: Ineffective diagnostic methods contribute to excessive overtreatment. About 30 to 50% of the RTIs and STIs cases were clinically over diagnosed by physicians (Chowdhury et al., 1995; and Swarup et al., 1997). Approximately 40% of the symptomatic women were not found to have any causative agent (Chowdhury et al., 1995) while nearly 30% of the women who were diagnosed negative were found to have some form of infective organisms.

Treatment

- Most of the health care centers have been using WHO syndromic algorithm.
- Gonorrhea: Single dose ciprofloxacin. Resistance to this drug has been reported in some cases.
- Chlamydia: Doxycycline for 5 days. Often not available at the government primary health care centers.
- Trichomoniasis and bacterial vaginosis: Single dose of metronidazole (8 tables 400 mg each). In most cases this induced severe gastric irritation.

Treatment compliance: In divided dose treatment compliance is poor (Chowdhury et al., 1995). Partner management is a major problem in Bangladesh. It is not attempted at the service delivery

centers and it is worst in the government system due to the improper management of clients. Treatment compliance for symptomatic women is remarkable but not for asymptomatic men and women.

India

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Program Officer, Population Council - India (New Delhi)

Prevalence in community based studies:

1. Rural South India: 0.8% gonorrhea; 8% trichomoniasis
2. Bombay Slum: 1.5% gonorrhea; 10% trichomoniasis

Chlamydia: no data.

Syphilis varies widely.

Reported symptoms: The most common reproductive tract complaint is “white discharge” which is generally understood to be associated with feeling weak.

Treatment: Often iron, folate and calcium are given by providers in response a complaint of “white discharge”.

Indonesia

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Resident Advisor, Population Council - Indonesia

Prevalences of Chlamydia and Gonorrhea as Estimated by Various Studies in Indonesia

Table 1. Low Risk Populations

	Feb-May 1997 Jakarta Study I¹ N=312	1994 West Java² N=1,136	1993 Surabaya³ N=599	1987-1988 Bali⁴ N=695
Gonorrhea	0.3%	1.4%	0.5%	1.0%
Chlamydia	10.3%	NA	8.0%	5.2%

1) Clients of two family planning clinics in North Jakarta (Population Council Jakarta, 1997)

2) Intervention to Decrease The Risk of AIDS/HIV and Hepatitis B among Women from Low Economic class in MCH/FP unit at Jakarta and West Java Primary health Center (Pratomo, Nasrin, et al., 1994)

3) Women partners of clients of sex workers who attended antenatal clinics in Surabaya (Linnan/USAID, 1995)

4) Study among women presenting for early abortion in 1987 and 1988 at a PKBI clinic, Denpasar Bali (Susanti, 1993)

Table 2. High Risk Populations

	Jakarta		Surabaya (East Java)					Manado/ Bitung (Sulawesi)
	1997 (1)	1995 (2)	1997 (1)	1995 (2)	1993 (3)	1993 (4)	1993 (5)	1997 (1)
Gonorrhea	14.0	21.0	28.0	15.0	24.0	10.0	3.0	12.5
Chlamydia	18.0	25.0	16.0	15.0	14.0	9.0	11.0	20.8

Source: Data compiled by J. Moran (HAPP/CDC), 1997

- (1) Brothel-based CSWs in Jakarta and Surabaya and non-brothel-based CSWs in Manado/Bitung conducted by the Indonesian Epidemiology Network under contract with HAPP
- (2) Brothel-based CSWs conducted by European Community
- (3) Brothel-based CSWs conducted by CDC/Atlanta with USAID-funding
- (4) Street-walking CSWs conducted by CDC/Atlanta with USAID-funding
- (5) Non-brothel-based, non-street walking CSWs conducted by CDC/Atlanta with USAID-funding

Table 3. Laboratory Tests to Diagnose Gonorrhea and Chlamydia

	Jakarta Stage I ¹	Jakarta Stage II ²	West Java ³
Gonorrhea	1. Gram Stain 2. Culture*	1. Gram Stain 2. Culture*	Gram Stain
Chlamydia	1. ELISA (IDEIA™ CHLAMYDIA)	1. ELISA (Syva Microtrak® Chlamydia) 2. Gen-Probe	NA

- 1) Clients of two family planning clinics in North Jakarta (Population Council Jakarta, 1997)
- 2) Continuation of Stage I above (Population Council Jakarta, 1997)
- 3) Intervention to Decrease The Risk of AIDS/HIV and Hepatitis B among Women from Low Economic class in MCH/FP unit at Jakarta and West Java Primary health Care (Pratomo, Nasrin, et al., 1994)

Table 4. Treatment Regimens for Gonorrhea and Chlamydia

	North Jakarta, 1997 (Population Council)
Gonorrhea	Ciprofloxacin 500mg, Single Dose Thiamphenicol 3.5g, Single Dose Spectinomycin 2g IM, Single Dose Seftriaxone 250mg IM, Single Dose
Chlamydia	Doxycyclin 100mg, 2 per day, 7 days Erythromycin 500 mg, 4 per day, 7 days Azithromycin 1g, Single Dose

Note: All Treatments are in Accordance With National RTI/STD Treatment guidelines from MOH, RI (Daili, et al., 1996)

Table 5. Gonorrhea and Chlamydia Cost of Treatment Regimens

Disease	Drug	Range of Cost for Treatment			
		Min. Cost/Regimen		Max. Cost/Regimen	
Gonorrhea	Ciprofloxacin 500mg, Single Dose	Rp 2,200	\$ 0.63	Rp 10,116	\$ 2.89
	Thiamphenicol 3.5g, Single Dose	Rp 4,760	\$ 1.36	Rp 12,453	\$ 3.56
	Seftriaxone 250mg, IM Single Dose	Rp 7,573	\$ 2.16	Rp 13,750	\$ 3.93
	Spectinomycin 2g, IM Single Dose	-	-	Rp 22,790	\$ 6.51
Chlamydia	Doxycyclin 100mg 2 per day, 7 days	Rp 3,402	\$ 0.97	Rp 51,816	\$ 14.80
	Azithromycin 1g, Single Dose	Rp 13,600	\$ 3.89	Rp 33,492	\$ 9.57
	Erythromycin 500mg 4 per day, 7 days	Rp 12,404	\$ 3.54	Rp 110,880	\$ 31.68

Note: Exchange Rate used is Rp 3,500 = USD \$1.00

Kenya

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Program Associate, Population Council - Kenya

Table: Compiled STD Data for East Africa

	Gonorrhea	Syphilis	Trichomoniasis
Nairobi (1991-92) (FP)	3.2	1.9	5.2
Nairobi (1989-91) (ANC)	7.3-8.9	3.6	-
Rakai, Uganda (1996)	2.4	7.3	22.3
Dar es Salaam, Tanzania (1991-92)	4.2	2.5	14.3

Table: HIV: Mixed ANC populations

	Kenya	Uganda	Botswana
Rural	7%	4%	7.5%
Urban	27%	22%	32.5%

Peru

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Michigan Fellow, Population Council - Peru

Table: Selected STD Prevalence Data by Gender, Peru

	Men	Women
Syphilis	1.8%	1.5%
Chlamydia	2.8%	14.1%
HSV-2	7.7%	21.5%
Any of the above	11.9%	33.2%

Figures based on a 1991-1992 study conducted in Lima

Philippines

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In the Philippines, STDs remain one of the least studied types of morbidity. To date, only a few studies have been carried out to determine the prevalence of gonorrhea and chlamydia, in both the general population and for high risk groups.

OB/Gyn Study, 1986: From March to May, a study was conducted to determine the prevalence of chlamydial infection among pregnant women. This study was an open, non-randomized descriptive study among first-visit pre-natal care patients at the Ob-Gyne department of a private tertiary hospital. Two cervical swabs were taken from the endocervix for two laboratory methods for chlamydial detection: Direct fluorescent monoclonal antibody test (Syva Co.) and Enzyme immunoassay (Abbott Laboratories). A woman was considered positive for Chlamydia if she was positive on both tests (Peña, 1987).

Chlamydia infection: 9.49% (17 out of 179 women).

Of those who tested positive:

- 53% were aged 20 to 29 years; 35% were aged 30-39 group.
- 47% were pregnant for the first time at the time of this study.
- 58% were asymptomatic
- 15.6% had dysuria
- 53% had no clinical evidence of infection while 41% did exhibit discharge.

AIDSCAP/University of Washington Study, 1994: Between July and September 1994, a study was conducted to determine the prevalence of STDs in both low risk and high risk populations (Wi, 1995). The low risk group consisted of randomly selected pregnant women attending the antenatal clinic of the Philippine General Hospital in Manila. The high risk population included women who identified themselves as sex workers, from both Manila and Cebu (the second largest urban area in the country) and were classified by status as registered or unregistered.

Endocervical swabs specimens were taken for gram stains, culture for gonorrhea, antigen detection by rapid test for Chlamydial infection. Vaginal swab specimens were taken for wet mounts and culture for trichomoniasis, KOH wet mounts for candidiasis. Urine had been stored at -70°C and referred for Ligase Chain Reaction determination for gonorrhea and chlamydia. Gonococcal strains isolated had been stored at -70°C and transported to the national Reference Laboratory at the University of Washington for antibiotic susceptibility testing and for further characterization. Sera was tested for *Treponema pallidum* antibody by RPR and TPHA. Anonymous unlinked HIV antibody testing was done on all the sera (Wi, 1995).

Table: Low Risk: STD/RTI prevalence in women attending the antenatal clinic at the Philippine General Hospital, July-Sept. 1994

Etiology	Prevalence
Gonorrhea	1.0% (2/203)
Chlamydia	5.6% (10/178)*
Syphilis	1.0% (2/203)
Trichomoniasis	0.5% (1/203)
Bacterial Vaginosis	11.3% (23/203)
Candidiasis	10.3 (21/203)

*The discrepancy in the denominator was due to the non-availability of the rapid test for chlamydia at the initial phase of the study

Table: High Risk: STD/RTI prevalence among female sex workers in Metro Manila & Cebu, July-Sept. 1994

Etiology	Metro Manila			Cebu		
	Registered	Unregistered	Combined	Registered	Unregistered	Combined
Gonorrhea	7.0	27.3	10.6	7.5	36.7	22.2
Chlamydia	14.3	32.0	17.3	15.2	30.0	22.7
Syphilis	1.6	7.3	2.8	4.1	9.3	6.7
Trichomon.	3.1	23.6	6.7	20.3	41.3	30.9
BV	12.5	7.3	11.6	NA	NA	NA
Candidiasis	4.3	7.3	4.8	NA	NA	NA

NA=not available (no data)

Diagnosis:

Gonorrhea: In the usual clinical practice, diagnosis is made by gram stain microscopy. Culture and sensitivity studies are only available in tertiary hospitals and advanced laboratories.

Chlamydia: Diagnosis is usually based on clinical findings and made in concurrence with gonorrhea because of high coinfection rates. Expensive rapid tests to detect the chlamydia antigen, such as Abbottzyme and EDIA have now been introduced to the market.

Treatment: The national STD Guidelines recommend the following antibiotics for gonorrhea:

- 1) Cefixime 400 mgs, single dose
- 2) Ceftriaxone 250 mgs, intramuscular injection (IM) single dose after negative skin test
- 3) Fluoroquinolones
 - a) Ciprofloxacin 500 mgs, single dose
 - b) Ofloxacin 400 mgs, single dose
 - c) Norfloxacin 800 mgs, single dose

Gonorrhea treatment is combined with antibiotics for chlamydia, selected from the following:

- 1) Doxycycline 100 mgs orally, twice daily for 7 days
- 2) Tetracycline 500 mgs orally, 4 times daily for 7 days
- 3) Erythromycin 500 mgs orally, 4 times daily for 7 days (in pregnant women or intolerance for doxycycline and tetracycline)

Summary of Conclusions:

1. In the Philippines, gonorrhea, chlamydia and trichomoniasis are the most prevalent STDs

2. STD prevalence is low in the general population.
3. Over 50% of patients with chlamydia have no symptoms or clinical signs.
4. Non-sexually transmitted RTIs (candidiasis & BV) are more prevalent in the general population.
5. Sex workers have higher STD prevalence rates than the general population.
6. Prevalence of gonorrhea is 4-5 times higher among unregistered than registered FSWs.
7. Chlamydia prevalence is twice as high among unregistered FSWs.
8. Diagnosis of chlamydia are easily available in advanced laboratories but still quite expensive.
9. Antibiotic choices for treatment for gonorrhea are cephalosporins and fluoroquinolones.

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Vietnam

Christopher J. Elias

Senior Associate, Population Council - Thailand

Table: Prevalence of Reproductive Tract Infections among Women at MCH/FP Center in Hue

Reproductive tract infection	Prevalence (%) N=600	N
Any RTI	21.2	127
Any STI	4.7	28
Endogenous RTI	17.2	103
Chlamydia	0.8	5
Gonorrhea	0.2	1

Source: Population Council Study. See Presentation in the this Workshop by Dr. Chris Elias.

N.B. Several women had multiple RTIs diagnosed

2. Chlamydia and Gonorrhea: Open Discussion and Recommended Actions

- There is not consistent understanding or agreement among women in general about what constitutes normal or abnormal symptoms. Dr. Chris Elias suggests that we need to find out more about women's and men's understandings of reproductive morbidity and how these relate to biomedical definitions of RTIs and STDs.
- Dr. John Moran reminds us that in our discussions and studies we must keep in mind that prevalences of STDs and HIV vary by country within continents and regions. We must not lump all Asian or African countries together in making generalizations or recommendations relating to reproductive health in these places.
- Findings on RTIs among low risk women, even first time FP clients, show high rates, especially of chlamydia. This has a lot of implications for how we can improve the safety of contraceptive provision. For example, the use of IUDs can be a dangerous combination with chlamydia.
- Testing technologies are by no means perfect or easy to use and false negatives and false positives are a serious problem which have implications for both treatment and prevention, as well as having potentially damaging effects on relationships. Issues of diagnostics and partner management will be discussed in later sessions.

III. CASE MANAGEMENT: SCREENING, RISK ASSESSMENT AND DETECTION STRATEGIES FOR SEXUALLY TRANSMITTED DISEASES

1. The Prevalence of Reproductive Tract Infections at the MCH/FP Center in Hue, Vietnam: A Cross-Sectional Descriptive Study

(Draft Paper by Christopher Elias)

Christopher J. Elias, presenter

Senior Associate, Population Council - Thailand

BACKGROUND

Until the availability of low cost, simple RTI diagnostic tests makes etiologic management more feasible, front-line providers will require guidance concerning optimal strategies for presumptively treating or referring women who present to clinical services with symptoms related to possible reproductive tract infection. Ideally, such therapeutic guidance should be informed by knowledge of the local epidemiology of RTI, as well as prevailing antibiotic resistance patterns.

MCH/FP providers in Vietnam have generally lacked a systematic approach to the clinical or laboratory evaluation of the various RTI syndromes common among women, such as vaginal discharge and lower abdominal pain. Health providers, policy makers, and women's advocates in Vietnam all identify RTI as a common and serious cause of reproductive morbidity among Vietnamese women. The demand for good quality services is high as evidenced by a large number of women seeking treatment for vaginal discharge syndromes in both the public and private sector. Consequently, the MCH/FP Center in Hue conducted a cross-sectional descriptive study of RTI prevalence among its clientele in order to define local epidemiology, as well as inform the development of a more systematic approach to symptomatic RTI case management. This investigation was seen as an essential first step towards improving the quality of RTI-related services within the Center, which is designated to play an important role as a regional training facility for reproductive health professionals in central Vietnam.

Previous studies of RTI prevalence in Vietnam are limited, although anecdotal evidence from health care providers suggests that the prevalence of RTI is a significant problem among family planning clients, and that the number of women being treated specifically for STI is rising (5,6,7). Due to the lack of proper laboratory equipment and an inconsistent categorization of RTI syndromes between studies, however, those quantitative investigations that have examined RTI prevalence in Vietnam have shown significant variation in the observed rates and types of infections. For example, one cross-sectional study of women in rural communes found an overall RTI prevalence rate of 69%(5). Broad definitions of suspected pelvic inflammatory disease (PID), bacterial vaginosis, and cervicitis were used in this study, however, and it is likely that the diagnosis of cervicitis included many cases of minor cervical ectopy. Other studies have found significantly different rates of infection, ranging from 42 to 82% (8,9), and most studies did not

assess the prevalence of cervical chlamydia infection. In order to inform the emerging discussion concerning RTI prevention and treatment in Vietnam, the study described here used internationally recognized definitions of reproductive tract infection in an attempt to standardize terminology and accurately measure the prevalence of specific RTIs of various types. We also sought to assess the association of infection with women's socio-demographic background, reported sexual and health behaviors, experience of reproductive tract symptoms, and clinicians' observations.

OBJECTIVES

The study had three specific research objectives:

- (1) To determine the prevalence of RTI in the client population attending the Hue MCH/FP Center in central Vietnam;
- (2) To assess the predictive value of simple, clinic-based diagnostic tests that could be conducted at the Center; and
- (3) To determine the demographic and behavioral characteristics of women found to have reproductive tract infection among this population.

We also sought to understand the indicative clinical signs that clinicians use to arrive at presumptive diagnoses of various RTI syndromes and, subsequently, an exploration of the sensitivity, specificity, positive predictive value and negative predictive value of the clinicians' presumptive diagnoses was also conducted. For comparison, a similar analysis was also performed following a "virtual" application of the currently recommended WHO flowchart for the syndromic case management of vaginal discharge.

METHODOLOGY

All women attending the MCH/FP Center in Hue were eligible for participation in the study, except those presenting for delivery care and those currently using intravaginal medication. To facilitate optimal specimen handling, only the first five women who were eligible and willing to participate in the study were enrolled each day. All study personnel participated in the design of the study protocol and intensive training was provided concerning consent procedures, specimen collection, preparation and handling, and on-site laboratory testing. To ensure the feasibility of the study protocol, a pilot study was conducted involving the recruitment of 72 women. The pilot study focused particularly on consent process, case record completion, specimen handling, and the reporting back of positive test results that required initiation of therapy or the revision of previously administered empiric therapy. Once the experiences of the initial participants had been reviewed by the investigators, the full study was initiated and a total of six hundred women were enrolled over a six month period.

After obtaining informed consent, a pre-coded structured questionnaire was used to collect information concerning the participants' personal, social, behavioral and medical history. All women were then thoroughly examined and specimens for RTI diagnosis were collected using standardized collection procedures and laboratory guidelines. The various criteria used to make a diagnosis of each RTI are summarized in Table 1. Standard treatment guidelines based on local norms regarding antibiotic therapy were followed by all study clinicians.

Table 1: Nature and location of laboratory tests performed for the identification of various RTI and the criteria used for etiologic diagnosis

Organism/ Syndrome	Tests performed	Testing site	Diagnostic criteria
Gonorrhea	Thayer-Martin culture (endocervix) Endocervical gram stain Vaginal gram stain	Hospital Both Both	Positive Thayer-Martin culture OR gram stain (cervical OR vaginal) showing gram-negative intracellular diplococci
Chlamydia	SYVA ELISA test	Hospital	Positive SYVA ELISA test
Syphilis	RPR with TPHA confirmation	Hospital	Positive RPR and positive TPHA confirmation
Trichomonas	Wet prep Cervical gram stain Vaginal gram stain Pap smear	Both Both Both Hospital	Trichomonads observed on wet prep, gram stain (vaginal OR cervical) OR Pap smear
Bacterial Vaginosis	KOH Whiff test Vaginal pH Vaginal gram stain for clue cells Cervical gram stain for clue cells Wet prep for clue cells	Center Center Both Both Both	If the women has 3 or 4 of the following: (1) homogeneous vaginal discharge; (2) pH>4.5; (3) positive Whiff test; (4) Clue cells observed on wet prep OR gram stain (vaginal OR cervical)
Candidiasis	KOH wet prep	Both	Fungal elements seen on KOH wet prep AND an abnormal vaginal discharge

Standard breast, abdominal and bimanual examinations were performed, and information collected on lower abdominal and pelvic tenderness. A vulvovaginal speculum evaluation was conducted to elicit information concerning inflammation, ulceration and vaginal discharge. Sterile cotton swabs were used to collect vaginal secretions for RTI testing. A cervical evaluation identified the size of any cervical ectopy, and described any endocervical discharge or ulceration. Endocervical secretions were also collected for RTI testing.

To allow a determination of the utility of on-site testing, laboratory evaluations were conducted by trained staff at the Hue MCH/FP Center and by a reference laboratory at the Department of Microbiology of the Hue Central Hospital (see Table 1). Tests performed at the Center were limited to those that could conceivably be sustained at such a facility given resource and training considerations relevant within Vietnam. When possible these tests were repeated at the reference laboratory (e.g. all tests except the KOH Whiff test and vaginal pH). Several gold-standard tests could only be performed at the reference laboratory. If a woman was determined to have a treatable RTI, appropriate therapy was provided free of charge by the Center. Pap smears were performed independently by staff from the Department of Obstetrics and Gynecology at the Hue Central Hospital (who came to the Center to fix and stain specimens) and those with significant findings received follow-up evaluation by Department staff.

RESULTS

Characteristics of Women Attending the Hue MCH/FP Center

The MCH/FP Center provides a broad range of reproductive health services and, consequently, women present to the clinic for gynecological complaints, family planning services, abortion and menstrual regulation procedures, sterilization, and antenatal and delivery care. Socio-demographic characteristics of the clients are presented in Table 2. Over time women began to come to the Center seeking enrollment in the study at the recommendation of their friends. Once we became aware of this phenomenon, investigators began to record whether the woman was aware of the study prior to coming to the Center on the day of her enrollment. An analysis of this information does not indicate that prevalence changed among the later study participants as a result of this effect.

Table 2: Socio-demographic characteristics of study participants, Hue MCH/FP Center

Characteristic	Category	Per cent	N
Reason for visit	Gynecological problem	87.2	600
	Family planning	6.0	
	Abortion services	2.3	
	Sterilization	0.8	
	Pregnancy check-up	0.3	
	Other	3.3	
Current age	20-29	17.8	600
	30-39	49.8	
	40-49	28.5	
	50-59	3.8	
Marital status	Currently married	96.5	600
	Currently not married	3.5	
Education	Illiterate	4.2	600
	Primary	49.8	
	Secondary	37.2	
	University	8.8	
Residence	Hue City	81.7	600
	Hue Province	17.7	
	Other	0.7	
Coital frequency (per week)	≤1	78.8	584
	2+	21.2	
Sex with other than partner	No	99.5	597
	Yes	0.5	
Characteristic	Mean	Standard deviation	N
Length of marriage	12.3	7.1	598
Number of deliveries	2.7	1.5	583
Age at first intercourse	24.1	3.9	600

In regard to the use of contraception, 93.9% of women who responded to the related questions (n= 594) had ever used a family planning method. Condoms, withdrawal, and the IUD were the three most frequently cited methods. Of the 520 women who reported current contraceptive use, 36.2% utilized condoms, 29.6% relied on withdrawal, and 21.7% currently had an IUD. No significant differences in RTI or STI prevalence by contraceptive method were found. A large majority of the women (73.2%) stated that they wished to have no more children, and most of the remainder desired only one additional child.

RTI Prevalence

Using the standardized diagnostic criteria outlined in Table 1, the study found only a moderate prevalence of reproductive tract infections in this sample of women attending the Hue MCH/FP Center. Table 3 summarizes the RTI prevalence findings.

Table 3: Prevalence of Reproductive Tract Infections

Reproductive tract infection	Prevalence (%) N=600	N
Any RTI	21.2	127
Any STI	4.7	28
Endogenous RTI	17.2	103
Candidiasis	12.0	72
Bacterial vaginosis	6.3	38
Trichomonas	2.8	17
Syphilis	1.2	7
Chlamydia	0.8	5
Gonorrhea	0.2	1

N.B. Several women had multiple RTIs diagnosed

Table 4 presents the prevalence rates among women who complained of a symptomatic vaginal discharge. Note that these rates, while consistently a little higher than those in Table 3, are not appreciably different than those observed for the total study sample.

Table 4: Prevalence of Reproductive Tract Infections Among Women with Symptomatic Vaginal Discharge

Reproductive tract infection	Prevalence (%) N=480	n
Any RTI	21.7	104
Any STD	4.8	23
Other RTI	17.7	85
Candidiasis	12.5	60
Bacterial Vaginosis	6.7	32
Trichomonas	3.1	15
Syphilis	1.0	5
Chlamydia	0.8	4
Gonorrhea	0.2	1

The Utility of Center-based Diagnostic Tests

The study aimed to assess the utility of simple diagnostic tests that could be conducted at the MCH/FP Center for identifying various RTIs. (Diagnostic methods have been summarized in Table 1.)

The one case of gonorrhea detected was identified using both the cervical and vaginal gram stains, at both the Center and the Hospital, and was also Thayer-Martin culture positive. Observation of trichomonads varied considerably between wet prep and gram stain tests and between the Center and the Hospital. The Hospital wet prep identified 15 cases of trichomonas, but only five (33.3%) of these were detected at the Center. Similar results were found for the vaginal gram stain, where

16 cases of trichomonas were identified at the Hospital but only five (31.3%) at the Center. The Center recorded three observations of trichomonads on cervical gram stains, two of which had also been identified on the wet prep and vaginal gram stain at both the Hospital and the Center. Using the same test (cervical gram stain), the Hospital failed to find any trichomonads. The Pap smear performed by the Department of OB/GYN revealed only three cases of trichomonas (17.6% of the total).

The identification of clue cells also varied greatly both between tests and between sites. The Hospital identified 23 women (3.9 %) showing clue cells on the vaginal gram stain, contrasting with the Center which found 45 (7.7 %) cases. Just 12 (26.7%) of these had also been identified at the Hospital. Similarly, just one case (0.2 %) was found from the cervical gram stain and none from the wet mount at the Hospital, but 21 (3.6 %) and 15 (2.5 %) at the Center respectively (not including, however, the one case identified at the Hospital). Fungal elements were also seen more frequently on the KOH wet prep at the Center than at the Hospital, 81 (13.5 %) and 44 (7.5 %) cases respectively. Just 12 cases (9.6 % of all diagnosed cases of candidiasis) were identified at *both* the Hospital and the Center.

One way to assess the utility of Center-based testing is to compare the prevalence of various RTIs calculated by combining data from both the Center and the Hospital and comparing these with test results from the Center only. Table 5 shows these findings.

Table 5: Comparison of RTI prevalence as identified by either the Hospital or the Center (combined data), and by the Center alone

Infection	Total prevalence	Prevalence identified by Center	% of cases identified (N)
Gonorrhea	0.2	0.2	100.0 (1)
Trichomonas	2.8	1.0	35.3 (17)
Bacterial vaginosis	6.3	5.5	86.8 (38)
Candidiasis	12.0	11.0	91.7 (72)

Note: It was not possible to conduct any tests for syphilis or chlamydia at the Center.

The results for bacterial vaginosis and candidiasis are quite good, with just 13.2% and 8.3 % of cases, respectively, being missed by the Center. It is important to emphasize that these vaginal infections not only proved to be the most prevalent RTIs among this population of women, but also met with the most success in being accurately diagnosed using simple laboratory tests performed at the MCH/FP Center.

Presumptive Case Management

In resource poor settings where etiologic diagnosis of specific RTIs is not feasible, optimal diagnosis and management of reproductive tract infections ideally depends on easily identified symptoms or signs that clearly indicate the presence of treatable infection(s) within the local epidemiological context. Using such an approach, clients are presumptively treated on the basis of these indicators or, alternatively, referred for further diagnostic testing. For the syndromic approach to presumptive case management of RTI syndromes, such as vaginal discharge, to be cost-effective, however, clinicians and program managers must understand the actual relationship

between women's reported symptoms, clinical observations and reproductive morbidity in their practice setting. Only then can optimal case management strategies to be designed and employed. Unfortunately, in the absence of definitive etiologic diagnoses, clinicians' presumptive treatment will always be a balance between under- and over-treatment of specific reproductive tract infections.

At the Hue MCH/FP Center, diagnosis and treatment have traditionally been based on presumptive clinical diagnoses formed without the aid of structured or standardized case management guidelines. Our study collected data to allow an assessment of this unstructured approach and permits us to detail the symptoms and signs that determine such presumptive clinical diagnoses. These presumptive diagnoses guide current therapeutic practices and, consequently, the levels of empiric antibiotic usage at the Center. The data also provide insights regarding the possibility of designing more appropriate and standardized approaches to symptomatic RTI case management.

In accord with our study protocol, the clinician was asked to make a note of whether or not she believed that there was an RTI present following her clinical examination of the woman (including only the KOH Whiff test and vaginal pH tests), and what kind (vaginal, cervical, and/or pelvic). These data are summarized in Table 6.

Table 6: Prevalence of reproductive tract infection presumptively diagnosed by the clinician after history and physical examination

Type of infection	Prevalence (N)
Any infection	61.5 (600)
Vaginal infection	42.8 (600)
Cervical infection	43.5 (598)
Pelvic infection	2.3 (600)

Note: Many women (24.3%) were considered by the clinician to have both cervical and vaginal infection.

Obviously, these figures are significantly higher than the RTI prevalence rates found through laboratory evaluations, described previously. This was particularly true in regard to cervical infection, where 43.5% of women were presumed to be infected, when in fact the combined prevalence of gonorrhea and chlamydia was only 1%. *As described further below, using current unstandardized criteria for the presumptive diagnosis of cervical infection, there is a > 40 fold over-diagnosis and treatment of cervical infections among experienced clinicians.*

Associations Between Observed Signs and the Clinicians' Presumptive Diagnoses

An analysis was conducted to determine which observed signs led clinicians at the MCH/FP Center to presumptively diagnose various reproductive tract infection syndromes. All RTIs were initially grouped together in order to identify the variables associated with clinicians' perceptions of infection. Three signs were found to be significantly associated with the positive diagnosis of an RTI by clinicians at the Center: the presence of a vaginal discharge noted during the clinician's pelvic examination, "redness" on the cervix, and bleeding of the cervix when touched (contact bleeding). These findings are summarized in Table 7.

Table 7: Relationship between observed signs and clinicians’ presumptive diagnosis of RTI after history and physical examination

Observed Sign	Group	Percent Diagnosed	Odds ratio	p	N
Vaginal discharge	No	4.3	20.03	<0.01	595
	Yes	87.1			
Redness of cervix	No	35.9	2.68	<0.01	594
	Yes	96.1			
Contact bleeding of cervix	No	59.9	1.61	<0.01	594
	Yes	96.4			

Of these three variables, the presence of a vaginal discharge observed on physical examination appears to be the sign most strongly associated with a positive presumptive diagnosis of RTI. As a result of the clinicians’ strong reliance on the presence of observed discharge as an indicator of infection, among the 369 women presumptively diagnosed as presenting with an RTI, almost all (358; 96.9%) had a vaginal discharge noted during physical examination.

The significance of the associations between both observed “redness” on the cervix and contact bleeding of the cervix with clinicians’ presumptive diagnosis of RTI is probably largely the result of confounding with the presence of observed discharge, since almost all of the women with these signs were observed to have a vaginal discharge as well. Only 8 women who did not have a vaginal discharge were presumptively diagnosed by the clinicians as having an RTI and 5 of these exhibited a “red” cervix.

Table 8: Relationship between observed signs and clinicians’ presumptive diagnosis of a cervical infection after history and physical examination

Observed Sign	Group	Percent Diagnosed	Odds ratio	p	N
Vaginal discharge	No	3.8	16.0	<0.01	593
	Yes	61.6			
Redness of cervix	No	6.8	13.5	<0.01	594
	Yes	92.2			
Contact bleeding of cervix	No	41.3	2.1	<0.01	597
	Yes	85.7			

Table 8 presents the relationship between these same three signs and the clinicians’ presumptive diagnosis of a *cervical* infection. Note that observed vaginal discharge has a slightly lower odds ratio for the presumed presence of cervical infection, and that both cervical “redness” and contact bleeding have somewhat higher odds ratios, suggesting that they are more important as factors influencing the clinicians’ presumptive diagnosis of this particular type of RTI.

In trying to further clarify the relationship between the presence of discharge and clinicians’ presumptive diagnoses of infection, both the consistency and the character of the discharge were examined. On the case record forms, consistency was recorded as “thick,” “thin,” or “sticky” and discharge character was designated as either “homogeneous” or “nonhomogenous” during the pelvic examination. No particular consistency proved more likely to induce a positive

presumptive diagnosis and the character of discharge also lacked a significant association with clinicians' diagnoses.

Of considerable interest, the clinicians' presumptive diagnosis of an RTI appears to be based primarily on her personal observation of vaginal discharge, rather than on the client's self-reported experience of discharge. As previously noted, of all 600 participants in the study, 480 (80%) reported being symptomatic with a vaginal discharge. Of these, 314 (65.4%) were presumptively diagnosed as having an RTI; a proportion that does not differ much from that of all women presumptively diagnosed with an infection by a clinician (61.5%). When women were queried about the nature of their discharge, they were asked to specify whether or not they experienced a "regular" ("*binh thuong*") or "irregular" ("*bat binh thuong*") discharge. A slightly higher percentage of the women with "irregular" self-reported discharges were subsequently identified as having an infection by the clinician (75.5%), however the majority of women with "regular" discharges were also so classified (60.6%).

Accuracy of the Clinicians' Diagnoses of RTIs

Not surprisingly, given the data presented above, a poor correspondence was found between clinicians' presumptive classification of infection and the actual presence of an RTI. Although of all the RTIs identified through laboratory tests (see Table 1), the examining clinician had correctly identified 85.8% (109), the trade-off was a major trend toward over-diagnosis. Indeed, less than one third (29.5 %) of the 369 (61.5%; N = 600) women who had been presumptively diagnosed positive for an RTI by the clinician, were actually infected.

The discrepancy between clinicians' presumptive classification for treatment and the actual prevalence of RTIs appears to be due primarily to use of observed vaginal discharge, as well as cervical "redness," as presumed indicators of infection. In reality, the association between these indicators and RTI is far less direct. Although the vast majority of actual RTI cases were accompanied by observed vaginal discharge (96.9%), only 29.9% of all women observed to have a discharge (123; N=595) actually had a reproductive tract infection.

Neither "redness" on the cervix, nor contact bleeding of the cervix, were statistically significant in relation to the actual presence of any specific RTI or STI, despite being so significantly associated with the clinicians' presumptive diagnosis of infection.

Association Between the Actual Presence of RTI and Other Variables

Since the signs currently used by clinicians as syndromic identifiers for presumptive diagnosis and treatment of RTI correlate poorly with the presence of actual infection, a wide range of other variables were analyzed in order to explore the possibility that alternative criteria might more accurately predict the presence of RTI. Based largely on experience in other, higher prevalence settings, several authors have suggested that risk assessment using locally-verified combinations of symptoms, signs, and background characteristics might allow a more accurate classification of symptomatic individuals for presumptive treatment and/or guide investment in further diagnostic testing (10).

There was no significant association between self-reported discharge and the presence of any specific RTI. There also appeared to be little agreement between a woman’s perception of discharge and the clinician’s observation of its presence during pelvic examination. For example, the clinician did not observe such discharge 18.8% of 154 women who reported experiencing “irregular” vaginal discharge, and, conversely, the clinician recorded observation of discharge in 56.7% of 120 women who stated that they had no discharge.

Those women who stated that they did experience discharge were also asked whether or not they perceived a corresponding “offensive smell.” When sexually transmitted infections as a group were analyzed separately from other RTIs, a significant proportion of those with STIs reported an “offensive smell” to their discharge ($p < .01$). Most of the difference was attributable to the presence of infection with *trichomonas vaginalis*.

One item on the questionnaire asked women if they believed themselves to be at risk of contracting a STI. (This question followed a brief description of the nature of sexually transmitted infections and the reasons an individual might be at risk.) Although only 21 women out of 599 (3.5%) stated that they believed themselves to be at risk of STI, the proportion of these women (3; 14.3%) who subsequently tested positive for an STI was significantly higher compared to the overall STI prevalence among the entire sample (4.7%) or among women who did not believe themselves to be at risk of STI (4.2%).

Predictive Values

If one views syndromic case management criteria essentially as heuristics for classifying individuals for the presumptive treatment for various infections, the performance of these case management systems can be assessed by determining the sensitivity, specificity, and positive and negative predictive values of the various criteria by comparison with the actual presence of infection assessed by gold-standard testing. In conducting this type of analysis, one must clearly specify the outcome of interest. Using results previously described above, Table 9 gives an example of this type of analysis for “observed vaginal discharge” (predicting “Any RTI”) and self-reported “offensive smell” of vaginal discharge (predicting “Any STI”).

Table 9: Predictive values for selected indicator criteria and outcomes

	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value	N
Clinician’s observation of vaginal discharge (Testing for “Any RTI”)	.97	.38	.30	.98	595
Self-reported “offensive smell” to vaginal discharge (Testing for “Any STI”)	.53	.77	.10	.97	427

N.B. “Offensive smell” was recorded only if the symptom of vaginal discharge was reported.

It should be noted that this pattern of predictive values reflects the generally low prevalence of STI in this study population.

There is great interest in the potential identification of criteria that successfully predict gonorrhea or chlamydia, both cervical infections with potentially severe consequences. Table 10 displays our results concerning the sensitivity, specificity, positive and negative predictive values for historical and clinical variables measured in this study as case finding criteria for cervical infections (i.e. chlamydia and gonorrhea combined). As previously mentioned, the total prevalence of cervical infections was only 1% (6 women), although 43.5% of the women were presumptive diagnosed with cervical infections.

Table 10: Case finding for Cervical Infection (chlamydia and gonorrhea combined)

	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value	N
Self-reported “abnormal” discharge	.33	.74	.01	.99	600
Self-reported “offensive smell” to discharge	.33	.76	.01	.99	427
Clinicians’ presumptive diagnosis	.66	.57	.02	.99	598

It is obvious from these figures that, given the very low prevalence of cervical infection and the lack of a strong correlation between self-reported symptoms, Clinicians’ observations, and the laboratory diagnosis of cervical infection, there are no variables in this data set which provide an adequate positive predictor of cervical infection. Of particular concern is the extremely high rate of over-treatment that results from clinician’s presumptive diagnosis.

Comparison with WHO Vaginal Discharge Flowchart

In an attempt to standardize global recommendations for the case management of common RTI syndromes, the World Health Organization (WHO) has issued guidelines for syndromic case management. In our study we collected all the data necessary to conduct a “virtual” application of this flowchart among the 480 women who reported the presence of vaginal discharge. This was 80% of our total sample of 600 women and for most women it was the primary reason for their clinic visit.

In this sample, not a single woman met the risk assessment criteria that would drive an empiric treatment for cervical infection. In contrast, almost half of the symptomatic women would have received presumptive treatment for cervical infection because of “mucopus from cervix.” Most of the vaginal discharges observed by clinicians were considered to be present in the cervical os and would thus be considered the equivalent of cervical mucopus in the Vietnamese context.

As a result of this analysis, rates of infection as determined by the flowchart can be compared with both clinicians’ presumptive diagnoses and the actual rates of infection as determined by gold-standard laboratory procedures. This comparison is depicted for both cervical and vaginal reproductive tract infections in Table 11. Note that, while the laboratory investigations and the WHO flowchart differentiate between different types of vaginal infection to be treated, the presumptive diagnosis by clinicians on the basis of signs and symptoms only identifies the presence of “cervical” and/or “vaginal” infection.

Table 11: Comparison of Prevalence Rates for Women Reporting Vaginal Discharge (n=480)

Condition	Clinicians' Presumptive Diagnosis	WHO Flowchart Results	Actual Prevalence of Infection
Cervicitis (Gonorrhea/Chlamydia)	48.4	49.4	1.0
Vaginitis	45.2	16.9	20.4
Bacterial Vaginosis	N/A	3.3	6.7
Candidiasis	N/A	14.0	12.5
Trichomoniasis	N/A	3.3	3.1

This table clearly indicates that although the use of the WHO algorithm would improve clinicians' ability to identify vaginal reproductive tract infections by lowering the level of over-diagnosis, it would result in roughly the same degree of over-treatment for cervical infection. Not surprisingly, treating women for trichomoniasis, bacterial vaginosis or candidiasis, as recommended by the chart, would not have varied much from treatment resulting from the identification of cases by diagnostic tests.

DISCUSSION

The findings of this study have a number of important implications for the prevention and treatment of RTI within MCH/FP programs in Vietnam. A major strength of this study rests with the use of carefully standardized definitions of various reproductive tract infections, our measurement of chlamydia prevalence, and our ability to examine the relationship between specific infections and a broad range of self-reported and clinical variables. One limitation, however, is that, since the majority of women enrolled (>87%) were attending the Center with gynecological complaints, there are not sufficient data to allow accurate description of RTI prevalence rates among asymptomatic women attending the Center for other reasons, such as to access contraceptive or abortion services. The larger proportion of symptomatic women enrolled, however, facilitated our analysis of current case management practices, as well as the potential for defining more effective case management approaches.

This cross-sectional descriptive study of MCH/FP Center clients revealed only a moderate prevalence of RTI (21.2%). The sample comprised predominantly married women (mean age = 32) from the urban area of Hue who reported relatively low coital frequency and a very low rate of extramarital sexual exposure. The majority of the six hundred women (480; 80%) were seeking treatment for symptomatic vaginal discharge. The observed RTI prevalence rates were substantially lower than those suggested by most previous studies among women in Vietnam. While the proportion of women reporting condom use as their principle means of contraception was over 30%, no association was observed between current contraceptive method use and any type of reproductive tract infection.

The majority of reproductive tract infections observed were caused by endogenous infections (i.e. candidiasis and bacterial vaginosis). Together these two vaginal infections were the cause of over 75% of the RTI-related reproductive morbidity experienced by women in this study and, consequently, are an important women's health issue. Fortunately, they were both diagnosed with a fairly high degree of accuracy using simple tests that were feasible to conduct at the MCH/FP Center.

The observed rate of sexually transmitted infection (STI) was quite low (4.7%) and only 1 % of women had cervical infections with gonorrhea or chlamydia. This is an extremely important observation with broad implications for STI/HIV prevention and control efforts, as well as MCH/FP programs in Vietnam. Since the rates of STI among women seeking treatment for vaginal discharge within MCH/FP settings are low, one implication of these findings is that case management efforts for symptomatic women should focus on the more common endogenous infections, as opposed to more costly, difficult, and largely unsuccessful attempts to provide presumptive treatment for cervical infection among this population of women. Case finding efforts for cervical infection among asymptomatic women would best be directed to improving the partner notification and empiric treatment of the female partners of men with symptomatic STI syndromes, such as urethral discharge. Experience with the latter approach from other settings suggests that it would allow intervention with positive predictive values of approximately 30%, in contrast to the positive predictive value of 2% observed with clinicians' presumptive diagnoses of cervicitis or the virtual application of the WHO vaginal discharge flowchart as applied to women in this study (see Tables 10 and 11) (11).

The etiologic diagnosis of cervical infection within the MCH/FP setting is extremely problematic given the prohibitively high cost of chlamydia testing and the difficulty of maintaining quality assurance for the diagnosis of infections that are as uncommon as gonorrhea was observed to be in this study. Although the Center staff did detect the one case of gonorrhea observed, this case appears to have been quite severe (all five gonorrhea diagnostic tests were positive). The experience in other studies would suggest that gonorrhea detection by gram stain is typically less than 50% sensitive. In the absence of reliable etiologic diagnoses, other case finding strategies have been shown to have very poor positive predictive values for the detection of cervical infection; a finding corroborated by the results of this study as well. Given the common use of the IUD as a contraceptive method in Vietnam and the lack of reliable criteria for identifying women likely to have an RTI based on socio-demographic, behavioral, or clinical variables, the low prevalence of cervical infection should be a very welcome finding for both MCH/FP program managers and contraceptive service providers.

In contrast to the diagnosis of cervical infection, the results of this study suggest that, with adequate training and supervision, the most common causes of vaginal infection could be definitively diagnosed using simple microscopy tests performed within MCH/FP clinic settings. As shown in Table 5, MCH/FP Center staff were able to accurately detect most cases of candidiasis and bacterial vaginosis, which together accounted for >75% of all RTIs observed in this study. For these infections the detection rates were, in fact, higher at the Center than the Hospital, an occurrence most likely related to a loss of accuracy resulting from inevitable delays in the transport of specimens to the referral facility. The disappointing results with trichomonas diagnosis at the Center, however, highlight the challenges of training, supervision, and quality assurance that are involved in the establishment of even simple laboratory testing facilities. Intensive training at the start-up of our study focused on candidiasis and bacterial vaginosis diagnosis since clue cells and yeast were felt to require more microscopy skills; relatively less emphasis was placed on trichomonas. Clearly, more intensive efforts for training and quality

assurance in regard to trichomonas detection would be required if etiologic diagnosis of vaginal infections were to be implemented on a wide scale. In addition, the relatively low prevalence of trichomoniasis may provide a challenge to quality assurance efforts at some facilities.

Consequently, while the etiologic diagnosis of common vaginal infections may be feasible within MCH/FP facilities, an important operational research question is to determine whether the investment required to establish and maintain such diagnostic facilities would provide cost advantages over simple empiric treatment of vaginal infection and/or the use of non-microscopy tests, such as vaginal pH alone. Further analysis of our data set will shed some light on this question in regard to the utility of vaginal pH testing and the use of leukocyte esterase dipsticks, however, a separate operations research study focused only on the pilot introduction of simple tests would also be desirable as a next step.

One of the most important findings of this study regards the very high rates of over-diagnosis and over-treatment for RTI that result from current clinical practices. This is particularly striking in regard to the presumptive diagnosis and treatment of cervical infection. As described in Tables 7 and 8, the clinicians' presumptive diagnoses are largely driven by observations of vaginal discharge and cervical "redness." In fact neither these signs, nor any of a broad range of socio-demographic variables, self-reported symptoms, or other clinical signs correlated meaningfully with the presence of cervical infection in this population. These findings suggest a need to review the current criteria used for presumptive clinical diagnosis of RTI in light of actual prevalence data from studies such as the one performed at the Hue MCH/FP Center and to reflect these insights within medical training curricula. Given the diagnostic challenges involved in performing gold-standard laboratory tests, very limited data has traditionally been available to describe the actual correlation (or lack thereof) between reported symptoms, clinical observations and the presence of different types of RTI. Now that such information is becoming available, these findings require broader discussion and dissemination in an effort to inform more appropriate presumptive treatment approaches.

While no criteria served to predict cervical infection, the more general diagnosis of "Any STI" was shown to have some association with a self-reported vaginal discharge that was accompanied by an "offensive smell" and a reported self-perception of STI risk. Given the low overall STI prevalence, however, the positive predictive values remained low. These observations may have significance in other service settings. For example, perhaps "self-reported vaginal discharge with an offensive smell" would perform better as a predictive criterion in clinical settings where STIs were more prevalent, such as dedicated STI clinics? (Obviously, independent validation would be required in order to make this determination.) Similarly, the willingness of some women to report a perceived risk of STI may be of relevance for enhancing the quality of contraceptive services, particularly in the Vietnamese context where IUDs are so commonly used. In our study women were interviewed by a sensitive provider in a very private setting where enough time was available to establish rapport. Before being asked if they perceived themselves to be at risk of an STI, women were given some basic information about what an STI was. It may be that if such information were provided routinely to women during contraceptive counseling, along with the suggestion that they not chose an IUD if they perceive themselves to be at risk of an STI, women

could self-select the most appropriate contraceptive for their personal use (or at least self-defer from IUD acceptance if they felt they were at risk of STI). The utility of such an approach as compared to provider risk assessment as a means of enhancing the quality of IUD service provision is currently being investigated in other countries.

A very important finding of our study is that, while the current unstandardized presumptive diagnoses of clinicians results in significant over-diagnosis of RTI, attempts to standardize case management by adoption of the currently recommended WHO syndromic flowchart for vaginal discharge would also be problematic. As previously mentioned, clinicians' presumptive diagnoses currently leads to a significant over-treatment for both vaginal and cervical infection. (More than 60% of women received a presumptive RTI diagnosis by the examining clinician, while the actual RTI prevalence was only 21.2%.) As shown in Table 11, the amount of over-diagnosis of vaginal infections would be greatly reduced by application of the currently recommended WHO vaginal discharge flowchart. The use of this flowchart would bring treatment levels generally into line with the actual observed prevalence rates for vaginal infection. Unfortunately, the levels of over-treatment for cervicitis would persist at levels comparable to that currently provided using the clinicians' unstandardized criteria. Consequently, while adoption of the WHO flowchart would be a definite improvement over current practice, it would not address the most costly component of over-diagnosis.

One attractive solution is to adapt the WHO vaginal discharge flowchart based on local epidemiological data. In fact, the recommendation to do just this has accompanied most efforts to introduce the syndromic approach. As our study shows that clinicians' observation of discharge in the cervical os has a very poor correlation with actual cervical infection, we would propose that this arm of the flowchart for empiric treatment for gonorrhea and chlamydia be dropped. As shown in Figure 2, if this is done, treatment levels would then be comparable to those based on the etiologic diagnosis of vaginal infection. An alternative approach would be to consider designing and testing flowcharts that involve return visits and the sequential use of empiric treatment for different RTI pathogens. Obviously, such modified flowcharts would require independent validation before being put into widespread use.

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Discussion:

Discussion and questions after this presentation focused briefly on the characteristics of the clients. The reported average age at first intercourse was 24, could this be true? The average age of the women was 34. Mostly they reported their age at first intercourse as the same as age at first marriage. It's hard to know if this is true.

Women were asked to self-assess themselves for risk of STD infection after a long interview/history/counseling session with the clinician. At the end of the session they were read a paragraph about risks for STD infection and asked if they thought they could be vulnerable. 4% said yes. Of those, indeed a higher proportion, 14%, were diagnosed with an STD. This indicates that use of client self-assessment may be a useful risk-assessment screening tool prior to STD testing in some resource-poor settings.

2. Syndromic Approach for Managing Reproductive Tract Infections in the Philippines

(by Jesus Encena, Marilou Costello and Chona Echaves)

Carmeli M. C. Chaves, presenter

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I. Background

In the Western Pacific Region, there are an estimated 30 million sexually transmitted disease infections that occur each year (WHO, 1997). As a result of this epidemic and growing concern about its role in the transmission of HIV/AIDS, the World Health Organization has argued for the need to provide STD case management services in the primary health care setting.

Based on epidemiological data about STDs from the Western Pacific Region, the WHO developed the syndromic approach and later endorsed it for STD case management in resource-poor settings. The approach makes use of flowcharts or algorithms so that health providers simply have to follow directions for treatment as based on the patient's signs and symptoms as well as his/her risk assessment results. This approach is said to be optimal for at least four distinct reasons, namely, its simplicity, its cost-effectiveness, its ability to provide early diagnosis and treatment, and its applicability to most primary health care settings.

In the Philippines, the syndromic approach was first introduced to the social hygiene physicians in 1995. The algorithms were scrutinized carefully by local experts and practitioners who made several modifications, taking into consideration both epidemiologic data and socio-cultural factors that influence the delivery of health services in the country. By 1996, with support from AIDSCAP, the Department of Health finally developed, its own set of syndromic management guidelines.

In this paper I will be using various data from the Philippine RTI Integration Study to analyze some of the benefits and limitations of syndromic management, as these were revealed by actual experiences undergone in the seven participating health centers. The analysis is based largely upon my own experience during the two-month supportive supervision phase of the study as well as on observations made by the major service providers (six doctors, one registered nurse) themselves when they were interviewed by project personnel. Supplementary statistics from the Situation Analyses and from client records will also be referred to .

II. Description of the syndromic management approach developed for the Philippines

The syndromic management (SM) guidelines include algorithms for six of the most common syndromes or presenting symptoms encountered in clinical practice: urethral discharges, vaginal discharges, genital ulcer disease in men and women, scrotal swelling, lower abdominal pain and eye infection in the newborn. There are three algorithms for syndromes in women (two for abnormal vaginal discharge and one for lower abdominal pain), two for syndromes in men

(urethral discharge and scrotal swelling), one for a syndrome found in both men and women (genital ulcers), and one for newborns (eye infection).

The choice of drugs being recommended by the National STD Management Guideline was based on the latest results of local drug sensitivity studies.

III. The benefits of syndromic management in the Philippine setting

A large number of health centers in the Philippines are neither manned by a medical specialist nor equipped with laboratory facilities. As such, SM will generally prove to be a practical choice in this context. Since the algorithms are simple, even non-physicians (i.e. the nurses and midwives) can use them. If syndromic management could be fully implemented in all of the health centers, it can expand the diagnosis and treatment of RTIs. As one doctor noted, "Syndromic management has been useful for case-finding. The midwife at her level can do history taking and complete pelvic exam. Anyway, if she can no longer manage the case, she can always refer it to me."

Insofar as SM does not require a lab exam, patients are diagnosed rapidly and treated early. Immediate management is important in order to prevent disease transmission and to avoid the development of serious complications. In the words of one doctor in our study site:

"The syndromic management is very practical because we do not need laboratory examinations anymore. We can treat the patient right away. From our experience, patients do not come back anymore if you refer them for laboratory tests which are expensive in the first place. You lose your patients and you'll never know what happened to them. "

This approach is also cost-effective since it eliminates the need for expensive laboratory equipment, a constant supply of reagents and other materials, and frequent training of medical technologists. In countries with limited resources, this is an important consideration.

The syndromic approach makes use of standardized treatment, using the most effective medications available. It also recommends the use of single dose therapy so as to improve drug compliance and minimizes the emergence of resistant organisms.

IV. Limitations

The literature on SM is fraught with discussions of problems associated with this approach. Our study on RTI integration encountered some of these difficulties, as discussed below.

a. In diagnosis/symptomatology:

One of the criticisms of the SM cites its inability to detect RTIs among symptomatic women. Since half of all women with an RTI fall into this category these cases are going to be

missed unless a more effective screening procedure is developed. Further still, since diagnosis can only be made if symptoms fall into a categorical syndrome, other signs and symptoms suggestive of RTIs can also be missed. An example of this symptom is genital itchiness. In our study this was the presenting symptom of 14 percent of all RTI clients. We know that this condition can be due to several causes, among which are candidiasis, trichomoniasis and /or lice infestation.

We mentioned earlier that one of the strengths of SM is the fact that it can be carried out even by non-physicians. Many nurses and midwives, though, have little confidence in their ability to diagnose and manage patients because they do not view this as their usual role. As a result, one of our main learnings from this study has been the need for a strong dose of supportive supervision to overcome this problem.

Actually, a legal issue is involved here. In the Philippines, as in many other countries, it is only doctors who are allowed to diagnose diseases and prescribe medications, just as only pharmacists can dispense them. It is therefore not surprising that, during our training of service providers, a few doctors stood up to express their cynicism towards the syndromic approach citing their disclaimer of any responsibility for complications that may arise from allowing their clinic staff to manage RTI cases. Interestingly, however, all the physicians who attended the training did agree by its end, to issue "standing orders" for RTI cases to be managed syndromically by trained staff members in their absence.

Just how competent are the midwives in using SM? Most of the doctors claimed that there had been relatively few cases of RTI misdiagnosis at their particular health center. In Jasaan, however, the Municipal Health Officer estimated that about seven out of ten cases were referred to her by midwives from the outlying barangays. This is special case, however, since a similar service provision structure (i.e. the setting up of Barangay Health Stations in isolated rural areas) does not exist in the major urban centers. Besides, the midwives in Jasaan were only tasked with making referrals to the RHUs and were not in any case responsible for case management.

b. The risk assessment procedure: how helpful is it?

The risk assessment (RA) procedure used in the Philippines uses a set of questions to distinguish vaginitis from cervicitis in women with vaginal discharge. These questions are highly subjective and perhaps too culture-bound. Many of the service providers noted that the questions may be too personal and direct especially in the context of Philippine culture. Knowledge of the health worker about the personal background of the patient or her partner may also influence the RA results.

Since RA questions are sensitive, patients' reactions were said by our respondents to vary from "embarrassment, discomfort, and unwillingness to respond to the questions to openness, amusement and laughter". However, one of the doctors claimed that risk assessment is "very helpful" in determining vaginitis from cervicitis. Another felt that "even a positive risk assessment

should always be followed by a proper physical examination, because physical examination findings will boost your diagnosis." She also added, "there is a need to differentiate between ambiguous answers such as '*hindi ko alam*' (I don't know) and '*suspetsa ko lang*' (It is only my suspicion).

The overall opinion of the doctors seemed to be that, even though clients are initially embarrassed by some of the RA questions, they are generally willing to give honest answers to them "because they fear the consequences if they keep information from the doctor." One doctor emphasized that valid answers can be elicited, but only if the service provider uses the proper strategies, e.g. making the client feel at ease and reminding her or him of the dangers which await those who do not "open up".

One of our respondents felt that the accuracy of the RA could be improved if additional questions were to be asked. In particular, the procedure could include questions on the husband's occupation (wives of policemen, military personnel and drivers were thought to be particularly likely to contract an RTI) and whether or not the spouses were separated for job-related reasons, as is true for example, for those working overseas.

While SM does not require laboratory tests, one of the doctors said, "there are instances when you need to do these tests." She cited resistant cases which do not improve with antibiotics, recurrent RTIs, and children with symptoms suggestive of RTIs (particularly in young girls with abnormal vaginal discharge). At present, the SM approach does not provide guidelines for such cases.

c. Treatment and establishing a cure

One of the most frequently asked questions has to do with the validity of the algorithms. Even if the design was based on epidemiological data, only a few countries have been able to conduct validation studies for SM. As far as I know, no study of this type has been done in the Philippines. I need not elaborate on this except to recommend that a validation study is sorely needed. It is interesting to note, however, that in one of the study sites, where 81 RTI cases were managed, 60 clients made a return visit. Of those who returned, 95 percent reported to have experienced improvement in their symptoms.

Many in the health sector believe that SM leads to excessive drug use which can be both expensive for typical health center clients and a cause of poor compliance, as may result in the emergence of drug resistance. In general, though, most of our respondents did not agree with this perspective:

"We have not found any cases of drug resistance. Overtreatment is not a problem."

"No problems of overtreatment."

"In SM, one possibility is that they overtreat. Maybe this doesn't happen, though."

Most patients need treatment for mixed infections. Many of our clients have mixed infections. False positives are rare."

Generally, doctors don't have difficulty in convincing patients to take so many drugs at the same time, possibly because they were provided for free to the clients in the participating health centers. There were, however, some patients who were observed to balk at the idea of taking so many drugs. Their suspicions in this regard way well be exacerbated in cases where the SP is not a trained physician.

For patients diagnosed with an RTI who are currently using an FP method, the SM treatment protocol does not offer any special guidelines. Questions such as "when to remove the IUD" and "for what types of RTIs do you remove or not remove IUDs" were asked by almost all of the health workers. One doctor noted as well the lack of any guidelines for pregnant women, particularly with regard to which drugs might be injurious to the health of the fetus.

In this study, about a quarter of the patients were discovered while undergoing the physical examination required for FP clients. These exams are required under the DOH clinical standards for new acceptors of any method; within one, three and six months after insertion of an IUD; and in the form of an annual check-up and pap smear for current users. Ensuring strict compliance with this requirement seems to be an efficient and cost-effective strategy for diagnosing and treating RTI asymptomatic women.

The basis by which we can say there has been a cure under the SM system is the disappearance of symptoms. This was emphasized in particular by the algorithms for vaginal discharges where the patient is presumed to be cured if her symptoms have disappeared. This, however, raises yet another issue; namely, given the fact that so many of these of women with RTI are asymptomatic, how can we use the disappearance of symptoms as a basis for declaring a patient cured?

d. Ensuring return and follow-up

The algorithms adopted for vaginal discharges can be characterized as being aggressive in diagnosis and management. Our discussion with the DOH team that recommended this explained that the prevailing presumption is that Filipino patients generally do not return after their initial check-up. This observation, however, is challenged by the findings of this study. After six months of observation, 74 % of the patients had returned for their follow-up visit with their health workers. It is our observation that there are various reasons why patients do not return for a check-up; namely, 1) they have been relieved of their symptoms, 2) the health worker did not tell them to return, 3) they have been dissatisfied with the services received or the health workers were too busy to entertain them when they visited the clinic and, 4) they were not able to buy their drugs, so were ashamed to admit this to the service providers. These findings seem to indicate that factors like quality of care may serve to improve health utilization. It also opens the possibility for exploring the feasibility of a "less aggressive" approach for management of RTI.

e. Counseling

SM highlights what is known as the "4 Cs" -- counseling, compliance, condom use and contact tracing. Counseling is one of the most challenging tasks within the context in RTI management because in a crowded and busy health center, time management is of the essence. As one service provider puts it, "they (patients with RTIs) take more time than other patients. *Kaya lang, kailangang gawin at saka ginagawa din naman ito sa ibang mga pasyente.*" (However, this [counseling and health education] is something that has to be done, and besides we also do counseling for other patients.) Other service providers made similar comments, pointing out as well that additional training on counseling would be helpful, as would the provision of a specially prepared "guide or outline" on counseling RTI clients, "particularly for the use of nurses and midwives." Some of the topics which ought to be covered in any training on counseling would include "how to get the client's confidence, how to make her tell the truth, how to ensure confidentiality of information."

Since the algorithms are printed only in the STD Management Guideline, a doctor using the syndromic management approach said, "*minsan nakakahiya kapag binuksan mo ang libro sa harap ng pasyente. Baka mawalan sila ng confidence sa iyo.*" (Sometimes its embarrassing to open the book in front of your patient. They might lose their confidence in you.) . Hence, the need to strengthen competency and to come up with a suggested counseling guide is apparent.

The role of condom use in the prevention of RTI transmission cannot be overemphasized. We found that the correct use of condoms should always be demonstrated. This is true for both clients and providers. In fact many of the providers were found to be quite embarrassed when they had to demonstrate the proper technique for using the condom. We therefore brought in a gender expert to sensitize them on these sorts of issues during their training. Penile models were also provided to clinics for use during counseling .

f. Overall assessment

Reactions to the SM approach were generally positive. Most claimed that they had encountered few difficult cases. As we have seen, the number of misdiagnoses was thought to be low. Counseling was a relatively time-consuming task but "it has to be done." When asked specifically about any problems or limitations inherent in the approach, one doctor cited her concern about the spread of resistant strains of bacteria. Two mentioned the high costs of drugs, a problem that was not, strictly speaking, of much concern to the clients participating in this study since outside agencies were tapped to cover these expenses. Another felt that SM offered "no emphasis on follow-up examinations, especially for women with vaginal discharge."

Opinions were also asked about just what their health center would need in order to sustain the program over the next few years. Responses tended to concentrate on the need for refresher training at periodic intervals and on various types of supplies (equipment, drugs, IEC materials, forms). One respondent noted her concern that "sometimes the government purchases less effective drugs." Another felt that some sort of solution would have to be proposed for taking into account the time-consuming tendencies of SM. A third suggested that separate personnel, who would specialize only in FP and RTI concerns, should be provided for.

V. Discussion and recommendations

The search for an ideal approach to RTI case management is not without its share of issues and controversies. With its perceived cost-effectiveness, easy usability and wide applicability, the SM seems to be the most practical choice for resource-poor setting. However, efforts are needed to improve it along at least three lines; (1) diagnostic accuracy; (2) efficacy of treatment; and (3) socio-cultural acceptability.

As a start, strategies for RTI management have to be developed to improve detection of asymptomatic women. These may include the following: 1) widespread IEC campaign to increase awareness about signs and symptoms suggestive of RTIs in women; 2) developing and testing a set of risk assessment questions that may warn the woman about her risk of acquiring such infections; and 3) establishing mechanisms for routine compliance among health workers in performing the required physical examinations including pap smears among FP/MCH clients. By complying with required physical examinations, the health worker can make full use of the natural opportunity to examine these clients and look for RTI-related signs and symptoms.

Under the existing MCH program, the prenatal clinic record contains information that may suggest the presence of one or more RTIs. A well-trained health worker who is aware of this should consistently and carefully ask the items on vaginal infections since clinical standards discourages speculum examinations unless the woman's condition warrants it.

Health workers should be encouraged to perform pelvic examinations for RTI symptoms which do not belong to a "syndrome". This is particularly true for genital itchiness.

There is also a need to formulate policies to cover the nurses and midwives who might become involved in a legal action as a result of RTI case management. A closer look at the "standing order" arrangement, specifying the parameters of this privilege will be useful. It might prove helpful as well to assess the level in the primary health care system at which different types/levels of RTI services can be efficiently and reasonably sustained.

Risk assessment procedures should be more objective, perhaps with clearer guidelines for ambiguous answers such as "hindi ko alam" (I don't know) and "suspetsa ko lang" (I suspect). During training, emphasis should be given to, as one doctor put it, "asking permission to ask these questions, insuring confidentiality at all times, conducting the interview with utmost care, professionalism and ethics." A validation study should also be done for various sets of risk assessment questions to determine their ability to predict infections more accurately.

Since a basic principle of SM relates to its limited need for laboratory tests, guidelines should be developed on their use particularly for infections that are resistant to conventional treatment, recurrent RTIs, special problems involving pregnant women and abnormal vaginal discharges in children.

For RTI services to be effectively integrated, considerable effort will have to be geared towards advocacy and increasing the awareness of local government leaders about RTIs and their connection to HIV/AIDS. This can help to mobilize continuing support for sustaining these activities most especially for subsidizing the drugs to be used for RTI management.

More research can be done to assess the utility of focusing on the disappearance of symptoms as the only criteria for cure. As for the seemingly aggressive nature of the current syndromic management, a more cautious "sequential approach" may be tested based on the high rate of return visits observed among patients included in this study.

During the training, emphasis should be placed on the importance of follow-up visits. This is the only way by which a service provider can assess the effectiveness of treatment, drug compliance and if there are any untoward side effects or drug reactions. According to one doctor, "making sure that patients return for another check-up, is as important as a good treatment."

Supportive supervision of service providers should be provided for after all training. The purpose of this is to identify problems experienced by service providers who will now be expected to practice an unfamiliar role and to apply a newly-learned set of skills. To further ensure that they are managing patients correctly, it is suggested that this type of supervision be carried out by a medical doctor with clinical experience in the management of RTIs particularly among low risk populations.

It will help if algorithms are printed in flipcharts or guide posters so that they can be easily read by the health worker without having to open the manual. It would also help to have a poster or flipchart that contains all the key messages and information that should be told to the patient. With a variety of patients to deal with everyday, health workers may find it difficult to shift from one topic to another.

Condom use is a key component of RTI management and prevention. As such, clinics with health workers who have undergone a training in RTI management and which are expected to provide these services should be provided with penile models.

One of the most important aspects of treatment is assuring patients that it is safe to use multiple drugs. As one doctor put it, it is necessary to "discuss the diagnosis and inform the clients why they have to take so many drugs at one time." It can also help to ease their apprehensions if the health worker gives the clinic phone number and offers her/his services in cases of any untoward side effects. The importance of taking the full course of prescribed medications must be communicated clearly to the clients.

Another important need of any RTI management approach is a set of guidelines for patients currently using FP methods, particularly IUDs. A special criteria for removal or non-removal of IUDs should be developed, as based on proven medical principles.

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Discussion:

Ms. Chaves' presentation was followed-up by input from Dr. Renee Faldas of the Department of Health of the Philippines, summarized as follows:

- The question remains as to what is normal or abnormal discharge?
- The DOH plans to prepare guidelines for the treatment and diagnosis of RTI/STD among children (given the case of the 3 year old girl who was found to have been abused and contracted gonorrhoea, among other cases.)
- Legal issues surrounding nurses giving prescriptions were raised. Indeed it would be better for trained nurses to be able to provide prescriptions than for people to seek out over the counter antibiotics on the basis of advice from friends.
- There are current initiatives for training in syndromic management to involve some groups of pharmacists, to improve the chances of people being provided with appropriate treatment.
- Limitations on time for counseling is consistently a problem so we have worked to provide IEC materials and also to prioritize counseling time for those who are most obviously in real need.

In further discussion, the suggestion was raised that counseling duties could be delegated to counselors, as with the study in Jakarta, since it became clear that the doctors and nurses could not find the time and could not easily acquire the skills. So counselors were brought in.

3. Using Self-Administered Questionnaires to Estimate the Prevalence of Reproductive Tract Infections and High Risk Sexual Behavior, in Peru

(by Jeanne A. Noble, Population Council Peru, Krishna Roy, Population Council Washington DC, and Aníbal Velasquez, INPPARES, Lima, Peru)

Jeanne A. Noble, presenter
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Summary

The objective of this operations research study was to test the feasibility of using a self-administered questionnaire to gather sensitive information from client populations with varying levels of formal education. The principal advantages of a self-administered questionnaire, as compared with traditional interview techniques, are its low cost and the privacy it affords the respondent when supplying potentially embarrassing or sensitive information. Given the sensitivity of the subject matter, the area of sexually transmitted diseases (STDs) and high risk sexual behavior is a classic candidate for testing the validity of self-reported information.

In Lima, Peru, the IPPF affiliate INPPARES tested the feasibility of using self-administered questionnaires to collect data on the STD risk profile of its client from three clinics serving populations of different socio-economic backgrounds. The self-administered questionnaire was evaluated with regard to: *minimum acceptability* (measured by the percentage of completed questionnaires returned at each site, as well as an assessment of questions most frequently left unanswered.); *instrument validity*, or the ability and willingness of different types of respondents to provide accurate responses to personal questions without the assistance of an interviewer; and *internal reliability*.

High return rates across the three study sites (89% of distributed questionnaires were returned) and high response rates to questions about STD experience and sexual behavior suggest that self-administered questionnaires are a socially acceptable way to collect sensitive information from populations of different socioeconomic strata.

The validity of the information obtained through self-administered questionnaires was evaluated by comparison with similar information available as clinic service statistics, including socio-demographic variables and the prevalence of RTI symptoms. Across study sites, there was a high level of consistency between questionnaire responses and service statistics, suggesting that most individuals are willing and able to provide accurate responses to simple questions without the assistance of an interviewer. High levels of internal consistency in response to questions about sexual behavior further suggest that self-administered questionnaires can be used among populations with limited education, as long as questions are well formulated and leave little room for individual interpretation.

I. Study Objective and Justification

The objective of this operations research study was to test the feasibility of using a self-administered questionnaire to gather sensitive information from client populations with varying levels of formal education. The principal advantages of a self-administered questionnaire, as compared with traditional interview techniques, are its low cost and the privacy it affords the

respondent when supplying potentially embarrassing or sensitive information. Given the sensitivity of the subject matter, the area of sexually transmitted diseases (STDs) and high risk sexual behavior is a classic candidate for testing the validity of self-reported information. There is also a growing need for STD-related information among program managers working to broaden family planning services into reproductive health care, often with fixed resources. Estimating STD prevalence or providing routine STD screening based on laboratory testing remains cost prohibitive for many programs. The additional information related to STD risk obtained through self-administered questionnaires could significantly improve the accuracy of syndromic diagnosis, which remains the most feasible approach to STD management in many resource-poor settings.

The present study represents the first step in a three part process. If self-administered questionnaires prove to be a feasible methodology in terms of acceptability, reliability, and validity, self-reported information on sensitive issues should be compared with similar data obtained through traditional interviews to better assess its comparative advantage. Finally, the predictive value of self-reported information in the detection of STDs should be measured by laboratory testing, with regard to both sensitivity and specificity.

II. Methodology

In Lima, Peru, the IPPF affiliate INPPARES tested the feasibility of using self-administered questionnaires to collect data on the STD risk profile of its client population. Three clinics were selected from the INPPARES network to serve as study sites: *Patres*, located in an upper-middle class neighborhood and serving an adult clientele; *Futuro*, an adolescent clinic operating in the same locale as *Patres*; and *San Juan de Lurigancho Community Clinic*, a small establishment operating in an urban slum and serving a population with limited education and disposable income (Cuánto, 1995).

The self-administered questionnaire was evaluated with regard to: *minimum acceptability* (measured by the percentage of completed questionnaires returned at each site, as well as an assessment of questions most frequently left unanswered); *instrument validity*, or the ability and willingness of respondents of different socio-economic backgrounds to provide accurate responses to personal questions without the assistance of an interviewer; and *internal reliability*. Instrument validity was evaluated in two ways: first, by comparing the socio-demographic profiles of clients obtained from questionnaire data with that of service statistics collected at each clinic during the study period;¹ and second, by comparing the percentage of respondents reporting current symptoms of a reproductive tract infection with the percentage of clinic visits during which such symptoms were detected by providers, obtained from a review of clinical records at each site. Instrument reliability, or the extent to which respondents provided consistent information about sexual behavior, was evaluated by cross-checks between responses to different questionnaire items.

Female and male versions of the questionnaire were created, based on provider checklists originally developed and tested by Family Health International (see Appendix). The questionnaires consisted of 17 questions for women and 16 for men, including purpose of visit,

¹This type of validity test refers to *concurrent validity*, when the information obtained from a test instrument is validated by demonstrating a correlation with a criterion immediately available.

socio-demographic characteristics, STD history, and recent sexual behavior.² Both versions were pre-tested with INPPARES clients, resulting in small adjustments in the wording of STD-related questions (e.g., providing colloquial terms referring to the “reproductive tract”) and adding explicit instructions that every question should be answered. Questionnaires were distributed by the clinic receptionist to all persons entering each site, including those accompanying clients. To preserve anonymity, respondents were requested to deposit completed questionnaires into a sealed container. Providing a private area for questionnaire completion was considered, but was not possible to implement due to space limitations at the three sites.

At Patres and Futuro, approximately 30 (non-consecutive) days of data collection took place between January and April of 1997. At San Juan de Lurigancho, questionnaires were distributed on all days of clinic operation between February 12 and March 14.

Although demographic data is regularly collected and maintained in the form of service statistics at the larger INPPARES facilities, statistics on the prevalence of STD symptoms and/or diagnoses are not, necessitating a review of records for all persons seen during the study period.³ The prevalence of symptoms and diagnoses calculated from client records are based on the provider’s physical examination of the client, without a laboratory confirmation of etiology.

RESULTS

I. Instrument Acceptability

Return of Questionnaires

In total, 1454 questionnaires were distributed and 1290 (89%) were returned in a complete form. Questionnaires were judged to be incomplete and thus excluded from analysis when the back side of the two-sided form was left blank. In addition, a small number of questionnaires returned by a group of men and women at Patres, who were observed filling out their questionnaires together while discussing highly improbable responses, were judged to be invalid. After this occurrence (during the first week of data collection), all receptionists were instructed to request each respondent to complete the questionnaire without the help of others. No further cases of overt data falsification were reported during the remainder of the study.

Two-thirds of the questionnaires distributed were completed by women and one-third by men with nearly identical response rates (88% and 89% respectively). Of the three study sites, San Juan de Lurigancho (SJL) had the highest completion rate (94%), possibly influenced by the fact that the receptionist could more easily observe respondents who declined to return the questionnaire in the small, uncrowded waiting area. Table 1 displays the distribution of questionnaires and the percentage of valid returns by site. High response rates across the three study sites suggest that populations of different socioeconomic strata are willing to complete self-administered questionnaires in clinic settings.

²The additional question included in the female version is whether the respondent currently has lower abdominal pain.

³Clinical histories were reviewed for all clients seen during the month of February at Patres and Futuro, and during the entire study period (February 12 - March 14) at SJL. At Patres, where a wider range of services are available, records were reviewed for general medicine, gynecology, and family planning visits only.

Table 1 Number of Questionnaires Distributed and Completed by Sex and Clinic

	Patres			Futuro			SJL		
	Distrib.	Valid*	%	Distrib.	Valid*	%	Distrib.	Valid*	%
Women	520	454	87	235	202	86	216	203	94
Men	291	254	87	150	137	91	42	40	95
Total	811	708	87	385	339	88	258	243	94

*Valid = Returned questionnaires with responses appearing on both sides of form.

Question-specific Response Rate

Ninety-seven percent or more of both women and men from all sites answered the questions related to current signs of a reproductive tract infection and to questions related to recent sexual behavior (with the exception of male respondents at San Juan de Lurigancho, where only 93% answered the question relating to partner's sexual behavior). The lowest question-specific response rates were obtained from San Juan de Lurigancho with respect to the four-part question on past experience with specific STDs (gonorrhea, syphilis, genital warts, and AIDS), answered by 85 and 88% of women and men respectively.

Table 2 Percentage of Questions Answered by Sex and Study Site

Questionnaire items	Patres		Futuro		SJL	
	Women N=454	Men N=254	Women N=202	Men N=137	Women N=203	Men N=40
Presence of unusual discharge	99	99	99.5	100	98	95
Presence of genital lesions/ warts	98	99	99.5	99	97	100
Current pain in lower abdominal area (Female questionnaire only)	98	-----	99.5	-----	99	-----
Past diagnosis/ treatment for gonorrhea	94	94	98	98	89	88
Past diagnosis/ treatment for syphilis	93	94	97	98	84	88
Past diagnosis/ treatment for genital warts	94	94	97	98	84	85
Past diagnosis/ treatment for AIDS	93	92	97	98	83	90
Have you had sex during past 3 months	99	100	98	99	97	98
Does your partner have other partners	98	99	99	99	97	93

High response rates to questions about STD experience and sexual behavior suggest that self-administered questionnaires are an acceptable way to collect sensitive information.

II. Instrument Validity

Socio-demographic Profiles

As a general measure of instrument validity, responses to socio-demographic questions were compared to similar data on client characteristics maintained at each SDP (service delivery point). The following tables display age, marital status, and educational attainment for female questionnaire respondents as compared with service statistics by study site. Comparison of male responses with service statistics was not possible due to the limited number of men attended during the study period (37 at Patres, 5 at Futuro, and none at SJL). Respondents who reported that they were accompanying a client and did not intend to receive services themselves have been excluded since they are not represented in services statistics.

It should be kept in mind that exact correspondence is not expected given that the time period represented in service statistics and the days on which questionnaires were distributed are not perfectly matched at either Patres or Futuro, meaning that some difference is attributable to sampling error. At SJL, differences attributable to sampling error are minimal given that approximately 90% of those represented in service statistics also completed questionnaires.

Table 3a Percent Distribution by Socio-demographic Characteristics: Questionnaire Responses and Service Statistics Compared

Patres, Female Clients	Questionnaire Data N=393	Service Statistics N=1941
<i>Age</i>		
Under 20	2.5	1.0
20 to 29	45.3	45.7
30 and older	52.2	53.2
<i>Marital Status</i>		
Single	29.0	37.1
Married /in-union	62.8	59.3
Separated/Divorced/Widowed	8.1	3.6
<i>Highest Level of Education</i>		
Primary or less	1.3	4.6
Secondary	21.2	22.9
University/Post-secondary technical	77.6	72.5

Table 3b Percent Distribution by Socio-demographic Characteristics: Questionnaire Responses and Service Statistics Compared

Futuro, Female Clients	Questionnaire Data N=159	Service Statistics N=328
<i>Age</i>		
Under 20	41.5	51.8
20 to 29	55.3	48.2
30 and older	3.1	0.0
<i>Marital Status</i>		
Single	84.9	91.0
Married /in-union	13.8	9.0
Separated/Divorced/Widowed	1.3	0.0
<i>Highest Level of Education</i>		
Primary or less	2.5	2.1
Secondary	49.7	30.2
University/Post-secondary technical	47.8	67.7

**Table 3c Percent Distribution by Socio-demographic Characteristics:
Questionnaire Responses and Service Statistics Compared**

SJL, Female Clients	Questionnaire Data N=183	Service Statistics N=185
<i>Age</i>		
Under 20	7.2	9.8
20 to 29	46.4	48.5
30 and older	46.4	41.7
<i>Marital Status</i>		
Single	13.7	11.0
Married /in-union	81.4	89.0
Separated/Divorced/Widowed	4.4	0.0
<i>Highest Level of Education</i>		
Primary or less*	15.4	24.4
Secondary	53.1	53.8
University/Post-secondary technical	31.4	21.9

*Excludes those who never attended school

At Patres and SJL, there is very little variation between age distributions calculated from questionnaire data and service statistics. The only notable difference at Futuro is that 42% of female respondents reported that they were under 20 compared with 52% of all female clients recorded in service statistics.

With regard to marital status, there is a close correspondence between questionnaire data and services statistics at Patres and a nearly perfect correspondence if single and separated or divorced women are collapsed into one category. At Futuro, the proportion of respondents reporting that they were married or in a consensual union is somewhat higher than that found in service statistics, but is likely due to different criteria used to define “in-union” by respondents and clinic staff. While respondents may report that they are in a union if they have a boyfriend or girlfriend, the criterion used by Futuro staff is limited to co-habiting couples. At SJL, the two data sources report very similar proportions of women as single, and there is only an 8 percentage point difference between the data sources with regard to women in union.

With respect to education, questionnaire respondents were asked for the highest level of education completed while service statistics report the highest level initiated and whether or not it was completed. For the service statistics data displayed in tables 3a-3c, “complete” and “incomplete” were grouped together at each level. Similarities in the educational distributions obtained from the two data sets disappear at all sites when “incomplete university” is grouped with “secondary” and “incomplete secondary” is grouped with “primary”, suggesting that most respondents actually reported the highest level initiated, whether or not it was completed.

Based on the adjusted service statistics, there is a close correspondence between the two data sets at the Patres site. At SJL, 19% of clients appearing in service statistics were reported to have no formal education. It is reasonable to assume that most individuals who never attended school are illiterate and would be unable to complete a written questionnaire, in contrast to service statistics where all information is obtained verbally. After excluding those who never attended school from analysis,⁴ there is a close correspondence between the educational distributions calculated from questionnaire data and from service statistics.

⁴The few questionnaire respondents who reported never having attended school and likely completed the form with assistance from a friend or family member were also excluded from analysis.

At Futuro, there is a 20 percentage point difference between the two data sets with regard to post-secondary education: while just under half of respondents self-reported having a post-secondary education, over two-thirds of clients have a post-secondary education according to service statistics.⁵ Having the respondent indicate the last year of a given level completed, as well as providing more specific options (such as university and post-secondary technical school as opposed to “superior”) might provide more consistent results. However, the inconsistencies in socio-demographic data at Futuro also raise the possibility that young adults are less reliable respondents.

III. Internal Reliability and Validity

Presence of RTI Symptoms and Sexual Behavior

The reliability and validity of responses to sensitive questions, such as the presence of symptoms of an RTI (reproductive tract infection) and sexual behavior, have been evaluated by internal cross-checks between questionnaire items and by comparison with the percentage of clinical histories containing references to RTI symptoms during the study period. “Presence of RTI symptoms” includes any type of genital lesion or discharge that the respondent considered to be abnormal, which may or may not be the result of an STD.

The first check for internal consistency is a cross tabulation of current RTI symptoms (discharge or genital lesion) with sexual behavior, expecting to see the lowest rate of symptoms among those reporting no sexual activity during the past three months, an intermediate rate among those reporting monogamous sexual activity during the past three months, and the highest rate among respondents with more than one current sexual partner.

Table 4 Percentage of Respondents Reporting RTI Symptoms by Sexual Behavior

Sexual Behavior	Patres	Futuro	SJL	All Sites	All Sites
	Women N=442	Women N=201	Women N=193	Women N=822	Men N=422
Not sexually active	29	25	25	27	20
One partner only	42	46	54	46	14
More than 1 partner	60	50	79	64	15
χ^2	p=.06	p=.04	p=.01	p<.001	NS

The distribution of female respondents at all three study sites follows the expected pattern, suggesting that questions were understood and answered honestly.⁶ An inconsistent pattern is seen among male respondents (pooled across sites) where those reporting no recent sexual activity also reported the highest rate of current symptoms, suggesting that their responses to questions regarding sexual behavior may be unreliable.

A second check for internal consistency is a cross tabulation of responses to the last two questionnaire items

⁵This discrepancy is not corrected by regrouping service statistics data by highest level completed, which produces the following distribution: 12% with complete primary education, 75% with complete secondary education, and 13% with complete university education.

⁶The Spearman correlation confirms a weak positive relationship between presence of RTI symptoms and number of sexual partners among female respondents (Value=.157, p<.001).

13) Have you had sex during the past 3 months?

- a) Yes, with only 1 person.
- b) Yes, with more than 1 person.
- c) No, I have not had sex within the last 3 months.

14) Do you think that your partner has had other sexual partners in the past 3 months?

- a) Yes, I think so
- b) No, I do not think so.
- c) I have not had sex within the last 3 months

The “incorrect” combination of responses is reporting no sexual activity to question 14 and some other answer indicating sexual activity (a or b) to question 13. In total, inconsistencies were found in only 4% of female cases at Patres and among 11% of male cases at the same site. At Futuro and SJL, 6% of female respondents gave inconsistent responses compared with 8 and 5% of male respondents, respectively. In sum, the large majority of respondents supplied consistent information regarding sexual activity, suggesting that such questions were understood and answered honestly.

Performing the same consistency check, while controlling for education, demonstrates that there is very little difference in the proportion of inconsistent responses by level of education. Among all female respondents, 6% of those with some primary education gave inconsistent responses to questions 13 and 14, compared with 5% of those with some secondary education and 5% of respondents with university education.

In addition to internal reliability checks, the proportion of respondents reporting RTI symptoms was compared with the proportion of patient records with references to RTI symptoms. As displayed in table 5, there is a close correspondence between questionnaire responses and clinical records among women seen at Patres and Futuro and less than a 10 point difference between the two data sources at SJL.

Table 5 Percentage of Female Respondents Reporting RTI Symptoms Compared with Clinical Records

	Questionnaire Data	SDP Records
Patres	42	37
Futuro	45	44
SJL	54	46

Clinical diagnoses (based on a physical exam) were made for all symptomatic clients. Table 6 displays the distribution of diagnoses, as recorded in client records, grouped into the following categories: “Probable STD” includes diagnoses of condyloma, trichomonas, and PID; “Unlikely STD” includes yeast infections, ovarian cysts, cervical polyps, and dysmenorrhea; and “Indeterminate” includes cervicitis, vaginitis, and vaginal discharge. Across sites, the large majority of diagnoses are in the indeterminate category, meaning that the provider was unable to specify the probable etiology of the infection.

Table 6 Percent Distribution of Provider Diagnoses by Likelihood of STD

	Patres N=615	Futuro N=144	SJL N=96
Probable STD	5	6	15
Unlikely STD	10	13	7
Indeterminate	85	81	78

Combining behavioral risk factors (e.g., having more than one partner) with the presence of RTI symptoms may be a more accurate predictor of STD prevalence than either self-reported or syndromically diagnosed symptoms alone (Finger, 1997). A significant proportion of all survey respondents reported at least one possible risk factor for STDs.

Table 7 Percent Distribution of Respondents by STD Risk Factors

STD Risk Factors	Women				Men
	Patres N=454	Futuro N=202	SJL N=203	All Sites N=859	All Sites N=431
+1 current partners	5	5	8	6	9
Suspect partner has other partners	17	16	23	18	10
Single & currently sexually active	30	62	16	34	46
Current symptoms of RTI	41	41	50	43	15
Previous diagnosis/treatment of RTI	48	38	59	48	14

Creating a Model for Risk Assessment

Beyond a simple combination of self-reported symptoms with any behavioral risk factor, a scale of relative risk can be constructed, indicating when treatment is most likely to be needed. The following schema could be used for the self-administered questionnaire under evaluation: respondents would be assigned 8 points if they reported current RTI symptoms; 5 points for reporting more than one partner in the past 3 months; 1 point if self-reporting as “single” and sexually active in the past 3 months (indicating a new or casual partner); 1 point if the respondent suspects that their current partner has other partners; and 1 point for a past diagnosis or treatment of an RTI. The following criteria could then be used to prioritize treatment:

1. Score of 0-8 = *Additional indications needed to decide whether treatment needed.* These respondents may have symptoms, but no other risk factors, or conversely, behavioral risk factors but no symptoms.
2. Score of 9 = *Strong probability that client should receive treatment; results of gynecological exam should help inform provider’s decision.* These respondents have current symptoms of an RTI, plus one additional behavioral risk factor (excluding having more than one current partner).
3. Score of 10-16 = *Treatment indicated.* These respondents have current symptoms and more than one partner; or have symptoms, previous diagnosis and/or treatment of RTI(s), and suspect that their partner has other partners and/ or self-report as single and currently sexually active.

Applying this model to assess the relative STD risk of respondents at the three study sites produces the distribution displayed in table 8.

Table 8 Application of Risk Assessment Model Constructed from Self-administered Questionnaire: Percent Distribution of Respondents

Level of STD Risk	Women				Men
	Patres N=454	Futuro N=202	SJL N=203	All Sites N=859	All Sites N=431
Low risk (0-8)	69	66	60	66	90
Intermediate risk (9)	17	18	23	19	7
High risk (10-16)	14	16	17	15	3

This information has ready applications for program management, suggesting a clear need for STD screening and treatment at all sites. As a result of this study, INPPARES is developing and testing clinic protocols for STD detection and treatment that will eventually be implemented in its clinics throughout the country.

IV. Problematic Questions

A few questionnaire items were not specific enough to produce interpretable results. First, respondents were asked three separate ‘yes’ or ‘no’ questions about the purpose of their visit: had they come for family planning services; for another type of service; or to accompany a client to the SDP. When the questionnaire was designed, it was assumed that most respondents would give an affirmative response to only one of the three questions. However, a significant proportion of respondents at each site gave more than one reason for their visit.

Table 9 Percent Distribution of Respondents by Motive for Visit

Purpose of Visit	Patres		Futuro		SJL	
	Women N=447	Men N=251	Women N=199	Men N=136	Women N=199	Men N=40
Family planning services	34	31	40	43	68	53
Other services	81	39	65	26	80	38
Accompanying client	16	64	21	63	29	74
% responding affirmatively to more than one item	30	32	28	34	61	53

Although it is certainly likely that *some* respondents were seeking more than one type of service, or both seeking services and accompanying a friend, the fact that more than half of all respondents at SJL gave two or three motives for their visit raises doubts as to whether the series of questions was understood by these respondents. This implies, naturally enough, that it is easy to misinterpret questions when there is no interviewer available to provide clarification. Combining the three questions into one with three possible responses may have yielded more interpretable results.

When purpose of visit is cross tabulated by educational level, a more probable distribution of responses is evident among those with secondary education or higher.

Table 10 Number of Motives Given for Visit by Level of Education, Female Respondents

Level of Education	No motive (%)	1 motive (%)	2 motives (%)	3 motives (%)	N
Primary or less	10	43	22	25	49
Secondary	4	56	32	8	287
University	3	64	30	3	471

Only 3-4% of those with higher education failed to give a reason for their visit, compared with 10% of respondents with primary education or less. Likewise, while only 3% of those with university education and 8% of those with a high school education responded affirmatively to all three motives (seeking family planning, seeking other services, and accompanying a friend), 25%

of those in the lowest educational group did so.⁷ Thus, it may be that respondents in the lowest educational group had difficulty understanding the question.⁸

Second, respondents were asked if they had ever had a vaginal/genital infection diagnosed by a doctor or nurse and were then asked if they had ever received treatment for such an infection. It was thought that these questions would indicate the proportion of respondents who at one time had an unmet need for STD services, indicated by untreated infections. However, the number of respondents reporting past treatment slightly exceeded the number of respondents reporting past diagnoses at SJL, and among women at Patres and men at Futuro. This is not necessarily an inconsistent response pattern given the common practice of purchasing medicines directly from pharmacies without previous medical consultation. Estimating unmet need for STD services would require more specific questions about how any previous symptoms were resolved.

Table 11 Percent Distribution of Respondents by Previous Diagnosis and Treatment of an RTI

	Patres		Futuro		SJL	
	Women N=445	Men N=245	Women N=198	Men N=135	Women N=193	Men N=34
Previous diagnosis of infection	41	12	35	7	44	13
Previous treatment	44	11	34	10	51	18

Given that 41% of all female and 10% of all male respondents reported having a previous infection, the virtual absence of affirmative responses to questions referring to previous diagnoses and/or treatment of gonorrhea, syphilis, or genital warts suggests that the medical names of STDs are not widely recognized, likely due to the fact that etiologic diagnoses of STDs are infrequent and/or there is an inadequate exchange of information between service providers and their clients. In either case, asking respondents about their past experience with specific STDs does not appear to be feasible.

Table 12 Percent Distribution of Respondents by Previous Diagnosis and/or Treatment of Specific STDs

	Patres		Futuro		SJL	
	Women N=454	Men N=254	Women N=202	Men N=137	Women N=203	Men N=40
Diagnosis/treatment of Gonorrhea	1	3	0	1	5	5
Diagnosis/treatment of Syphilis	0	2	0	1	1	3
Diagnosis/treatment of Genital warts	2	2	0	0	2	0
Diagnosis/treatment of AIDS	0.4	0.4	0.5	0.7	0.5	0

⁷The Chi-square test for level of education and number of motives for visit confirms a dependent relationship (Value= $p < .001$). When respondents who failed to give a motive for their visit are grouped with those who gave 3 motives (proxy for an incorrect response), compared with those giving one or two motives (proxy for correct response), there is a positive correlation between level of education and responding “correctly” to the question (Spearman’s correlation coefficient=.179, $p = .01$).

⁸It is also possible that the lower income clients seen at SJL have a greater unmet need for health services and thus are more likely to report more than one motive for their visit. However, similar information was not available in service statistics for cross verification.

V. Lessons Learned

Across study sites, there was a high level of consistency between questionnaire responses and service statistics, suggesting that most individuals are willing and able to provide accurate responses to simple questions without the assistance of an interviewer. High levels of internal consistency in response to questions about sexual behavior further suggest that self-administered questionnaires can be used among populations with limited education, as long as questions are well formulated and leave little room for individual interpretation. Clearly, in settings where a significant proportion of respondents are illiterate, self-administered questionnaires are not a feasible method of data collection.

A basic flaw in instrument design was the imperfect match between questionnaire items and the socio-demographic questions routinely asked by SDP staff. Differences between the two data sets may have been exaggerated by subtle differences in the phraseology of questions and the specificity of allowed responses. For example, questionnaire respondents should have been asked for their exact age (rather than their age group) and the number of years of school completed at the highest level initiated (rather than the highest level completed).

Closer attention should have been paid to issues of internal consistency during the pre-test of the questionnaire. During the analysis stage, it became clear that some items did not produce interpretable results due to lack of specificity. Although the same questions may have been satisfactory for a traditional survey where the interviewer could provide clarifications, there was too much room for interpretation in the self-administered setting. The absence of the interviewer also necessitates observation of respondents during questionnaire completion to insure that groups of individuals do not intentionally provide inaccurate responses.

Study results highlight the fact that health clinics (or at least those closely associated with family planning services) are not a feasible venue for collecting STD-related information from men.

A final lesson learned during the study is the benefit of collecting data during one continuous period, thus facilitating comparisons of questionnaire data with clinic statistics that often must be compiled by hand. At the Patres site, a large sample size and heavy client flow (captured in service statistics) made exact chronological correspondence between the two data sets less important. At the smaller site of Futuro, however, an unnecessary degree of statistical “noise” was introduced by comparing questionnaire responses and services statistics from only partially matched periods of data collection.⁹

VI. Next Steps

Having tested the basic feasibility of using self-administered questionnaires to collect sensitive information from client populations, a next step is measuring the instrument’s contribution to the syndromic diagnosis of STDs by health care providers. To better serve as a risk assessment tool, additional questions should be experimented with including frequency of condom use, total number of sexual partners, and number of new partners during the past six months. Measuring the self-administered questionnaire’s contribution as a risk assessment tool

⁹This was not a factor affecting San Juan de Lurigancho where questionnaire distribution occurred over a continuous period and was matched with service statistics accordingly.

could be accomplished by comparing the sensitivity and specificity of syndromic diagnosis when based on physical examination alone, with the performance of syndromic diagnosis when information obtained from a self-administered questionnaire is coupled with a physical exam. Requesting clients to complete questionnaires in the waiting room, prior to being seen, would allow respondents to answer sensitive questions in private (if not anonymously), thus partially preserving a key advantage of the self-administered approach. Pre-coded forms could be used so that respondents would not have to write their names on the actual questionnaire.

An additional advantage of obtaining STD-related information through self-administered questionnaires, versus provider-based intake, is the assurance that all relevant questions are indeed asked. Evidence from Peru suggests that family planning providers perform little or no screening for reproductive tract infections or behavioral risk factors before offering IUDs to interested clients (Leon, 1997). In Ceará, Brazil, the 1993 Situation Analysis found that only 6% of women seeking gynecological services in public facilities were asked anything about their experiences with STDs and only 3% were asked about their number of sexual partners (Noble, 1997).

Combining the syndromic approach based on clinical examination with an assessment of STD behavioral risk factors obtained from questionnaires, could represent a significant improvement over syndromic management alone, while remaining cost-effective. Given the initial positive results of the self-administered questionnaire, in terms of both completion rates and low levels of inconsistent responses, further testing is warranted to more precisely determine the instrument's contribution to STD detection and treatment in resource poor settings.

Note: The Appendix including the English translation of the Health Survey is not included here. Please contact Population Council, Peru, if you would like a copy.

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Discussion:

This was a low budget study involving no diagnostics, but focusing on the feasibility of using a self-administered questionnaires for risk-assessment. The questionnaire was found to be very acceptable, but still needs further adjustment and testing. The advantage of self-administered tests is the privacy for giving answers which may foster greater openness and honesty in responses. There was a suggestion that computer questionnaires are another way to get this benefit which have been found to be useful by PATH. Of course, without diagnostic data connected to the questionnaires, risk categories cannot accurately be determined, so this questionnaire development process is still in early stages and further testing is needed. There remains the question of the reliability and validity of the answers - whether or not people choose to be completely honest. A similar questionnaire however, could also be used as a provider checklist, once the key questions are narrowed down, although experience with this type of risk assessment has not yielded many answers in terms of the best questions indicative of “high risk.”

There was further discussion about the cultural acceptability of bringing up questions of sexual behavior and STD status. There was feeling among local Indonesian representatives that many clients may not want to know their risk status or their infection status, and that informing clients and their partners of infection could have negative effects, “beyond the imagination,” such as repercussions within marriages, including divorce and violence. There is a range of experience and opinion on this topic and the answers are not easily found.

4. Reproductive Tract Infections and the Private Sector in Vietnam

(by Vu Quy Nhan, Population Council - Vietnam)

(Not presented at the Workshop due to unforeseen circumstances preventing Dr. Vu Quy Nhan's attendance)

The establishment and development of private health sector in Vietnam.

1.1. The establishment of private practice in medicine and pharmacy.

Prior to the Economic renovation (Doi Moi), in Vietnam there was only one health care system: the state (public) health care network. The preventive and curative health facilities were widely developed throughout the country, with an emphasis on remote rural and mountainous areas. In such a health care system, health services, both preventive and curative, were free of charge to all Vietnamese citizens, whether they were state employees or mere citizens. For the Northern people, the total reliance on the state health facilities has roots in the thirty years of subsidized system (1954-1986). But it is quite different for Southern people, who were familiar with well developed private health care system in South Vietnam prior to the reunification of the country in 1975, and are ready again to pay for health services. This difference explains the fast and wide development of private health service in the South, in contrast to the rather slow process in the North.

Along with the Economic renovation where private economy is recognized, private practices in medicine are also permitted by the State. The Decree on Private practice in Medicine and Pharmacy, was approved by the Standing Committee of the National Assembly on 30 September 1993[1]. According to this decree, every Vietnamese person who has criteria and conditions as defined by this decree may open a private practice in medicine and pharmacy. Foreign individuals and organizations, overseas Vietnamese who want to have a private practice in medicine and pharmacy, must get permission from the Ministry of Health.

The forms of private practice in medicine and pharmacy defined in the decree are: hospital, maternity, polyclinic or specialized consultation cabinet, dentistry, dentistry prosthesis, laboratory, functional exploration laboratory, X-ray unit, esthetic operations, nursing and rehabilitation unit, health unit providing injections and nursing care, and family planning services.

The decree also defines the following forms of private practice in traditional medicine: traditional medicine hospital, consultation unit, nursing and rehabilitation by using traditional medicine, unit for acupuncture, massage, acupuncture points treatment, medicinal herb steam treatment, and traditional medicine prescription.

Different forms of private practice in pharmacy include: private pharmacy, sale representative of pharmaceutical company, private business, joint-stock company, limited company, pharmaceutical enterprise; and traditional medicine shop.

According to this decree, state employees who are still working in public health and pharmacy institutions may have their private practice out of working hours. Private doctors can perform medical examinations but are prohibited from selling medicine.

On 20 January 1994, the Government issued a decree to provide details on some prior articles of decree on private practice in medicine and pharmacy[2]. According to this decree, graduated physicians and pharmacists who wish to have private practice must experience at least five years of practice.

Private practice in family planning as defined by this decree, allowed services include: menstrual regulation (early induced abortion by manual vacuum method); IUD insertion; no-scalpel vasectomy. The following procedures are not permitted in private institutions: induced abortion; female sterilization (tubectomy); IUD removal; and to restore the sterilized vas or fallopian tube.

The Ministry of Health issued technical guidelines in private practice in medicine and pharmacy along with the ministerial decision No.606/QD-BYT of May 4th, 1995 [3]. Only reproductive health related items are presented here:

**ObGyn consultation cabinet:* permitted procedures are: consultation and treatment in Obstetrics and Gynecology, to provide prescription, primary aid and emergency; if the provider is capable and having got permission of Provincial Health Bureau, the cabinet may provide: IUD insertion; cauterization of the cervix; colposcopy; biopsy; specimen taking; breast biopsy via exploratory puncture; and no-scalpel vasectomy. The following procedures are prohibited : female sterilization; induced abortion (menstrual regulation and D&C); IUD removal; reconstruct the dissected vas or fallopian tubes; antenatal check, and pregnancy registration.

**Maternity* can provide the following services: normal delivery; assisted delivery with vacuum extractor; antenatal check, pregnancy registration, IUD insertion (but not IUD removal); menstrual regulation; urine test.

**Family planning centers* can provide: family planning motivation and IEC; IUD insertion (not removal); treatment of common gynecological infections for contraceptive purpose; and no-scalpel vasectomy. The following procedures are not allowed: any type of induced abortion; female sterilization; reconstruction of dissected fallopian tubes; delivery of a baby; and other obstetrical procedures and operations.

1.2. Various types of private practice in medicine and pharmacy.

1.2.1. Different types of private practice in medicine.

The Government decree defines all types of permitted private practice in modern and traditional medicine as mentioned above. In reality, various types of private medical practice are now available in Vietnam, including:

*Physicians with their own private consultation cabinet who do not work for the state health institutions. These are: retired doctors (who may retire at the officially fixed age or may due to some reasons retire sooner); those who left the state institutions for health reasons or due to staff reduction policies ; and those left the army.

*Polyclinic or medical center for consultation, medical exploration or laboratory where physicians, pharmacists and laboratory technicians work together (in the form of capital contribution or hired by someone who invests the capital). Consultation cabinet can be polyclinic or specialized such as: dentistry, Obstetrics and Gynecology, ORL, Internal medicine.

*Private hospital: In Vietnam so far there is only one private hospital in Da Nang. Private hospitals are rare because there is a lack of capital.

*Physicians and pharmacists who are still working for the state but also run their private consultation cabinet or pharmacies out of working time, or on holidays and weekends.

*Public hospitals or clinics provide services with fees, where the clients may also select providers.

1.2.2. Private practice in traditional medicine.

Medical colleges also train graduate students in traditional medicine. Students are trained for the same length of time as students of modern medicine.

Graduates in traditional medicine receive a diploma and bear the title of physicians in traditional medicine (or oriental medicine doctor).

In addition to physicians in traditional medicine formally trained, there are many traditional healers who always publicize saying that they have inherited a secret, traditional prescription for certain disease(s) from their ancestors and they can cure many diseases . In fact, nobody knows how true it is or about the quality of their services.

1.2.3. Private practices in pharmacy: these include pharmacies who may procure the medicaments from different supply sources. These medicaments are registered by MOH's pharmaceutical management body. However non registered items whose sources of supply and quality are unknown, are often of poor quality. Through a recent inspection mission by Ministry of Health officials in early 1997, false items of drug were also found but in very small proportions (0.3% of controlled items).

1.2.4. Private practice in traditional drugs : Traditional drugs (herbs, animal parts or products, and minerals) are provided by traditional medicine providers in shops, markets or public spaces.

1.3. Quantity of private physicians in modern medicine:

The exact number of private physicians is not known even by the Ministry of Health, because due to authority decentralization within health sector, permission for private practice is issued by the Provincial Health Bureau. The types of service provided through private sector are also not known because many private doctors registered to provide one type of service in practice may provide other or many non-registered services. According to the government decree, this is in principle illegal.

Generally speaking, private doctors are concentrated in urban settings and cities and towns where there is a need and where the clients can afford to pay for services. In remote rural and mountainous areas, where the people are poorer or very poor and may not be able to afford paid health services, and the private doctors do not want to provide services because they cannot earn money.

According to reports from the provinces to the Ministry of Health [3], in 1996 in Ho Chi Minh City, there are 3,117 private medicine units; Hanoi has 947 units and An Giang (shares border with Cambodia) has 1,139 units, while Kon Tum (Central highland) has only 30 units.

The medical service management unit of the Ho Chi Minh City Health Bureau reports [13] that in 1996, in Ho Chi Minh City there were 4,010 private health units, including: 2,838 consultations either in internal medicine or specialization, 16 charity consultation units, 11 maternity, 509 traditional medicine units, 394 dentistry cabinets, 199 health units providing injection and minor wound care, 13 esthetic surgery units, and 30 medical massage units. Private practices in pharmacy include: 1,663 pharmacies, 262 traditional drug shops, 97 traditional drug processing units.

1.4. The quality of private practice in medicine and pharmacy.

In 1997, The Ministry of Health conducted an inspection mission of private practices in medicine and pharmacy [4]. The result of this inspection mission showed that by 31 December 1996, in the whole country there were 13,270 private medicine units, 10,181 private pharmacies and 4,463 traditional medicine units.

According to the inspection mission's findings, the *positive effect of private health sector* is its contribution in providing consultations and treatment to many patients, thus reducing the overloaded work of public health sector and also reduces the waiting time of patients at public health institutions. The development of a geographically wide network of private pharmacies, especially in urban settings has enabled customers to get medicine in a convenient way.

For example, in Ho Chi Minh City, with 4,000 private health units, if each unit has only 5 clients/patients a day, in one year (1996) the private health sector can provide 7,200,000 consultations/treatments while the City public health sector achieves 12,000,000 consultations/treatments in the same time-period.[13]

But the *private health sector also has its drawbacks* . According to a report of Ministry of Health, a number of private health units committed mistakes in professional guidelines and regulations, or caused harm and physical damage or medical complications to patients and deaths have occurred. Out of 8,588 private health units inspected, 2,897 units (33%) provided more services than permitted. Many units do not have as much equipment as registered; or boasted more than their real capacity, or publicizes incorrectly about characteristics of some medicine brand name. Many pharmacy owners who usually are pharmacists were not present in their pharmacies at the time of inspection. The Mission was received by the sale clerks. Of the pharmacies visited, 7% of them provided some poor quality items, and in three pharmacies (0.3%) fake medicines were found. Medicine is usually provided to clients without asking for a physicians' prescription. Many private traditional medicine units existed without formal registration.

A report from the Ho Chi Minh City Health Bureau shows a high prevalence of private health units which do not observe the regulations on private practices in medicine and pharmacy: 72% in 1994, 52% in 1995 and 34.31% in 1996. Violations include: expired permission; not compliance to any of items of regulation; incorrect sign board; pharmacists being absent when the pharmacies were visited; the facility is too small or dirty with insufficient light and poor sanitation; the doctor provides more services than permitted; and inappropriate advertisement of certificate or diploma.[13]

2.Reproductive Tract Infections (RTIs) in Vietnam.

2.1.Prevalence of Reproductive Tract Infections(RTIs) in Vietnam.

It is hard to know the exact prevalence of the RTIs in Vietnam, because there has not been any population-based survey and only some small hospital or clinic-based data are available from ObGyn hospitals or polyclinics, or centers for maternal and child care and family planning. Even in these data , RTI prevalence is given differently due to different study methodologies and criteria used. The same is true for STD prevalence.

While population-based surveys on *Reproductive Tract Infections (RTIs)* are not available, the medical providers and experts in some specializations in medicine (ObGyn, family planning and dermato-venereology) provide different estimates in the prevalence of RTIs and STDs. In her report, Dr. Nguyen Kim Cuc from Vietnam Women's Union [5] estimates RTI prevalence among Vietnamese women of reproductive age to be as high as 50 to 80%. Another study on 400 women aged 15-50 in five rural communes in the Northern and Central of Vietnam reports an RTI prevalence of 66.6%. (*Nguyen Hoai Duc, 1995*) [7]. However, in a recent study conducted in the Hue MCH/FP Center (*Christopher Elias and Nguyen Thi Loi, 1997*) [8], RTI prevalence is found to be 21.2%, among which endogenous infections constitute 17.2% and other RTIs, 4.7%. Among STDs, trichomoniasis is (2.8%), syphilis (1.2%) and chlamydia (0.8%). This study also reveals the wide discrepancy between clinicians' presumptive diagnosis with the diagnosis as confirmed by laboratory examination. In this study, while 80% of women reported vaginal

discharge, only 65.4% of women self-reporting vaginal discharge were clinically diagnosed as having RTIs. However only 21.2% were confirmed by laboratory examinations as having RTIs. Therefore, if diagnosis of RTIs is based on clinical examination alone, one may expect an inflation of RTI diagnosis and thus, a high RTI prevalence. The adverse effect of this inflation in RTI diagnosis means many women will be overtreated for an RTI, when in fact they do not have one. A study was conducted by the Institute for Protection of Mothers and Newborns (IPMN) in 1994, on clients of outpatient gynecology clinics. In the symptomatic group (aged 18-50 women report having vaginal discharge), prevalence of RTIs and STDs are as follows: candidiasis (22.2%), chlamydia (2.6%), gardnerella (2.6%), gonorrhoea (0.0%), and trichomoniasis (5.6%). In the asymptomatic group, the respective prevalences are :13.6% (candidiasis), 3.4% (chlamydia), 2.6% (gardnerella), 0.0% (gonorrhoea), and 0.6% (trichomoniasis) (*Phan Thi Kin Anh et al, 1996*) [11].

Based on reports to the Institute of Dermatology and Venereology (IDV) *Sexually transmitted Diseases (STDs)* have increased from 17,906 cases a year in 1976 to 30,120 in 1995 and 49,212 cases in 1996 (*Pham Van Hien, 1997*) [9]. Among reported cases of STDs in 1996, gonorrhoea constitutes 10.64%, syphilis 6.68%, and other STDs 82.67%. The author estimates the true number of STD cases might be as high as 10 to 20 times higher than the reported figure because a very high proportion of STDs patients perform self-treatment. Self-treatment might be said as a common bad practice among Vietnamese, either rural peasants living in the country sides or urban settings dwellers. They usually conduct a self-treatment based on their own experiences in the past, or suggestions and/or advises from friends and relatives. In Vietnam, all kinds of medicine can be purchased over the counter and the private pharmacies also want to sell their items, not asking for physicians' prescription. In many instances, clients asking for help from pharmacy keepers who, are not always pharmacists, based on client's reported symptom, provide medicine to client as if s/he is a physician cum pharmacist. The pharmacist might be reluctant in advising the client to see a doctor, since s/he is afraid that the client will buy medicine somewhere else after having a medical examination.

The specialized hospital in dermatology and venereology in Ho Chi Minh City in 1996 examined 296,806 patients, finding 13,316 cases of STDs (4.5%)[10]. Also according to this report, the Center of MCH/FP of the City examined 812 women aged 15-39 and found 2.5% women to have chlamydia , 0.7% have gonorrhoea and 0.5% syphilis.

2.2. Reproductive Tract Infections and private health sector.

In the public health sector in Vietnam, patients with RTIs and STDs may seek help from general medicine consultation units. If a patient with an RTI or STD is a woman in her reproductive year, she usually seeks help from specialized units such as: gynecology clinic, center for family planning, or the maternity or ObGyn department of general hospital. Once she is diagnosed as having an STD she will be referred to a dermatology and venereology clinic or hospital. Male patients may seek care from polyclinics or clinics or hospitals specializing in dermatology and venereology .

Since the State of Vietnam issued the decree on private practice in medicine and pharmacy, the private health sector has contributed in providing health services in general and in treatment of RTIs and STDs in particular. According to the decree, the registered private doctor can provide only the types of services registered which means for example, obstetricians are allowed to provide ObGyn, MCH/FP services as defined in the decree. If a doctor provides other or additional services, s/he may be considered as non-compliant to regulations and may incur penalties or have her/his permission withdrawn. In reality, many private health units provide either more services or other services than permitted or both. Thus, according to this decree, only private specialized units in ObGyn and MCH/FP may provide services to RTI patients and specialized units in dermatology and venereology can provide services to STDs patients. In fact, RTI and STD patients can seek help from any private health unit either general or specialized one.

Many private practitioners do not comply with the government decree, and therefore they do not cooperate in providing data and information relating to their diagnosis and treatment of RTI and STD patients. RTI patients and especially STD patients prefer private doctors to public doctors, as private doctors agree to hide patient's identity and profession. The services provided by private doctors are always confidential.

A pilot study on reproductive health services provided by the private sector (medicine and pharmacy) conducted in Ho Chi Minh City and in Viet Tri town in 1997 by The Population Council Vietnam showed that private doctors specializing in ObGyn, MCH/FP do have a lot of RTI and STD clients. Visited physicians did not want to provide detailed information on the number of RTI and/or STD clients, the prevalence of specific STDs, and how they manage STDs. The general subjective impression of the observers/interviewers is that the quality of services is poor due to the lack of needed equipment and essential laboratory tests in the majority of private health units. (Some medical centers are better equipped and managed by experienced doctors can provide better quality services. But there are only few of them). The relationship and collaboration between private and public health sectors in management of RTIs and STDs has not yet been established perhaps due to both clients and private doctor reluctance to contact the public health sector.

The majority of STD patients in Vietnam are prostitutes, bar-girls and female massage parlor workers. These people, especially prostitutes, due to the illegality of their profession according to existing law, are afraid and try to avoid public health services. They prefer private doctors who are willing not only to provide them with better medical examination and treatment but also to keep confidential their profession and identity.

In a study on "Access to reproductive health services by prostitutes in Ho Chi Minh City" conducted by The Population Council Vietnam in collaboration with Save the Children UK and Ho Chi Minh City Psychology Association's Social Studies Unit (*Le Thi Phuong Mai, 1997*) [12], prostitutes reported their preference for private doctors for the following reasons: convenience, no waiting time, will not be recognized by friends or relatives, private doctors are confidential, private doctors provide better care even though clients have to pay more .

Also in this study, private practitioners (one with specialization in ObGyn, and the other in dermatology and venereology) were interviewed. Doctors reported that some of their clients are prostitutes, and usually had white vaginal discharge. Commonly encountered diseases among prostitutes are : genital warts, genital ulcers, and gonorrhea but syphilis is rare. Interviewed doctors also reported that in general, young prostitutes are more likely to have STDs due to their frequent sex encounters with multiple partners. Private doctors treat clients with RTIs and some STDs, but clients with syphilis are always referred to hospital specialized in dermatology and venereology.

4. Discussions and recommendations

1. For various reasons, some patients with RTIs and especially those with STDs seek help (examination and treatment) from the private health sector. Assuming that the majority of private doctors are not specialized in gynecology or dermatology-venereology, the lack knowledge on these diseases, and have poor equipment and laboratory facilities, one might worry about the quality of services they provide. Over time, private doctors may have some laboratory equipment but they still need to have access to updated information on RTIs and STDs.

Private doctors should be provided with training and/or updated information on RTI/STD prevention, diagnosis and management as it has been done by Institute of Dermatology and Venereology. It is important to conduct further study on the establishment of relation and collaboration between private and public health sectors in RTIs/STDs health education, IEC activities and in prevention, diagnosis and treatment.

2. The majority of patients with RTIs and STDs, especially prostitutes, because of the illegal status of their “career” and inferiority complex, usually try self-treatment. This malpractice may lead to antibiotic-resistance in patients and community or make acute diseases become chronic. Reproductive tract infections and sexually transmitted diseases should be integrated into health education in general and specifically in reproductive health curriculum. Provide health education on RTIs and STDs prevention focusing on high risk sexual behavior group such as prostitutes (although access to them is not always easy), restaurants and discotheques girls, bar girls and massage parlor lounge girls.

3. The role of private pharmacies is also important since pharmacy keepers may be the first persons to get contact with RTI/ STD patients, when requested to provide medicine at the patients’ demand. Health education and information on RTI and STDs should be provided to pharmacy keepers and pharmacists so that they can counsel their clients. However, this may not work given that pharmacy keepers are willing to sell their articles for financial benefit, rather than pay attention to whether their customers’ diseases may become chronic or if they develop antibiotic-resistance.

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5. Overview of Reproductive Tract Infections in Vietnam

(by Dr. Lynellyn D. Long, Population Council - Vietnam)

(Not presented at the Workshop due to unforeseen circumstances preventing Dr. Lynellyn Long's attendance)

The purpose of this overview is to review the situation of reproductive tract infections (RTIs) in Vietnam based on research conducted to date and field observations of reproductive health and clinical practices. In what follows, I outline some current issues regarding: RTI prevalence, the relation of RTIs to reproductive health, institutional management of RTIs, the private sector role, validation of syndromic approaches, client perspectives and perceptions, and current sexual and social practices. I then propose future directions for research and training on RTIs. Specifically, I discuss the need for more research on: vulnerable populations, the clinical management of IUDs and abortions, syndromic management of certain RTIs, and current sexual and social beliefs, practices, and networks. I also argue for upgrading the current sentinel surveillance system and for more training in infection control procedures. In the conclusion of the paper, I contrast the current situation in Vietnam to other countries in the region.

Prevalence of RTIs

Carefully designed studies on sexually transmitted disease (STD) prevalence rates among women seeking care in MCH/FP programs indicate that STDs are low, while there is a moderate prevalence of endogenous RTIs (Hue MCH/FP and Population Council 1997; Hieu and Stoeckel 1997; Uhrig 1997). The majority of reported RTI infections are candidiasis and bacterial vaginosis. However, most clinicians – particularly those practicing in the private sector – believe that STD prevalence is higher and increasing (interviews in HCMC 1997). To date, there have been no population based studies but such data will be extremely difficult to obtain. Sentinel surveillance systems have been established but need to be upgraded and established in areas of the country where clinicians believe STDs are increasing.

The study of RTI prevalence conducted by the Hue MCH/FP with support from the Population Council finds that the rates of most RTIs even among symptomatic women are low; nevertheless, clinicians diagnose much higher rates (Hue MCH/FP and the Population Council 1997). These findings have implications for current practice. The authors of the Hue study (1997:21) propose that “case management efforts for symptomatic women should focus on the more common endogenous infections as opposed to more costly, difficult, and largely unsuccessful attempts to provide presumptive treatment for cervical infection among this population of women.” Clinicians also need better training in diagnosing and managing RTIs and should be aware of the pressures that their clients may be placing on them to over-prescribe.

RTIs in relation to Reproductive Health

Current reproductive health practices affect vulnerability to RTIs. Vietnam has one of the

highest IUD contraceptive prevalence rates in the world (Nhan 1994). Of currently married women using any method, 33.28% reported using the IUD (ICDS 1995:58). Yet, IUDs are sometimes inserted with insufficient attention to infection control procedures and women may be suffering from RTIs due to these insertions. However, to date, there have not been any studies to assess whether women using IUDs have higher rates of RTIs and under what conditions these rates increase. Similarly, surgical abortions in Vietnam are very high and increasing in Vietnam (MOH and WHO Assessment 1997). In 1992 the reported rate was 2.5 abortions per woman (Goodkind 1994). However, there is also increasing evidence of insufficient infection control in even the best settings (MOH and WHO Assessment 1997). The Council is currently assisting the Thai Binh Medical School to develop a prospective, case control study to evaluate post abortion complications.

A third reproductive health concern is that cervical cancer rates appear to be increasing in Vietnam but there is very little health infrastructure to address early diagnosis and treatment of this disease (IPMN/Hanoi data). Discussions with practitioners also suggest that they may not be following best clinical practice in managing this disease. Many cervical cancer patients are seen in the private sector or during private hours so more research is needed in these sites as well.

Institutional Management of RTIs

Vietnam as many countries has a multiplicity of institutional actors involved in RTI research and management including the Ministry of Health, Institutes of Dermatology and Venereology, National Committee on AIDS, hospitals, and STD clinics. However, the first line management of RTIs has been pushed down to the commune health station level where practitioners are usually the least trained. Observations at this level suggest that clients may not be managed and referred appropriately. Male clients are also rarely seen at this level and providers fear to notify male partners. More training of midwives and physicians assistants is needed in effective RTI case management.

At the national level, many different institutions have primary responsibility for setting national policies and overseeing clinical practice. Given the range of issues that RTIs cover especially when seen in the broader context of reproductive health, there is a need for cross-institutional and disciplinary collaboration and support. The danger is, however, that with so many actors, no one assumes responsibility for total case management, prevention, and control and important aspects are not addressed. Coordination mechanisms across programs and institutions are badly needed.

The Private Sector

Given the social stigma associated with RTIs, it is not surprising that an increasing number of clients are turning to the private sector for treatment and care – or of great concern, self-diagnosing. In recent visits to private Ob/Gyn clinics in HCMC, practitioners reported that their primary case load is RTIs and specifically cited cases of trichomoniasis, bacterial vaginosis, candidiasis but only a few cases of chlamydia, cervical cancer, and very few of gonorrhea. Only

two doctors reported treating patients with syphilis and HIV/AIDS. Clients say that they go to the private sector because of the personalized attention and confidentiality. Long waits comparable to the public sector did not seem problematic.

The concern is, however, as more clients seek their care in the private sector, there are currently limited institutional mechanisms to ensure of training and supervision of these practitioners. Although many private practitioners also practice in the public sector and have access to training opportunities through these sites and hours of practice, some private doctors work entirely outside the public system. Specifically, young doctors and retired doctors may have little access to public training opportunities. Of greater concern to the Vietnamese Government are those doctors who operate without licenses and are unqualified but may nevertheless be sought after by clients.

More investigation is also needed into if and how private practitioners refer clients with RTIs and whether they diagnose most RTIs through clinical exams or through laboratory testing. Although the doctors we interviewed reported sending their specimens to national laboratories, there are undoubtedly many less skilled practitioners who are not testing and may not be competent to diagnose RTIs correctly. Another concern is that patients in the private sector are not being counted in national surveillance systems.

Validation of Syndromic Approaches

The over diagnosis of RTIs among many practitioners argues for training more practitioners in syndromic approaches. However, as Hieu and Stoeckel (1997) find that syndromic management of certain RTIs also results in clients being over diagnosed. Such an approach also requires knowing the prevalence of specific RTIs in the population – data we still lack -- and current clinical practice. There may also be gender differences in the effectiveness of this approach. For example, syndromic management of urethra discharge in men whereas the flow chart for vaginal discharge in women results in high levels of over-treatment for cervical infection (Hue MCH/FP and the Population Council 1997).

Syndromic approaches should also be validated in different settings (Hue MCH/FP and the Population Council 1997). Most validation studies have been conducted in countries in Africa where prevalence of certain RTIs is quite high but there are almost no published studies from Asian countries and none which provide evidence to support this approach in Vietnam.

Client Perspectives and Perceptions

Vietnamese women commonly complain of RTIs. Several studies note how Vietnamese women believe that RTIs come from standing in rice paddy fields or dirty water (Whittaker, oral communication 1996). The basis for these beliefs, however, has not been adequately investigated. The Council's recent research suggests that water and sanitation information campaigns may have been so effective that all complaints are attributed to dirty water (Vietnam Women's Union and the Population Council 1997). A related concern is women's definitions of an RTI. For some

women, it appears that a discharge of any kind may be considered an RTI. More investigation is needed of the specific terms that men and women use to describe their complaints and what other symptoms they experience.

Interestingly, little research has been conducted on male complaints of STDs although the data suggest that STDs are increasing among men. Because the family planning system has focused on women, men have little access to preventative services and counseling until diagnosed at an Institute of Venereology. Not surprisingly, given the structure of services, much of the research on client beliefs and practices to date reflects this same gender bias.

RTIs, even if not sexually transmitted, are highly stigmatized in Vietnamese society and focusing on women makes comprehensive treatment and partner notification more difficult. More research is needed to understand how to address the stigma attached to RTIs and how to do careful partner notification – especially of married women. This calls for knowing more about both male and female clients' perspectives in order to help doctors do a better job of addressing clients' concerns.

Current Sexual and Social Practices

Even if the current prevalence of most RTIs is low in the general population, experiences from Cambodia, Thailand, and China suggest that these rates can rise rapidly especially in the face of rapid socio-economic change. Vietnam is facing profound changes in the transition to a market economy. Several studies conducted in different parts of the country suggest that sex work is increasing rapidly and the forms and venue of sex work are changing (Franklin 1993). New sexual networks internally and across borders are being created and sex tours are coming to Vietnam (Hoang 1992; Kelly 1993; Care 1997). Likewise, IV drug use is increasing and HIV/AIDS continues among these users who constitute the majority of new HIV cases. Again, these rapid changes point to the need for high quality monitoring and surveillance systems. Even though STD prevalence in Vietnam may currently be low, there is a need to be prospective and preventative given the experiences in other parts of Asia.

Research and monitoring should also be targeted at the next generation whose practices do not reflect those of their parents. Pre-marital sex among youth is increasing but many youth know very little about STDs and their prevention (Nhan and Hang 1996; Population Council 1997). Our research in Quang Ninh shows that out-of-school youth know very little about HIV/AIDS and almost nothing about other STDs (Population Council 1997). Most reproductive health programs and interventions, however, are designed for classrooms where there is little attention to youth's social concerns. More investigation is needed to determine how best to provide information to youth, what kind of information they need, and where such information should be provided.

Research Agenda

There is a need to formulate a more broad based and comprehensive research agenda and training that goes beyond married women in clinics to look at changes in the broader population and to address the health needs and health seeking behaviors of those in vulnerable situations such as sex workers and their male clients, migrants, IV drug users and their partners, out-of-school youth, construction workers, truck drivers and others involved in transport and tourism. Although it is important to determine RTI prevalence rates in the broader population, there is a critical need to go beyond defining the problem to preventing it. In formulating a research agenda, it is also critical to take a reproductive health approach that includes both men and women and a variety of actors and institutions.

In terms of defining the incidence and prevalence of RTIs, sentinel surveillance systems need to be upgraded or established in rapidly developing and transitional areas of the country. More consideration should be given to doing sentinel surveillance among youth especially those out-of-school youth and to different groups in border areas, where cross border trafficking is increasing.

Within the family planning system, attention needs to be paid to how decisions about different contraceptive options (including abortion in the Vietnam context) affect the prevalence of exogenous RTIs. Careful monitoring of infection control procedures should be undertaken. If there is a higher prevalence of RTIs in clients undergoing certain procedures, such findings should provoke further investigation of whether current infection control procedures are adequate in different settings. Case control studies are needed to determine whether the IUD or abortions increase women's risk and if so, under what conditions. Even without more research, observations of several service delivery sites point to the need to provide more training and monitoring of infection control procedures (Ministry of Health and Population Council 1997; MOH and WHO 1997).

Research, as proposed in the Hue MCH/FP Study, is also needed to validate syndromic management of different RTIs in various clinical settings. In addition, such research should be gender disaggregated and conducted not only at MCH/FP clinics which women utilize but also at the Institutes of Venereology and hospital clinics where men are more likely to seek treatment for STDs.

More careful interviewing and systematic observation is needed to determine men and women's beliefs and practices with regard to RTIs. Too much of the research has been conducted by practitioners who impose their own biases on the respondents and women may not feel that their responses will be held in confidence. Women's beliefs and models about health are also not fixed or simplistic. Our observations suggest that most women – even the most highly Western trained physicians – practice a combination of Western, Chinese traditional and folk remedies for any given illness or set of illnesses. Moral beliefs and ideas about the right way of living also seem to inform these practices. Yet, to understand such complex beliefs and practices requires more than brief one to two hour focus group interviews with a group of strangers and much more in-depth research along with a more open mind and sympathy to different

perspectives. Such research would do well by beginning with in-depth interviews with practitioners about their own practices.

Research on current sexual and social practices should be expanded and is critical to understanding whether the prevalence of certain STDs is likely to increase or decrease in a given population. Such research is particularly important given the limitations of the current sentinel surveillance systems and the difficulties of ensuring anonymity in clinical research. Yet, the difficulties of ensuring anonymity also hamper sexual research. Creative approaches and methodologies are needed to document people's sexual and social networks and practices. In our work we have found that time allocation studies, social network analysis, and narrative strategies which allow groups to tell about current norms of behavior and practice rather than forcing an individual to reveal his/her particular practices are all useful strategies (Population Council 1997). Without such research, we would not know that cross border trafficking may be increasing in certain areas or that sexual networks are expanding in Ho Chi Minh City beyond commercial sex workers and their clients. Such research is critical for designing prevention strategies and interventions now and for the future.

Finally, in the context of Vietnam's campaign against social evils, there is a need to use research results constructively to encourage debate and discussion among policy makers, program managers, and other researchers. Too often research on RTIs stays within a narrow circle of already informed individuals without reaching the broader audiences of decision makers. This is particularly a problem when research results go against prevailing wisdom and assumptions about who is most at risk in the society and/or when RTI rates are lower than previously thought. Thus, research findings need to be presented in ways to inform a broader public about RTIs and their prevention.

Conclusions

In this brief overview, I have outlined some of the major current issues affecting prevention, control and management of RTIs in Vietnam today. These issues are: determining RTI prevalence, the relation of RTIs to reproductive health, institutional management of RTIs, the private sector role, validation of syndromic approaches, client perspectives and perceptions, and current sexual and social practices. Following a review of each issue, I then propose future directions for research and training on RTIs. Specifically, I argue for more research on specific groups of people (both men and women) living and/or working in ways that increase their risk of RTIs. Such research can assist in upgrading the current sentinel surveillance system. In addition, research and training are needed to improve current infection control procedures with abortions and IUD insertions and removals. Other research is needed with both men and women to validate syndromic management of certain RTIs. Finally, socio-cultural and behavioral research is needed to understand prevailing beliefs and practices about RTIs and to determine the social and sexual networks in order to act preventively.

In 1993, a Care Report predicted with regard to HIV/AIDS that "Vietnam today is in much the same situation as Thailand was in 1988" (Kelly 1993:2). There was a widespread concern that HIV/AIDS would spread rapidly from IV drug users and commercial sex workers

into the general population. Recent studies suggest that prevalence rates of sexually transmitted diseases (STDs) are less than feared. There is mounting evidence that the prevalence patterns of all RTIs are likely to be quite different in Vietnam, given its experience with socialism, when compared to Thailand and perhaps, other parts of Asia. At the same time, Vietnam is in the midst of an enormous transition and social mores are changing rapidly. People are also increasingly seeking treatment for RTIs in the private sector. While the experiences of Vietnam may not necessarily replicate those of other countries in the region, it will be critical to monitor and track these changes in relation to RTIs and to continue to improve care and management of RTIs for all clients.

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6. Strengthening Partner Notification: Experiences from Bangladesh

(by Sharif Mohammed Ismail Hossain and Syeda Nahid Mukith Chowdhury of Population Council, Bangladesh, and Joachim Victor Gomes of the Christian Commission Development in Bangladesh, CCDB).

*Sharif Md. Ismail Hossain, presenter
Program Officer, Population Council - Bangladesh*

INTRODUCTION

Bangladesh is culturally a conservative country where there are very big gender inequalities. The majority of the women do not have power in household decision making process and worked as a passive partner in sexual life. There is almost no discussion about sex and sexuality among husband and wife. As a result many of them have suffered or suffering from RTI/STD without proper attention. In reality, women's reproductive health and well being is interlinked with men's sexual health. It is relatively easy, to address RTI/STD for women through MCH-FP service delivery mechanism, but effective partner management is difficult. However, there is very little experience and facilities for addressing STD issues for men in Bangladesh. Population Council undertook this study with Marie Stopes Clinic Society.

BACKGROUND

MSC is a non-governmental organization which provides comprehensive reproductive health services in urban settings. One of the principles of the organization is to establish services which are sustainable, though non-profit. Clients are expected to pay. At the same time, MSC tries to create an environment which is client-centered and attractive -- often a contrast to public services. MSC effectively serves an emerging lower and middle class who are willing to pay for services.

In Bangladesh, MSC started its operation since 1988. It operates 7 urban clinics nationwide. MSC has 2 clinics in Dhaka, both in busy commercial areas. These are connected to the community through field coordinators who are responsible for marketing the clinical services among selected groups.

In 1996, MSC incorporated RTI screening services into their women's clinic. Approximately 44 percent of the women attending the clinic availed the RTI services; about one third of them were diagnosed with an RTI on the basis of syndromic diagnosis. This high prevalence RTI and when many of their clients utilized the clinics repeatedly with same or re-infection led to a programmatic decision to start services for men. MSC established two male STD clinics within the premises of existing female reproductive health clinic.

The purpose was to provide services for the male partners of infected women who were clients of MSC. Initially, referral card for partners were given to each woman client diagnosed with an STD. This intervention was designed to aimed at develop a model of STD service delivery by strengthening the existing clinic service delivery system, creating demand in the target population and adopting various modes of partner management within a clinic based service delivery system.

METHODOLOGY

Population Council undertook this study initially by **Assessing the needs** of the male clinics. Interventions were provided by **MIS and IEC Materials**. In addition, clinic staff were trained to provide the services. Continuous **Evaluation** was perform to measure the impact of these intervention. All male clients attending the two STD clinics, between July 1996 to March 1997 are the sample of the study. Out of the total 1467 clients 11 percent were STD clients, 28 percent were sexual performance anxiety clients and 61 percent were other clients (general, pathology, immunization, etc.).

Age Distribution of Clients by Types

Age Distribution of Clients by Diagnostic Group					
Age Groups	STD related conditions %	Sexual performance anxiety %	Other diagnoses %	Total	
				%	N
Less than 13	0.0	0.0	1.1	0.7	11
13-19	17.1	9.8	16.1	14.6	214
20-24	23.3	32.1	26.7	27.9	410
25-29	32.1	33.7	25.5	28.6	420
30-34	11.2	14.4	11.8	12.2	179
35-44	9.2	5.7	10.4	8.9	130
45-54	5.4	0.5	3.5	3.1	45
55 and over	0.0	0.5	2.6	1.6	23
Not stated	1.7	3.3	2.2	2.4	35
Total	100% N=240	100% N=368	100% N=815	100 %	1,467*

❖ *Of 1,467 clients, diagnosis was not found for 44 clients.*

The distribution of clients diagnosed as having 'STD' related conditions are highest among the age group 25-29 (32 percent), followed by age group 20-24 years (23 percent). One other important observation is that, among the 'Sexual Performance Anxiety,' the age group of 20-29 was highest (66%).

Level of Education of Clients by Types

Level of Education by Types of Clients					
Education	STD related conditions %	Sexual performance anxiety %	Others %	Total	
				%	N
No Schooling	17.0	6.2	12.3	11.4	168
Primary	25.0	19.8	25.9	23.8	350
Secondary	43.0	47.3	39.1	42.3	620
Higher Secondary	9.2	15.8	11.3	12.1	177
Graduate and Above	5.8	10.9	11.4	10.4	152
Total	100% N=240	100% N=368	100% N=815	100 %	1,467*

❖ Of 1,467 clients, diagnosis was not found for 44 clients.

The proportion of diagnosed STD cases is higher among the clients having secondary schooling (43%). The second highest proportion is among the primary education group (25%).

However, the outstanding feature of the client flow is the generally high education level of the clients (22%) with higher secondary education or above (national level is 32%). Interestingly, those with secondary education have a larger proportion of sexual performance anxiety problems. However, there is no significant difference of partner management with the level of education. One client refused to treat his partner who had 'no schooling.'

Marital Status of Clients

Marital Status of the Types of Clients				
Marital status	STD related conditions	Sexual performance anxiety	Others diagnoses	Total
Married and living with spouse (%)	19.6	19.0	59.0	100 % (463)
Married and not living with spouse (%)	16.0	32.0	50.0	100 % (206)
Never Married or not stated (%)	14.5	26.8	55.0	100 % (798)
Total Number	240	368	815	1,467*

❖ Of 1,467 clients, diagnosis was not found for 44 clients.

There are no significant differences between the proportions of STD related condition according to marital status. The higher proportion of STDs among married client (20%) most probably due to the aggressive partner management drive. However, those who are married and living with spouse are significantly less likely to be diagnosed as having 'Sexual Performance Anxiety' symptoms. But those who were unmarried and married but not living with their spouse were likely to be suffered from sexual performance anxiety. The later group, most probably stay away for the fear of performance anxiety. However, partner management is significantly related with the marital conditions and living with spouse.

Exposure Type of Diagnosed STD Clients

Types Of Exposure by Diagnostic Group					
Type of Exposure	STD related conditions %	Sexual performance anxiety %	Other diagnoses %	Total	
				%	N
CSW	50.4	24.3	8.1	18.5	312
CSW, Girl Friend (both)	0.0	1.3	0.6	0.6	11
Girl Friend	5.1	11.1	3.7	5.6	95
Male	1.1	0.0	0.1	0.2	4
No Exposure	4.3	3.4	1.2	2.1	36
No Exposure Recorded	39.1	59.9	86.2	72.9	1,231
Total	100 % N=256	100 % N=379	100 % N=996	100 %	1,689*

❖ *Of 1689 clients, diagnoses is missing for 58 clients.*

About 27% of the total clients had an exposure history out side of their marital condition and out of the diagnosed STD patients 50% have a positive exposure history with commercial sex workers (CSWs).

Use of condoms is not common for any type of exposure history. Only, 6% of the total clients (458) who gave their history of exposure were using condoms. But use of condom in every encounter was rare.

Presenting Chief Complaints

Percent Distribution of Clients by Chief Complaints			
Major Complaints	STD related Conditions	Sexual performance anxiety	Others Client
Urinary Problems/ Urethritis	52.5	11.5	6.2
Nocturnal Emission	4.0	18.4	2.0
Premature Ejaculation	2.2	19.0	1.4
Genital Itching	3.3	0.6	6.1
Infertility	0.4	4.8	0.5
Inguinal Swelling	1.8	0.4	1.1
Genital Ulcer	3.3	0.0	0.5
Impotence	0.0	1.7	0.2
Urethral Discharge	3.7	0.0	0.0
Others	32.2	43.3	81.9

Clients coming to the clinic for service provision were normally asked about their complaints for which they have come for treatment. Most of the STD clients presented urinary problem as their major complaint. These include burning micturation, pain during micturation, sugar coming out with urine, and semen is coming out before and after micturation. Fifty-three percent of the STD clients present urinary problem as their major complaints.

Approximately 5 percent of the 'Sexual Performance Anxiety' clients, presents infertility as a complaint was unprecedented. Similarly, nocturnal emission and premature ejaculation were the two most important causes, for which the clients have been using the clinics.

The proportion of STD diagnosis is highest among the occupation categories service (28%) followed by garment workers (25%) and business (15%). However, highest percentage of STD related conditions were diagnosed amongst the occupation category of transport workers (28%). Moreover, partner management was not associate with any occupation category.

Attempts for Partner Management

Several modes of partner management were attempted. Each mode was used for one month time to assess how many partners it could bring. Due to time constraints, impacts have not been measured adequately.

The modes of partner management were:

- 1) **Patient Referral:** Which means treatment of the client and option of medicine for client. The client was given a "Partner card" and requested the client to referred the partner to this clinic with this card.
- 2) **Treatment Only:** This means treatment of the client and option of medicine for client. The client was also offered free or subsidized medicine for her/his partner
- 3) **Provider Referral:** In this process clients were given treatment and option of medicine but no medicine for partner. The clients were requested to refer the partner to this clinic but information about partners were not collected and no attempt was made to collect name and address of the partners.
- 4) **Patient and Provider Referral:** Treatment to the client and option of medicine for client but no treatment for partner. Although the partner management was voluntary but clinic staff did not try to obtain name, address and did not try to contact with the partner. In addition to partner card, clinic staff gave a 'letter or slip' to the client requesting his/her partner to come over the clinic to discuss about her/his partner sickness or problem. The partner could come to any clinic (female's partner to male and vice versa). This letter had a measurable impact, which brought more clients than other methods. When partner came to the clinic with or without partner card or letter or slip, they were welcomed and problems were discussed. The diagnosis of the partner was collected from the partner record and were evaluated for the possible infection. The study revealed that most of the time the partner was asymptomatic. Hence, it was very difficult to detect case by partner notification in the absence of full diagnostic support. About 124 partners management were required but only 50% of them were collected through these processes. Approximately 50%, of the partner came with the letter or slip.

Although the study was conducted with the male clients but component of partner management was available in both clinics. Client information was collected from the other clinic if any partner came to the clinic with 'reference' or 'partner card' or with the letter or slip.

Over time, there was a steady increase in the number of STD related conditions and partner management. The total number clients increased 200% increased during 6 months period and partner management was doubled during the second half of the study period.

Constraints & Problems to Partner Management

Now I would like to address the partner management rather than partner notification. In a culturally conservative society like Bangladesh provider referral, partner notification or tracing the partner is not appropriate, given the existing sexual norm which allows only one sex partner.

In Bangladesh, it is culturally not appropriate to tell a woman that she is suffering from a disease which is sexually transmitted. If she does not have multiple sexual partners her husband might. Women might be frightened to tell her husband if she has more than one sexual partner where the consequence would be torture and divorce. On the other hand, men will not send their wives or partners if a provider discloses anything about his sexual behavior.

Where there is wide spread gender inequality, women do not have power to ask their husbands about extra-marital sexual intercourse, and disclosing the existence of other sexual partners could be devastating. There is the chance of divorce if a wife has extra-marital relations. Therefore, nobody wants to discuss extra-marital relationships and sexually transmitted diseases. Moreover, clients tried to hide exposure history and sources of infection. Men did not take supplied medicine from their wife if they are asymptomatic. The most common elicitation was " *You have disease, I do not have any problem, why should I take the medicine?*".

Partners were not referred by unmarried persons due to accidental partners they had (irregular, casual or CSWs). Most probably it was not done due to fear of breakdown of relationship. Similarly, the providers tend not to inform their clients about a disease which is sexually transmitted and which might be contracted from his regular or other sexual partners. Moreover, there is professional inadequacy in dealing with sexual health matters and communicating it to clients. Providers do not feel comfortable talking about STDs and sources of infection.

If any clinic is branded as a STD clinic, this could discourage clients from seeking care. For example, in this study, clients reacted as, "*That is an STD clinic, the doctor asks about sexual history, examines genitalia, and demands partners to come to the clinic.*"

STD service providers have to be prepared for clients who would come for sexual performance anxiety. These clients tend to have multiple sexual exposure with different partners to check the change (increase) in their virility. To cater for these large numbers of clients provider has to prepare mentally and logistically. To attend a single client provider needs 3-7 counseling session. However, married couple needs couple counseling where wife can provide psychological support and act as an active sexual partner.

Very few female partners came to the clinic referred by their male partners. This could mean that the male partners are not interested to send female partners to the clinic or it is not possible to bring casual/irregular partner. On the other hand a considerable number of male partners came to the clinic referred by their wives. This was made possible by the housewife due to

100% counseling on the issue and patient referring. CSWs did not send their partners to the clinic.

Policy Recommendations

Findings from the study suggest the following:

- Patient and provider referral combined seem to be the most appropriate mechanism in a conservative society. Culturally sensitive counseling and a letter mentioning problems and needs to discuss it with the doctors, are seem to be good approaches to bring partners at the clinic. Exposure history should not be a singular screening criterion for STD diagnosis because clients tend to conceal this information. It is virtually impossible job to trace partner in a society where couple do not discuss about sex and sexuality. Excluding the cost of provider resources, provider referral sometime could be devastating.
- Male STD intervention should be combined with general and other sexual health services as many of the STD diagnosis came from these two categories. A Clinic should not be banded as a STD clinic as it could deter people from seeking care.
- Providing STD services to men requires two pronged approaches.
 - Efforts should be made towards educating men and empowering them to talk about sex and sexuality.
 - Providers need training and psychological support to deal with the issues of sexuality and STDs. Extensive training of the providers is required to elicit accurate information.
- At least 3 counseling sessions are needed for sexual performance anxiety clients and providers should be able to provide these sessions.

7. Discussion Session:

Screening and Detection of STDs - The Limitations of the Syndromic Approach and Partner Notification for Case Detection Among Women

John W. Townsend, facilitator

Director, Asia & Near East OR/TA Project and Senior Associate, Population Council - India (New Delhi)

Dr. John Townsend summed up problems that have been highlighted by the studies presented. On one hand, there are reliability problems from the provider side, as we saw from Vietnam, the presumptive or syndromic diagnoses were very unreliable, and there are fears of stigmatization. There are also problems with reliability of labs, the problem of frequent false positives which can have severe consequences if a client is incorrectly informed that s/he has an STD. Finally, there are also problems from the clients' side, such as incorrectly reporting their symptoms or their behaviors. On the other hand, everyone is saying, what are we going to do about the problem of RTI/STDs? We need a screening instrument. And whether this instrument is a self-administered questionnaire, or a less than excellently trained provider, or a less than gold-standard test, we have major problems with all of these. So how can we proceed in addressing RTIs? There are three programmatic responses to this, some of which have been reflected in the presentations and discussion here, these are:

- 1) It's an imperfect world, let's go on with what we have, one day diagnostics will be better, at least it's something, and WHO says we should do it, etc.*
- 2) None of what we have is any good, in fact most of it is culturally insensitive and inappropriate, we should throw it all out and start again, putting off any intervention for another 10 years until we get it just right*
- 3) We need to learn more from what we have, work with it for now and try to reduce the error*

Key issues to keep in mind:

Dr. John Moran kicked off the discussion by warning us to keep in mind some key concepts:

We must keep in mind:

- 1. The health effects of each infection - Some are more dangerous than others**
- 2. The Question: What is the net benefit of the interventions we devise and implement?**
- 3. Cultural Context for Intervention Strategies**

- Dr. John Moran

Cultural context is very important and if we don't keep this in mind, cross-cultural public health discussions can be confusing and unproductive, and some useful strategies may be needlessly thrown out or re-applied elsewhere with negative consequences. For example, Dr. Moran pointed out that studies in some countries, such as Bangladesh, show that partner referral has been found to be very difficult to implement due to cultural sensitivities. But, in other countries, such as some in Africa, it has been found to work very well and be very useful for partner treatment and case finding.

Dr. Sharif Hossain from Bangladesh emphasized the cultural issue of perception about disease by reiterating points from his study. He found that about one third of his male clients who had come to seek services for STDs were not suffering from anything STD-related, but in fact had psychosexual problems, such as complaints about their low sexual power or performance, which they perceived as an STD. We must keep in mind that clients have different perceptions about what STDs are, what they define as an STD, and that many "STD clients" may in fact have unrelated sexual problems.

Problems with the syndromic approach:

In the syndromic approach, two different issues have been combined: *cervical* and *vaginal* infections and their detection from the symptom of vaginal discharge. Vaginal discharge is very often indicative of vaginal infection but not cervical infection.

- Dr. Christopher Elias

Dr. Elias went on to identify two clear issues:

- 1) We must develop a standardized case management procedure for women presenting with symptoms (we can't just say "it's no problem" or services and providers will lose their credibility in the long run); and
- 2) Cervical infections are very often asymptomatic or else they present as very acute PID with severe symptoms.

The syndromic approach at this point is the "lowest common denominator", it has many problems but we use it because we have no better alternative. But we should take the position that diagnostics should be used whenever possible to confirm infection status.

- Dr. George Schmid

Dr. George Schmid continued that there are two main benefits of using good diagnostic tests:

- 1) you are sure of what you tell the patient, and this gives both the patient and the clinician a lot of comfort, and
- 2) partner management - which is very difficult without a clear diagnosis.

Feasibility and appropriateness of partner notification and treatment.

There was lengthy discussion of the issue of informing clients and partners of the sexually transmitted nature of their infection, either suspected or confirmed.

A representative from a local hospital in Jakarta who had been involved in the Population Council's study on RTI service integration in the FP clinic, offered that he is convinced clients and partners should be notified if they have an STD. He faced no serious problems in his efforts to do partner notification, no cultural problems, and there was no reduced utilization of FP services. Another colleague suggested that it depends on how the clients are addressed, "we are talking about sex," there must be sensitivity. These doctors represent the view of providers who have been recently introduced to the procedures of RTI case management.

Speaking from the client's perspective, another participant suggested that informing someone honestly of whether they have an STD or not is not just a matter for case management but also is key for prevention of reinfection. This should be kept in mind, of course.

In Indonesia, we can't just tell people they have an STD, we have to find a way to tell a "white lie," to find an acceptable term, but also to address the problem from a public health point on view.

- Dr. Hassan Hoesni (BKKBN)

Dr. Sharif Hossain explained that in Bangladesh, to avoid mentioning the emotionally loaded term "STD," the couple were told, "you have some form of infection, your wife has some form of infection, so you both need to be treated."

[In Bangladesh] it was found to be completely unacceptable and impossible to bring up the idea that the disease came from someone else and that it is an STD.

- Dr. Sharif Hossain

From the FP program perspective, there was strong suggestion of the need to find a new term/package to address RTI/STD among FP clients. There are times when it is particularly difficult, such as for clients with BV, who may be suspected of also having an unconfirmed STD. How to address this with the client is a complex counseling question, requiring providers with skills, training and experience.

[Telling people that they definitely or possibly have a sexually transmitted infection] is a very difficult issue, but at some point we have to take it on - we cannot duck the issue by calling it something else.

- Dr. Christopher Elias

Defining and discussing RTI/STD - A new approach:

Dr. George Schmid of CDC Atlanta suggested a new approach for the definition of RTIs/STDs:

**RTIs consist of three types of infections 1) STDs, 2) Sexually associated diseases and 3) non-sexually-associated diseases.
- Dr. George Schmid**

What is an STD? A good definition is difficult to find. *An STD is an abnormal state in an individual which is the result of the transmission of a microorganism from one person to another and in which we want to find the transmitting partner to treat them and prevent infection to others.* This is key and it is simple in the case of STDs like gonorrhea and chlamydia, where we treat with antibiotics. In the case of herpes, although we cannot cure it in the same way, we still treat with counseling and include the partner, as it is clearly sexually transmitted.

As for BV, this is a *sexually associated* disease. It has many characteristics of being an STD, in terms of the behaviors that are associated with it, but yet no study has ever shown that treating the male partner has done anything to reduce the likelihood of reinfection of the woman. This implies that the counseling message for a woman with BV should be different from the message for a woman with an STD. Also for men with urethral discharge, many of these men are found to be negative for any known STD. If we tell these men they have an STD anyway and that we have to treat their partner, we have taken a guess and we take a real risk of destroying relationships. Also, what would we treat the woman for? We don't know. This is another case in which to use the term sexually associated disease. It diffuses the notion that the partner has willingly passed on an infection, but it allows for association with sexual activity. Similarly for women with PID. There are some who do not have and never had an STD. There is room for modifying the counseling message to be careful about impact and consequences for individuals when we as providers are not sure.

Diagnostic and Treatment Feasibility Issues

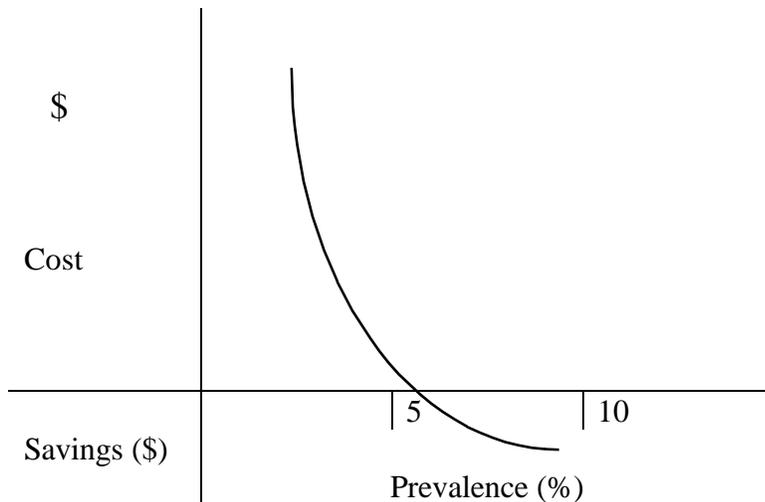
Dr. Moran, of HAPP/CDC, reminds us that diagnosis in the form of screening for all possible infections in order to be 100% sure of the next step in case management, is not feasible, especially in resource-limited settings. For example, it costs about \$5 to diagnose Chlamydia, but only about \$0.30 to treat it if we suspect its presence. So how do we decide what to do?

Dr. Christopher Elias asserted that we need criteria, or guidance for deciding when cervical infection prevalence in an area is worth doing anything about, or whether the limited resources should be targeted for use on vaginal infections, which are generally less severe but more prevalent. Dr. Elias ended by posing the question:

What do we do in borderline areas, where prevalence of cervical infection is 5-10%? Is expensive testing worth it?

Dr. Schmid suggested a helpful tool for this type of decision. We can look at it from an economic standpoint, with the goal being to save money. We can look at economic curves indicating at what prevalence of infection it would be cost-effective to screen. These calculations can help determine a basic cut off point between costs and savings.

Economic curve for Chlamydia based on Gen-Probe Diagnostics:



For chlamydia, there is a “threshold prevalence” around 6%, below which screening does not save money, because you are using more and more tests to detect fewer and fewer infections.
- Dr. George Schmid

For gonococcal infections, we don't know yet the threshold prevalence, the study has not yet been done. These types of studies are simply based on the cost spent on screening (tests, personnel, etc.) vs. the cost of the complications of untreated chlamydial infections (PID, involving 3 major complications: chronic pelvic pain, infertility and ectopic pregnancy). The general rule in the industrialized world is that an untreated case of chlamydia in a woman is worth about \$1,000. So if you spend less to detect and treat the infection, you are saving money. In the developing world things would be different, because medical expenses would be less, fewer interventions would be attempted. But ectopic pregnancy may result in death which has a high value in the developing world, so costs may in fact balance out. So this is an economic answer in dollars and cents: screen above 6% and not below 6%. But this is just the economic view. In fact, society values the complications which we prevent so that even below 6% it may be worthwhile to screen for chlamydia, as long as we know that we are spending money to do it. At prevalences of 6% and above we are saving money. This is a “no brainer”, or a “dominant strategy” in economics. We prevent costly outcomes, so we save money.

With regard to TPHA, Dr. Schmid also has data from a decision tree on whether or not to screen for syphilis. The answer is somewhere around a prevalence of 0.2% or above, 1 out of 500, which is quite low. The reason is that while preliminary symptoms are minor, the later complications to the few people who never got treatment along the line during their lives, are so complex and costly that it drives down the prevalence threshold. According to Dr. Schmid, even

in the developing world, a 1% prevalence of syphilis is well worth screening for. Screening for pregnant women is a special case. The consequences of congenital syphilis are so high and so socially unacceptable that we should just do it: screen all pregnant women for syphilis.

What about the consideration of limited-resource settings? And what about the other health interventions that the money could be spent on? All these issues should be on the table.

In deciding whether screening is worthwhile or not, we can use risk assessment mechanisms to narrow down groups from within the general population to bump up the prevalence to above the economic threshold (e.g. 6%). Thus, within that group, we can be confident of saving money.

“It is widely agreed that antenatal syphilis screening is an internationally recognized “best practice” but it is too rarely applied. It should be a benchmark intervention. If we can’t do this, can we really do any of these other less clear-cut interventions? With syphilis, we have a simple, accurate test, but no consensus on how to apply it. We worry about having no simple, accurate tests for other infections, meanwhile a real unsolved issue is how we would apply these tests. “

- Dr. Christopher Elias

Ethical Pros and Cons of Universal Screening of Pre-selected Populations:

While several participants supported the view that at a minimum screening for syphilis among all pregnant women should be provided by any reproductive health program, there were those who raised the issue of ethics and informed consent to screening.

**“What about confidentiality and clients’ rights?
What if clients do not want to be screened for an STD?”**

- Dr. Rosalia Sciortino

The connection was made to universal HIV screening in pregnant women in some countries, without any counseling to inform women about the issues surrounding the test or the possible results and consequences. According to Dr. Rosalia Sciortino, of the Ford Foundation, people must be informed and free to decide if they want to be screened.

On the other hand, it was argued, we are not talking about HIV, and it could take days for a doctor to inform a client about the intricacies of each diagnostic test and procedure. Moreover, clients, especially antenatal care clients, are coming voluntarily purely for preventive care, and this is part of optimal preventive care and it’s a question of what is routinely offered.

Can we afford to spend 20 minutes informing each client about syphilis before doing the test?

- Dr. John Moran

It was also mentioned that in relation to the ICPD, reproductive health initiatives now are attempting to address issues other than family planning and to address the fact that women are suffering in silence, the symptomatic women who don't get treatment. We do need to face the non-economic and non-family planning issues of reproductive health which are of ethical and public health importance.

8. Discussion Session:

Management of Non-Sexually Transmitted RTIs (Bacterial vaginosis and Candidiasis), Provider Knowledge, Diagnosis and Mis-Management Practices

George P. Schmid, facilitator

Assistant Chief for Science Translation, Division of STD Prevention, CDC-Atlanta

**Key Question: What constitutes the best care for people with non-sexually transmitted illnesses?
- Dr. George Schmid**

Non-Sexually Transmitted RTIs and Association with STDs

In response to a question about the transmissibility of yeast infections, Dr. Moran explained that yeast infections (candidiasis) are not sexually transmissible and thus not of great public health importance. These infections are indeed a bother, but do not have severe consequences. They arise due to changing conditions for the overgrowth of yeast, it is an overgrowth problem and there is nothing to be gained from partner treatment. As for BV, it is considered “sexually associated” but not sexually transmitted (as covered in the previous discussion). There is no need for partner treatment and it does not have severe consequences, such as for pregnancy or fertility. However, BV is sexually associated because it can be useful as a marker for other infections.

MPC (Mucopurulent Cervicitis) is the female equivalent of non-gonococcal urethritis in men. Often it is treated successfully as chlamydia, but it can have other causes. It does not seem to be a clear indicator of chlamydial infection and its significance and diagnostic criteria are unclear (beyond the scope of the present discussion).

A representative from the Philippines mentioned a study finding of high levels of vaginosis, asking whether this has any links with BV or any implications for vulnerability to other STDs.

**There is no real evidence that BV or Candida can lead to increased susceptibility to STDs. They are mainly just a bother for the woman and do not have severe consequences.
- Dr. John Moran**

Dr. Schmid from CDC Atlanta clarified that BV can be important in surgical situations, involving vaginal procedures. In these cases, care must be taken. As for enhanced transmissibility of HIV with presence of BV, this question is still in early stages of investigation.

Provider Knowledge and Practice

According to Dr. Schmid, in the US, clinicians have been surveyed on how they address BV and there is much hesitation about what to tell patients. Some actually told patients they had an STD. Dr. Schmid emphasized that we need to really keep in mind the effects on couples' relationships. It would be nice to know what adverse consequences ensue when people or couples are told in error that they have an STD, but we really don't know. There can be serious consequences such as relationship break-ups and also economic impacts in terms of the costs of diagnosis and treatment.

Often the problem is a borderline test result, and if the clinician decides to read it as positive this can have major consequences. Or for example, if a Pap smear is read as positive for trichomonas and this is used as the basis to inform a client that she has an STD. In fact, a Pap smear is a very poor tool for detecting trichomonas.

Mis-use of Albothyl?

Dr. Christopher Elias explained: Albothyl is a topical preparation, it has been on the market for many years. It is currently on the market in about 30 countries. It contains policresulen, which works as an exfoliant. It erodes the surface layer of the mucosa. It is commonly used in its suppository form in Thailand and the Philippines by sex workers, and also by providers. In the late 60s it was on the market in the US but withdrawn in the early 70s. A study was done by CDC in northern Thailand, and the results (via colposcopy) were presented to the Thai FDA, which is now considering taking it off the market. This is mainly based on the lack of evidence of benefit, rather than on clear evidence of harm. Albothyl causes quite serious inflammation and desquamation of the mucosa, and there is an unresolved question that this may result in increased likelihood of transmission of HIV.

Since it has no benefits and a potential for harm, probably Albothyl should not be used.

- Dr. Christopher Elias

Other treatments?

There were various treatments discussed that are used in both industrialized and non-industrialized countries, which reflect a history of the lack of availability of good treatments. Gentian violet for example is still widely used for candidiasis. Is it worth it to give this instead of nothing, because it's available and cheap?

We need to get the information out to providers that we have effective and affordable treatments.

- Dr. George Schmid

People will end up spending more money anyway if their infection is not cured and they keep trying different treatments. A local treatment widely used in Indonesia for RTI is betel leaf. It is boiled and used to either clean the genitals or to drink. It is also often used for douching.

However, in the United States, it has been shown that douching seems to be associated with more frequent vaginal infections. It's not clear which products or liquids are associated with infections.

Personal Hygiene

This is another area where we seem to be lacking information, even a clear definition of “personal hygiene.” One issue is, what information should be given to adolescents before they are sexually active so that they are well prepared? Even menstrual management is often not well explained to young people. We need to study what people are doing in different countries and what the experiences have been in relation to infection and cure. There is a wide range of different cultural and ritual practices. A study in Giza, Egypt, has begun to look at the various different local douching practices.

If there are behaviors, such as douching, that we are talking about trying to change, we must first know what the behaviors are and whether they are harmful.

- Dr. Christopher Elias

IV. STRATEGY DEVELOPMENT: INTEGRATION OF RTI/STD CARE INTO EXISTING PRIMARY HEALTH CARE SERVICES

1. Integrating RTI Services in Public Sector Health Clinics in the Philippines

(by Marilou Costello)

Marilou P. Costello, presenter

Program Associate & Host Country Advisor, Population Council - Philippines

As we all know, a major recommendation of the ICPD was to “make available universal access to a full range of high quality reproductive health services” including family planning and sexual health through the primary health care system. The Philippine Department of Health has taken up this challenge by initiating, within the last year, a series of activities in support of efforts to integrate other reproductive health services within existing FP/MCH programs at the central and local government levels. The project on Integrating RTI Management in LGU Health Centers may be considered as an attempt to operationalize this approach.

The situation in many developing countries including the Philippines has been that neither STDs nor RTIs are systematically managed within the local public health clinics. The assumption seems to be that these conditions are found exclusively among commercial sex workers (CSWs) and that these should therefore be treated in the so-called “social hygiene clinics.” These facilities are generally found in urban areas and are often attached to a city health office.

There are several considerations that indicate the need for an integrated approach to RTI case management. For example, it has been demonstrated in several studies that the prevalence of RTIs among members of the general public is quite high. Furthermore, individuals with RTIs will in many cases be asymptomatic and unaware that they suffer from this illness. Even when they are aware of their condition, women who are other than CSWs will generally be unwilling to go to a social hygiene clinic because of its stigmatizing character.

To integrate RTI management, however, means that personnel at the local public sector health clinics should be prepared to manage RTIs and STDs. Table 1 below lists the major activities to be undertaken on a routine basis and the associated skills that would have to be developed in these facilities.

Table 1: RTI Case Management Under the RCH Approach

Sub-Center	IEC and Referral
PHC	Counseling, lab testing, treatment and referral
CHC	Counseling, lab testing and treatment

At the same time, though, we must recognize that several questions remain concerning the feasibility of such an approach. These include the following:

1. Will already overburdened clinic personnel be willing and able to carry out these new tasks?
2. What sort of reaction can we expect from health center clients and their partners?
3. Will an integrated approach actually work to increase the identification and treatment of RTI cases?
4. What will be the costs of such an approach? Will some models of RTI management prove cheaper or more efficient than others?
5. Will an integrated approach be feasible and sustainable within the context of a devolved health system?

The Population Council (ANE OR/TA) has therefore been collaborating with the Family Planning Service of the Philippine Department of Health on a study which has been set up for the purpose of answering these types of questions. The study proceeded in two stages beginning with a diagnostic phase that concentrated on assessing and describing major issues likely to affect the RTI case management initiative. Data were collected through focus group discussions and a situation analysis of seven local health centers. This was followed by an intervention phase during which three types of activities were carried out:

1. Trainings
 - RTI Case Management for Service Providers (Physicians, Nurses, Midwives)
 - Refresher Training for Medical Technologists
2. Improvement of Diagnostic/Curative Capabilities
 - Upgrade Lab Facilities
 - Drug Provision
3. IEC Development and Community Awareness Campaigns

The study was conducted in three types of communities located in different areas of the country. These included two health centers from Metro Manila, three from the intermediate-sized city of Cagayan de Oro and one each from the towns of Tagoloan and Jasaan, Misamis Oriental province.

A total of twelve FGDs with men and women from these study communities were conducted. A large number of interesting and policy-related findings were identified through this process. Time constraints prevent us from outlining these in any great detail but the following summarizes some of the most important observations:

1. Several RTI-related conditions were identified by both women and men (especially the former). Explanations about disease causation and treatment represented a mixture of traditional and quasi-scientific beliefs.
2. Reactions to persons with an STD are mixed. (E.g. help a friend, shun a CSW, blame the spouse).
3. Men who have contracted an STD will generally discuss this with a friend or a doctor but

- not with their wife.
4. Knowledge about the preventive role of condoms is fairly widespread; however, attitudes toward condom use are negative.
 5. Self-medication for STDs is common. Both traditional and modern treatments (e.g. antibiotics) are commonly resorted to. Information on these is available from friends and relatives.
 6. Privacy/confidentiality are of paramount importance for persons seeking treatment for an STD.

These findings point to the important role played by social and cultural factors in the management and prevention of RTIs and STDs. Counseling of RTI clients, community awareness campaigns and strong efforts to work toward partner notification will clearly be needed.

Situation Analyses were carried out in all seven sites. These involved an inspection of the health centers' facilities, interviews with 22 health center personnel and observations of 42 client-provider interactions. Special attention was given to the experience of the health centers with RTI case management, both before and after the intervention had been put in place.

Summarized below are some of the typical situations that we found in the health centers during the pre-intervention period.

1. Capacities for carrying out lab exams were limited. In all cases, tests for detecting RTIs had to be referred to other SDPs.
2. Records on RTI cases were not being kept in any standardized fashion in any of the health centers.
3. Less than one in seven service providers had ever been trained in RTI management.
4. Identification of RTI cases was infrequent at best. More than half of all SPs attended less than one RTI case per month on average during the year preceding the survey.
5. SPs showed evidence of several significant knowledge gaps with regard to RTIs.
6. For all practical purposes, discussion of RTIs and STDs was found to be nonexistent during the observations of client-provider interactions.
7. Quality of care during pelvic examinations was often deficient.

Initial intervention activities were successfully carried out. Service providers were given a four-day training in RTI case management. Medical technologists were then given a refresher training while lab facilities were upgraded. Outside funding sources were identified which agreed to underwrite the full provision of drugs to RTI clients during the course of the study. An attempt was made to update clinic record keeping procedures. A program of facilitative supervision was also instituted to ensure that each of these inputs would result in the expected output. The latter component was found to play a significant role in the whole intervention process--without it, SPs were generally unable or unwilling to implement the guidelines established during the RTI training.

Initial findings indicate an increase in the identification of RTI cases among regular FP clients after the intervention had been put in place. According to the SA interviews, the median incidence

of RTI^L observed by the SPs had previously reached 4 to 6 cases per year. In comparison, no less than 243 cases were identified overall in the seven SDPs during the six-month period, May-October 1997. Should this trend continue for the succeeding six months, the result would be an average of about seventy confirmed RTI cases per center per year.

Further still, inter-center variation in the diagnosis of RTI cases was quite noticeable . In particular, the three Cagayan de Oro clinics have so far managed to identify only 47 of the 243 cases located to date. This pattern appears to be due in part to certain administrative and record-keeping factors. To the extent that additional follow-up and advocacy activities can address these problems, further increase in the identification of RTI cases could well occur.

2. Integrating STI/HIV Management Strategies into Existing MCH/FP Programs: Lessons from Case Studies in East and Southern Africa

(by Baker Ndugga Maggwa and Ian Askew)

Maggwa B. Ndugga, presenter

Program Associate, Population Council - Kenya

Note: This paper is a summary of another report which you can obtain by contacting PC-Kenya

Background

This paper synthesizes findings from four case studies and provides policy makers, program managers, donors and technical assistance organizations with empirical evidence of how an integrated approach has been implemented in different programmatic, organizational and socio-cultural contexts.

The methodology for conducting the case studies included (1) Review of available reports and data for each program; (2) In-depth interviews with program managers; (3) Inventory of facilities, equipment, supplies and drugs available at all program facilities; (4) Observations of client/service provider interactions where possible; (5) Exit interviews with clients receiving MCH, FP and STI services; and, (6) Interviews with service providers.

Table 1. Sample Sizes for Data Collected During Case Studies

Study Site	Clinics visited	Clinic staff interviewed	Community workers interviewed	MCH/FP clients interviewed	Client provider interactions observed
Busoga, Uganda	17	21	45	117	65
Nakuru, Kenya	7	23	0	72	72
Mkomani, Kenya	2	12	14	36	0
BOTSPA sites, Botswana	25	38	0	164	164

This synthesis reveals that all four programs have, quite independently, developed strategies for integration that have several common components; a prototype model for integrating these services is proposed based on these components. The paper also proposes a number of general recommendations for strengthening the implementation of integrated programs that have some or all of the components of the prototype model, and suggestions are given for further operations research which would clarify many of the unknown issues that remain.

A prototype model for integrating STI/HIV Services into MCH/FP Programs

Although all four models were developed independently, operate within different organizational and socio-cultural environments, and serve different populations, a number of commonalities are apparent in the way in which the services have been organized. The prototype

model proposed summarizes what appears to be fairly standard model emerging from these case studies, although no one program was found to have all of these components. Five points need to be highlighted.

First, the activities described in the model are feasible and applicable for MCH/FP clinics which do not have on-site facilities that would permit even basic STI testing. Second, the case findings procedures described are already being applied but primarily to new family planning clients and, to a lesser extent, to first visit antenatal clients. History taking and a clinical examination are integral parts of these services and so the additional case finding activities can be added fairly easily. Whether case finding through risk assessment, history taking and clinical examination can, and should, be extended to revisit family planning clients, later-term antenatal clients, and clients attending for infant or child welfare services needs further consideration given the implications for additional resources and time spent with the client, and the uncertainty of its effectiveness.

Third, most attention has been paid by program managers to integrating the finding and treatment of STI cases among asymptomatic women attending their clinics for MCH/FP services. Integrating communication and behavior change activities that encourage infection prevention into existing MCH/FP IEC strategies are clearly essential components of any model for providing integrated services and need to be strengthened.

Fourth, although not a major focus of the case studies, anecdotal evidence suggests that this integrated approach is acceptable to both providers and clients because additional services are provided in a way that reduces overall time for the client and jointly providing the services does not unduly burden the provider.

Fifthly, the cost of providing these services was not included in these case studies and is the subject of a complementary study being implemented by REDSO/ESA. Cost analyses have been undertaken of the Botswana, Mkomani and Busoga programs and are reported in a forthcoming monograph to be published by REDSO/ESA.

A prototype model for integrating STI/HIV Services into MCH/FP Programs

Four components of STI management added to FP/ANC services:

- 1) *Case finding and treatment of asymptomatic women or women not recognizing existing symptoms, through:*
 - risk assessment by asking questions on behavioral factors
 - clinical history taking
 - general clinical examination
 - pelvic examination if possible (full preferable)
 - if signs/symptoms identified, categorize into general syndrome
 - provide appropriate curative treatment, on-site, preferably by same person doing diagnosis, at the same time as diagnosis
 - encourage partner notification by client for screening.

2) *HIV/AIDS management through:*

- HIV testing and counseling through referral to nearest specialist site for clients with signs and symptoms, or for those explicitly requesting testing
- IEC on prevention of HIV transmission and signs/symptoms of HIV infection to all clients.

3) *Finding and treatment of maternal syphilis through:*

- screening all antenatal clients on first visit for syphilis infection through referral for test and/or result
- encourage contact tracing through partner notification by client.

4) *Information and education to prevent new infections and to improve health seeking behavior if infected through:*

- raising awareness of signs and symptoms of possible infection
- education on safer sexual behavior and practices
- promotion of condom use
- group health talks
- print materials available in waiting rooms, during individual consultations and to be given to clients
- individual consultations with MCH/FP clients
- group and individual talks within the clinic catchment areas through community health workers including STI/HIV with MCH/FP messages
- advertising availability of services

Experiences with Implementation of a Prototype Model

All four programs are primarily clinic-based although all have community-based components. Probably as a consequences of this, the focus of their integration activities has been on the detection, diagnosis and treatment of STIs among the family planning and antenatal clients attending their MCH/FP clinics.

A. Case finding and treatment of asymptomatic women and women not recognizing or reporting existing symptoms

The four programs have sought to introduce case finding procedures that would enable their staff to identify those clients who may be at risk of an STI and/or who show signs and symptoms of an STI. These procedures are intended to detect potential cases which may be asymptomatic or which a woman did not realize may be an STI, and include behavioral risk assessment, clinical history taking, general physical examination and, where possible, a pelvic examination.

Risk assessment and clinical history taking are essential components of finding potential STI cases among mainly asymptomatic MCH/FP clients but are not performed consistently or according to guidelines in all four programs. Lack of communication skills among service providers, service providers' perceptions about clients, absence of appropriate and easy to use guidelines and check lists, inappropriate client clinic records that do not allow for the recording of STI information and inadequate privacy for the clients during consultations were some of the reasons given for the inadequate risk assessment and clinical history taking observed.

Recommendations

- Train clinic staff in discussing sexual behavior with clients and in being more aware of clients self-assessment of their risk of being infected.
- Develop service delivery guidelines that take into account the potential difficulties faced by staff in their implementation
- Provide clear written guidelines and checklists for clinic staff to follow that specify exactly which questions to ask and how to interpret the answers
- Ensure guidelines are reviewed and updated regularly, preferably based on observations of staff performance and validation studies
- Redesign MCH/FP client record cards so that risk assessment and STI clinical history and signs can be recorded
- Improve levels of privacy available during consultations so that sexual behavior and STIs can be more easily discussed

A thorough general clinical examination and a pelvic examination, essential for detecting signs and symptoms associated with STIs, are not always undertaken. Lack of emphasis on clinical examination in the algorithms used to manage STIs in these programs, client record that do not allow for recording of STI information and absence of appropriate basic equipment and supplies required for clinical examinations were common findings in the programs except for Botswana. These findings may explain the inadequate clinical examinations carried out.

Recommendations

- Reinforce the need for staff to undertake a thorough general physical exam to assist in detecting non-genital signs
- Ensure that client record cards are able to record all information needed for a general physical examination
- Ensure that all MCH/FP clinics have the basic equipment and supplies needed for an internal pelvic examination (e.g. speculum, gloves, adequate light) and that there is sufficient privacy for the examination
- Train staff in providing appropriate psychological support to reduce client nervousness
- If these conditions are met, reinforce the requirement that an internal pelvic examination be undertaken for all new family planning clients, annually for all returning family planning clients, and for all MCH/FP clients with symptoms and signs associated with STIs and/or assessed to be at risk through the risk assessment / clinical history taking

B. Using the syndromic approach to manage STDs

For women showing signs and/or symptoms suggestive of an STI, the four programs have trained their staff to use the syndromic approach for diagnosis and treatment because of poor access to and high cost of laboratory testing facilities. The case studies focused on the feasibility of incorporating the syndromic approach into the clinics' existing procedures and could not address the validity of syndromic management, its cost-effectiveness, or the ethical concerns of possible over-treatment.

Staff had been trained and the algorithms were on display for guidance, but many staff had problems following the algorithms correctly, and were faced with drug shortages or bureaucratic barriers which prevented them from completing the treatment without having to refer the clients to a doctor.

Recommendations

- Program managers should constantly monitor new developments in syndromic management procedures and update their guidelines regularly
- Whenever guidelines are updated the new information should be passed on immediately to staff through appropriate means (e.g. circulars, inhouse refresher training)
- To increase efficiency, the person undertaking the finding and diagnosis of potential STI cases should also be able to prescribe and provide treatment during the same visit

Most MCH/FP clinics refer less straightforward cases to facilities with laboratories for further testing, but current referral arrangements are time-consuming and frequently the client is lost before diagnosis and/or treatment are complete.

Recommendations

- Existing referral arrangements need to be examined closely to look for ways to improve their effectiveness
- As simpler screening tests become available programs should develop the capacity to use them at an increasing number of secondary and even primary level facilities

The syndromic approach is intended to simplify treatment of STIs by requiring a small range of drugs that can be treat several types of infection, but the supply of these drugs at clinics and their purchase by clients are major problems in all but the Botswana program.

Recommendations

- Improve staff understanding of the different treatments available, through training and written guidelines, and update these regularly to reflect changes in drug sensitivity
- Strengthen existing drug supply mechanisms and forecasting / ordering procedures for MCH/FP clinics to include drugs that can be used for treating STI syndromes and other illnesses, and to ensure that essential drugs are routinely available at clinics
- Ensure that sufficient funds are available to program managers, through government or donor sources or cost-recovery mechanisms, to maintain a continuous supply of drugs to the clinics

- Wherever possible, ensure that the client receives / purchases the drugs at the same clinic to ensure correct treatment provided

C. Partner notification

Partner notification was included as a component of all the programs, primarily through requesting clients to notify their partners verbally. This approach has proved to be highly ineffective and remains a major problem which needs to be addressed urgently if the successful treatment of the woman is not to be undermined through re-infection by her untreated partner. Sensitive counseling is needed to allow for cases when the infection was not caused by sexual transmission.

Recommendations

- Staff should make sure that the importance of partner notification is always included in the counseling given to all clients treated for an STI and whenever discussing STIs in general
- Programs should look for ways to make partner notification sensitive to the woman's personal and social situation, and especially to the possibility that the diagnosis may not be accurate and the infection may not be sexually transmitted

D. HIV testing and counseling

For MCH/FP clients suspected to have HIV, or who have asked for a test, all programs refer elsewhere for testing and counseling because testing facilities are not widely available and counseling is felt to be a specialized activity requiring a lot of staff time which MCH/FP staff are not able to undertake.

Recommendation

- Programs should refer the acceptability and effectiveness of current procedures for referring clients for HIV testing and counseling to determine if they can be strengthened and whether the counseling can be decentralized to the MCH/FP clinic

E. Syphilis testing and treatment

In line with national policy guidelines, all four programs also offer syphilis screening for pregnant women. This service is not effectively implemented, however, because clients have to return later to obtain the results, or go elsewhere for the service, and normally have to pay, all of which deter them from following through on the advice given by staff. Little attention was being given to the detection and management of other STIs that are also associated with bad obstetric outcomes like gonorrhoea and chlamydia.

Recommendations

- Current procedures for collecting and testing specimens, giving the results to the client, and ensuring treatment for infected clients and their partners must be examined closely to improve their effectiveness if they are to continue
- The feasibility and cost-effectiveness of introducing antenatal screening for other STIs (especially gonorrhoea) should be considered given their association with adverse pregnancy outcomes

F. Information and education to prevent new infections and improve health seeking behavior if infected

Although the programs have placed most emphasis on case finding and treatment of asymptomatic family planning and antenatal clients attending the clinics, all four are also making concerted efforts to inform and educate their clinic clients and, more importantly, the general population in their clinic catchment areas.

All four programs mandate that group health talks should be held at their clinics daily, but these are infrequently held and information on STIs and HIV/AIDS is only given occasionally.

Recommendation

- If health talks are to continue then they need to be strengthened through ensuring that they are always held, planning which issues are to be covered, training staff in effective communication techniques and providing guidelines and materials, especially for topics such as the symptoms and sign of STIs

Cadres of community-based workers, although functioning differently in each program, seek to communicate messages about the signs and symptoms of infection, modes of transmission, ways of preventing or avoiding infection, and what to do if an infection is suspected.

These IEC strategies appear to have been quite successful in increasing general awareness of STIs and HIV, but their impact on detailed knowledge of STIs and HIV, on attitudes towards male/female relations, and on sexual behavior remain to be evaluated. Clients' awareness of symptoms associated with STIs, their ability to identify and describe them, and providers' ability to understand clients' descriptions of symptoms are poor and need to be improved for the syndromic approach to work effectively.

Recommendations

- Increase clients awareness of symptoms through IEC activities within clinics and, where possible, through community-based programs
- Train staff in local terminology and concepts used to describe potential signs and symptoms

Condom promotion should be an integral component of all information exchanges with MCH/FP clients, but is undertaken to differing extents by each programs.

Recommendation

- Use of the condom for protection from STIs should be promoted more strongly, either on its own or possibly in conjunction with another contraceptive method (i.e. dual use)

The availability of STI/HIV/AIDS services is not to well advertised at MCH/FP clinics, preventing clients from pro-actively seeking counseling or screening, or initiating discussion of STIs during a consultation.

Recommendation

- Clinic managers must ensure that clients are fully aware of all services available at the clinic, including when and where they can be obtained, through signs and posters inside and outside the clinic. Moreover, this advertising should stress that the service is available during regular MCH/FP consultations and so does not require a separate visit, and that strict confidentiality will be maintained.

Conclusion

This analysis suggests that integration of services is occurring primarily through finding and treating potential STI cases among MCH/FP clinic clients. Some IEC activities are being integrated to encourage preventive behavior, but much remains to be done to strengthen this component. There appear to be two broad priority issues which operations research should be used to address next.

The case studies show that it is feasible to find and treat STI cases, program managers must pay close attention to many issues, particularly quality staff training, clear procedural guidelines, regular drug supplies, effective and sensitive partner notification, and continuous IEC in the clinic catchment areas. What is emerging clearly from this and other analyses, however, are the dual concerns with the effectiveness of the approach in correctly finding, diagnosing and treating clients with STIs, and the cost effectiveness of this approach compared with others. Its effectiveness is being questioned because recent studies are showing that the validity of syndromic management, even with risk scoring, may be too low.

Although many policy makers and donors in the region have endorsed the use of syndromic management in the context of MCH/FP clients, this has been based more on its utility in the absence of accessible and low-cost laboratory tests than on demonstrated effectiveness. The key priority issue to be addressed through operations research is, therefore, establishing the validity of the syndromic approach (including with and without risk scoring) in MCH/FP clinic settings. If proved to be acceptably effective, studies should then measure the marginal cost of adding this service, and comparing its cost-effectiveness with alternative strategies for detecting and treating STIs among MCH/FP clients.

The second priority for operations research is to evaluate the impact of this approach on reducing the transmission and prevalence of STIs, including HIV, in the general population. This

is an important issues for policy makers and donors as it is unknown whether this essentially curative approach would have an impact on STI prevalence. Moreover, whether it would be more effective than a behavior change approach which focused on providing information and education about prevention of infection is also not known. Indeed, little is known about the impact on STI prevalence of preventive strategies integrated with MCH/FP programs. These types of studies would be resource-intensive, however, as they require longitudinal surveys with population-based bio-assay measures of STI/HIV prevalence.

3. Integrating RTI Services in Primary Health Care System: Observations from an Operations Research in Uttar Pradesh, India

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BACKGROUND

Emerging evidence from community studies indicates that significant proportions of Indian women may have a reproductive tract infection (RTI). These are based on women's self reporting of symptoms and, clinical and laboratory examinations. For example, studies from four sites (urban slums of Bombay and Baroda, rural areas of West Bengal and Gujarat) found that women reported symptoms indicative of RTIs such as excessive discharge (22-57%) backache (5 to 39%) and lower abdominal pain (9 to 22%) (BCC, CINI, Sewa-Rural and Streehitakarini, 1995). Similar studies carried out by Centre for Operations Research and Training (CORT) in various parts of the country including Bihar, Madhya Pradesh, Rajasthan, Gujarat and Delhi slums show that in all sites more than 40 per cent of the women had reported one or the other symptoms of RTI (Table 1).

Table 1: Percentage reporting gynaecological or RTI related problems

States	Percent reporting at least one gyn. problem	Average number of problems reported	References
Maharashtra	92	3.6	Bang & Bang 1989
Uttar Pradesh (one district)	77	2.8	PC, 1993
Uttar Pradesh (two districts)	61-70	2.3	CORT, 1997
Madhya Pradesh (three districts)	39-49	1.2	CORT, 1994
Bihar (two districts)	30-36	1.5	CORT, 1995
Rajasthan (two districts)	29-42	1.5	CORT, 1995

Clinical examinations also revealed that cervicitis (8 to 40%), vaginitis (10-15%) and Pelvic Inflammatory Disease (1 to 17%) were the prominent morbidities. Similarly, clinical and laboratory examinations of rural women in Karnataka revealed that 70 per cent had vaginitis, cervicitis or PID (Bhatia, *et al.*, 1996). In terms of the specific infections, the laboratory assessment indicated bacterial vaginosis (18.2%), candidiasis (5.2%), trichomoniasis (7.5%), chlamydia (0.5%), gonorrhoea (0.8%), syphilis (1.5%), and urinary tract infections (6.5%). Apart from the community studies, clinical and microbiological studies have also confirmed the wide prevalence of RTIs among Indian women (Luthra, *et al.*, 1992).

RTI prevalence in Uttar Pradesh (UP) appears to be of the order of 30 per cent as indicated by the preliminary results from the PERFORM survey conducted in UP. In particular,

23 per cent of the women who had recently given birth in Sitapur district, reported symptoms indicative of RTIs. A similar picture emerges from Agra district as well, where over 45 per cent of ever married women reported that they were currently suffering from excessive vaginal discharge (BSUP-Agra, 1995). To understand the magnitude of such levels of prevalence, the out patient records maintained at the Sidhauri Community Health Centre (CHC), a rural hospital in Sitapur district were examined. These records revealed that an estimated 20-30 per cent of women visiting the gynaecologists seek treatment at this health facility for ailments including profuse discharge, urinary tract infections, vaginitis, and PID. Given that women are in general asymptomatic and that even symptomatic women may not seek care the estimates presented here are the minimum levels of prevalence. Most women do not seek treatment for RTIs for such reasons as lack of awareness, acceptance that RTIs are part of women's lives as well as lack of treatment facilities (Gittelsohn et al. 1994, Patel, et al. 1994, Bang and Bang, 1989).

On the supply side, in the public sector the treatment for RTIs is limited with most services provided through STD clinics in urban areas. Seeking treatment at STD clinics is stigmatizing to most clients, particularly so for women. Thus, most clients at STD clinics tend to be men and their partners may remain untreated. Women are more likely to seek treatment from gynaecologists or MCH care providers and do so for symptoms such as acute abdominal pain (reflective of PID), foul smelling and excessive discharge, and for conditions such as infertility and childlessness.

Interviews with ANMs in Agra district in Uttar Pradesh revealed that they are often approached by women for treatment of vaginal discharge. While most ANMs provided iron or calcium tablets as these were the only drugs available with them, some did provide metronidazole (Metrogyll) (Patel and Khan, 1997). One of the important reasons for women's not seeking treatment at PHC, particularly for gynaecological problems is non-availability of lady doctor at the PHCs. Very few PHCs have women gynaecologist or even a qualified lady doctor. For these reasons, accessible and non-stigmatizing services must be available for women.

A recent review of the health sector by the World Bank recommended an essential package of reproductive and child health services to be included in the public sector programme (World Bank, 1995). One component of the package is the provision of RTI prevention and treatment services, including counselling, screening, case finding and diagnosis by clinical and laboratory procedures and treatment (Pachauri, 1995). This package has been accepted by the Ministry of Health and Family Welfare, Government of India and it is an integral part of the recently announced Reproductive and Child Health (RCH) program.

At present, even in clinics (public and private) providing RTI services, treatment of these infections is generally based on the symptoms reported by the patient and clinical examinations. As a result, patients are often prescribed wide spectrum drugs to treat a mix of infections which may lead to over treatment. Thus, diagnosis backed by laboratory support would enhance the quality of services.

Research on RTIs in India has so far concentrated on studies measuring prevalence of

various infections, women's perceptions of them and their health seeking behaviour. Little is known about the service delivery aspects and the cost of service provision. For programme and policy purposes it is critical to have information on service delivery. The present paper discusses some preliminary observations from an ongoing Operations Research in Uttar Pradesh which attempts to answer the question on feasibility of integrating management of RTI with the existing primary health care services provided by primary health centres (PHCs) or rural health hospitals like Community Health Centres (CHC) and Post Partum Centres (PPC).

THE PUBLIC HEALTH CLINICS

In the Indian context, rural public health facilities like Community Health Centres (CHCs), Post Partum Centres (PPCs) and Primary Health Centres (PHCs) are the lowest level which could diagnose and provide RTI services. PHCs have the requisite facilities in terms of personnel and infrastructure, though CHCs and PPCs tend to be better endowed. ANMs at the subcentre, the smallest health facility in the public health sector, could educate community members about RTI, identify the cases and refer them to appropriate health facility for proper diagnosis and treatment.

CHCs have four doctors, one of whom is a female gynaecologist and who regularly conducts out patient clinics. Similarly, PPCs which are often attached to women hospitals, have at least one female gynaecologist to attend obstetric emergency cases as well as provide curative services at out patient clinics. The doctor at a PHC is generally a male physician. However, under a special program funded by USAID, implemented by SIFPSA¹, private lady doctors are being contracted to provide gynaecological services on fixed days at selected PHCs. All the three types of health facilities have laboratories equipped to conduct blood, urine, malaria and TB sputum tests. Thus, it is possible to upgrade the available lab facilities and with the requisite training of the gynaecologist and the lab technician, RTI services can be provided.

OBJECTIVES

The specific objectives of the operations research are:

- To test feasibility of integrating case management of symptomatic women for RTIs at rural health clinics like CHC, PPCs and PHCs.
- To analyse the cost of providing RTI services at these levels.
- To describe the clients using the services and measure client satisfaction.

The Approach: As planned, all symptomatic women seeking services are examined for RTIs and treated, if found to be infected with them. Services are provided at out-patient clinics in CHCs, PPCs and PHCs by the attending gynaecologist. The syndromic approach of case management is

¹SIFPSA (State Innovation Family Planning Service Agency) is an autonomous agency established by the Uttar Pradesh Government to implement 250 million dollar IFPS Project, funded by USAID. IFPS aims to strengthen and improve access, quality and promotion of family planning in Uttar Pradesh, the most populous state of India with 156 million population in 1996.

being used to diagnose and treat vaginitis (inflammation of the vagina caused by bacterial vaginosis, candidiasis and trichomoniasis) and cervicitis (inflammation of the cervix usually caused by gonorrhoea or chlamydia), PID, urinary tract infections, and genital ulcer disease. To confirm the clinical findings of trichomoniasis, candidiasis and bacterial vaginosis, simple microscopy is used. The pathogens causing these three infections can be detected by inspecting wet mounts. The specimen slides are processed in the attached laboratory by the lab technician immediately and results are presented to the gynaecologist within a few minutes. These static clinic services is being offered on every gynaecological out-patient clinic day.

All the block PHCs and the post partum centres have paramedical staff who are expected to provide out reach services to the communities. Apart from providing primary curative care, MCH and family planning services, they are also responsible for educating the community members about various preventive health measures. These paramedical staff could also be trained to educate the community members about RTI/STD, identify cases suffering from the disease (syndromic) and refer them to PHC/CHC/PPC for treatment.

Compatibility with National Programs: While deciding to use syndromic approach of case management, it was fully appreciated that use of the syndromic approach alone for the detection of RTI may have poor predictive value (Bulut, *et al.*, 1995, Younis *et. al.*, 1993) and that the back up support provided by a laboratory doing simple tests (wet mount, gram staining) makes detection only slightly easier. However, as this approach for screening, diagnosis and treatment of RTI/STD cases is being implemented at the national level by the National AIDS Control Organization (NACO), Government of India, it was decided to follow the same guidelines. The NACO guidelines are essentially a syndromic approach with three different variations depending on the availability of speculums, microscopes, slides and lab facilities.

Upgradation of Laboratories

Two factors were considered critical in upgradation of the existing laboratories at the selected health centres.

- Availability of essential equipment and reagents to carry out simple microscopic tests for RTI
- Availability of a trained lab technician to conduct the tests.

Most of the CHCs, PPCs and block PHCs in the rural areas are equipped with lab facility and a laboratory technician is posted there to carry out routine pathological tests, like blood, urine, malaria and TB sputum tests. The equipment and supplies to conduct these tests are generally available.

The existing laboratory can undertake simple microscopy procedures to diagnose the presence of some RTIs. RTIs such as trichomoniasis, candidiasis and bacterial vaginosis can be detected with the help of saline wet mounts. Wet mount scrutiny can reveal the organism causing these infections. Other infections such as syphilis and gonorrhoea though easy to test require a different set of procedures which involve equipment and reagents not currently available in PHCs,

CHCs and PP Centres. In addition, laboratory testing for infections such as chlamydia are expensive and not available even in most private sector hospitals. Thus, for the present study, it was felt that with the present set-up of health facilities, back-up laboratory support for diagnosis would be realistic only for trichomoniasis, candidiasis and bacterial vaginosis.

Situation Analysis of Laboratory Facilities: A quick situation analysis of the laboratory facilities at the study sites revealed that most of the essential equipment such as microscope (with light source), centrifuge machine (manual) and burner lamps were available except a few items like hot air oven (to sterilize glassware). Apart from this, most of the sites did not have specimen collection swabs, bacteriology loop and recurring supplies such as slides, cover slips, test tubes, syringes and needles, and reagents were generally short supplied. Thus, it was estimated that with a small investment in essential supplies, the laboratory will be sufficiently equipped to provide the specified tests. Accordingly, in the project a small amount of money was allocated for providing the required supplies.

Training of Lab. Technicians: At all the three study sites, lab technicians were in position. The laboratory technicians are trained persons with a one year Diploma in Medical Laboratory Technique. However, during the situation analysis, all of them expressed need of reorientation training for the diagnosis of the pathogens causing the RTI infections as presently, they were not doing these tests. After considerable discussion with the experts, microbiologists, NACO technical officials and Population Council professionals who have wide experience in conducting such operations research, a ten day training program was developed and organized at the Department of Microbiology, KG Medical College, Lucknow.

Considering the importance of upscaling the experiment and the fact that in phased manner, this approach will be extended to all the block PHCs and rural hospitals by NACO, the lab training was extended to all the lab technicians attached with PHCs/CHCs, falling under the area covered by OR project in Sitapur and Agra districts. Altogether 10 lab. technicians participated in the training. They were given both technical and practical training in various laboratory testing techniques. Practical training was given much more emphasis than theoretical part. The course contents through which they passed through is given in Appendix 'B'. Broadly, it consisted of diagnostic techniques for several infections including candidiasis, trichomoniasis, bacterial vaginosis, gonorrhoea, chlamydia, syphilis, etc., sterilization of glassware, maintenance of equipment, quality control to registration and record keeping.

Training of Doctors

Currently patients infected with RTIs are diagnosed and treated on the basis of symptoms or syndromes they report. However, it is difficult to make a clinical diagnosis as different pathogens can cause the same syndrome or when there is more than one infection. In order to aid diagnosis the syndromic approach is advocated which is a combined treatment for all pathogens commonly found to cause a syndrome. This approach uses a combination of methods such as flow charts for case management decisions, risk assessments, clinical examinations, education and

counselling, and partner management to diagnose and treat RTI clients. To train the doctors, NACO in collaboration with WHO experts have developed guidelines and training modules for the management of STDs (NACO, 1994). NACO is using these manuals and guidelines to conduct training workshops for doctors and laboratory technicians all over the country. The training comprises of six modules covering topics of (1) STD transmission, (2) introduction to and rationale for the syndromic approach, (3) history taking and examination, (4) use of NACO flow-charts for case-management, (5) education and counseling, and (6) partner management.

To keep the training similar to what MOH&FW is implementing in the country through National STD/AIDS Control programs, it was decided to use the guidelines and manuals developed by NACO. A four day training workshop was organized at Lucknow in collaboration with NACO, KG Medical College and State Institute of Health and Family Welfare (SIHFW). While theoretical training was organized at SIHFW, practical training was given at Department of Ob/Gyn. Department of Microbiology helped in setting up facility for microscopic examination of the slides

by the trainees at the Ob/Gyn. unit itself. This saved considerable amount of time from transporting trainees from one department to the other and made the practice easier and better supervised. A number of experts from other parts of the country having experience in conducting such trainings and similar OR in rural settings were invited as guest faculties. Technical experts from NACO were present through out the training and acted as key resource persons. Use of the flow charts for the diagnosis of diseases which were developed in consultation with NACO (see Appendix `A') were shared and discussed extensively during the training. The details of the training program which was followed in the workshop is given in Appendix `C'.

Altogether 15 doctors and two tutors of ANM Training Centres (one each from Agra and Sitapur) participated in the training workshop. As in the case of lab technicians training, apart from the gynaecologist of the three study sites, doctors posted at Block PHCs of OR project area and the Dy. CMO responsible for coordinating the OR projects at the district level also participated in the training.

A comparison of the results of pre and post training tests revealed considerable improvement in the understanding and knowledge of participants, both about syndromic approach, RTI and its management (see Tables 2 and 3).

Table 2: Gain in Knowledge about RTI and Syndromic Approach

	Pre training	Post training	Test of significance (t test)
Average number of common RTI/STD diseases mentioned as prevalent in the work area of participants	2.1	3.6	p<.05
Main features of syndromic approach mentioned	2.2	3.5	p<.05
Average number of factors mentioned that may encourage the onset of infection or disease in the female reproductive system	2.4	2.9	NS
Average number of measures mentioned which could reduce chances of infection by STD	1.2	1.7	NS
Average number of STDs (Chancroid and Herpes) mentioned that can cause genital lesions	0.6	1.4	p<.05

NS = Not Significant

Table 3: Increase in Knowledge about RTI during pre and post training test

Percent mentioning that	Pre training	Post training	Test of proportion
Syndromic approach is scientific	40.0	70.6	*
It is better to treat each patient for all the possible causes simultaneously	26.7	64.7	**
A female client who has a thick, curd-like white vaginal discharge, itching and soreness is most likely to have Moniliasis	46.7	58.8	NS
Cervical cancer is related to STD	66.7	47.1	*
Pelvic inflammatory disease (PID) is a severe infection of the uterus and Fallopian tube	80.0	88.2	NS
STDs are most common in the age group of 15-30 years	73.3	88.2	NS
Uncircumcised men are more susceptible to STD infection	73.3	94.1	*
PID increases the risk of ectopic pregnancy by 7-10 folds	6.7	29.4	*
Correctly describing normal vaginal discharge giving colour and consistency changes over a monthly cycle	26.7	88.2	**
Correctly aware of reasons for females being more susceptible to sexually transmitted disease	13.3	82.4	**
Number of trainee participants	15	17	

* P< .05; **P< .01.

PRELIMINARY FINDINGS

Currently preliminary data from two sites are available - one from PPC Mehmoodabad and the other from Achhnera PHC, Agra. As the two health facilities are quite different in its nature and functioning, the results are discussed separately.

PPC Mehmoodabad: PPC Mehmoodabad being a relatively big health facility and attached to women hospital, the turnover of female patients are quite large. The average number of outdoor patients is around 917 per month (range 825-1029), giving a daily workload of 36-40 patients.

During April-Sept. 1997, a total of 5241 women attended OPD. Its distribution by broad categories of problems are presented in Table 4.

Table 4: Distribution of OPD Patients by Type of Problem at the Mehmoodabad PPCs during April to September 1997

Problems/diseases	Number of women	Percentage
Gynaecological problems	1506	28.8
Obstetric problems	2043	39.0
Abortion	78	1.5
RTI	278	5.3
FP	217	4.1
Other diseases	1119	21.3
Total	5241	100.0

The figures in Table 5 shows, out of the total 5241 women who sought treatment at the PPC during April - Sept. 1997, only 278 (5.3 per cent) had complained for some RTI problems. According to service statistics, out of these 278 suspected cases of RTI, 235 (84 per cent) were subjected to laboratory tests. Most of the time, only wet mount tests were performed as because of the non-availability of stains, gram stain test was not possible. The results of the lab. tests are summarised in Table 5.

Table 5: Results of Laboratory Tests of Suspected RTI Cases

Total RTI cases	No. of lab tests done	Type of tests			
		Wet mount Results		Gram staining Results	
		+ve	-ve	+ve	-ve
271	235	2		2	
		Candida albicans		GV/Clue cells	
		2	226	3	46
		GV/Clue cells		Clue cells	
		5		Clue cells	

Gv = Gardinella Vaginitis.

As the table shows, out of the 235 cases for which lab test was done, only in 14 cases (5.9 per cent), the results were positive. Out of these, 2 were diagnosed for candidiasis, 4 for Gardinella while the remaining 8 were cases of Clue-cells indicative of bacterial vaginosis.

A discussion with the gynaecologist posted at the PPC revealed that the lab. technicians did not face any problem in performing the tests and their results, as checked by the doctor herself, were quite reliable.

Generally the RTI patients were prescribed Norflaxin, Tinidazol and Metronidazole for 7 days. If symptoms persisted, they were provided with any one of the following antibiotic Tetra Cycline, Doxycycline, Ampicycline, Amoxicycline and Norflaxin, Tinidazol and Metronidazole or Injection Placentrex for 10 days. These medicines were given with Anti-inflammatory and pain killer ibuprofen, paracetamol, Dielonee Sodium. As and when these medicines were not in stock, the patients were asked to purchase from the market and show it to the doctor before its use. According to the doctor at PPC all the patients purchased the drugs.

Achhnera PHC:

In block PHC Achhnera, under SIFPSA's scheme a lady private gynaecologist has been visiting the PHC village regularly on every Wednesday and organises OPD clinic for women patients. The scheme is showing quite encouraging results. A total of 2873 clients have been served in 88 clinics conducted so far starting from November 1995. Without any propaganda or formal publicity, just by word of mouth, the turnover of women per clinic day was on an average about 33 women.

Table 6 gives the number of patients by their type of problems who were examined and treated in the OPD organised under SIFPSA scheme. Sixty percent of the clients were obstetric cases, followed by 22 percent gynaecological cases, 14 percent RTI cases, 2 percent for family planning advice, services or follow-up and 10 percent with other general problems.

Table 6: Number of patients by type of problems served by SIFPSA doctor during Nov.95 - Oct.97 (88 clinic days)

Problems*	Number of women	Percentage
Gynaecological	637	22.2
Obstetric	1722	59.9
RTI	401	14.0
FP	59	2.1
Others	299	10.3
All	2873	100.0

*Percentage adds to more than 100 due to multiple problems reported.

Out of the 1722 obstetric cases, 40 percent were for normal antenatal check-up, 17 percent for pregnancy with high risk factors, anaemia or pain, 3.6 percent with full term pregnancy or with loss of foetal movement and 10 percent with lactational amenorrhoea or suspected pregnancy. Nine percent of the obstetric cases had come for abortion services while 3.5 percent (n=61) with incomplete abortion or other complications following abortion.

Women who sought treatment for gynaecological problem mainly reported bleeding problems, infertility (primary or secondary), UTI, prolapse or menopausal complaints.

Out of the 401 RTI patients, 45 percent (6 percent of the total cases) were suffering from Pelvic Inflammatory Disease, and 44 percent from leucorrhoea, while others (ranging from 1 to 2.5 percent) complained of vaginal discharge, chronic or acute cervicitis, lower abdominal pain, trichoma, trichomoniasis and candidiasis (Table 7).

Table 7: Distribution of RTI patients

Symptoms	Number	Percent*	Percent**
Pelvic inflammatory disease	179	6.3	44.6
Leucorrhoea	175	6.1	43.6
Vaginal discharge	10	0.3	2.5
Chronic or acute cervicitis	10	0.3	2.5
Lower abdominal pain	12	0.4	3.0
Trichoma	3	0.1	0.8
Trichomoniasis	9	0.3	2.2
Candidiasis	3	0.1	0.8
All	401	7.8	100

* Based on all types of patients served by SIFPSA doctor (i.e. base is 2873)

**Taking RTI patients as base (i.e., 401)

80-90 percent of the women are given treatment on the basis of symptoms. In few cases, the women are referred to Agra Government Women's Hospital or asked to undergo pathological tests.

Since July 1997, laboratory test facilities at the PHCs are being utilised to test suspected cases of RTI. According to service statistics since July 1997, out of the 100 suspected cases of RTI at Achhnera, only 18 were subjected to laboratory tests. Most of the time only Pap smear is done. There are some administrative problems in using the lab. facilities effectively. Efforts are being made to overcome these hindrances.

Generally, the RTI patients were prescribed Crystalline Vaginal tablet, Tinidazol, Doxycycline, Evalon (Estriol) cream. These medicines were given with anti-inflammatory. However, condoms were given to only 3 women with RTI and in three cases both the partners were treated. The majority (82 percent) of the RTI cases were asked to come for follow-up check-up after 15 days and 5 percent after a month.

The regular turnover of women ranging from 14 to 57 per clinic day shows an existing unmet need for reproductive health services. While there are 24 to 30 women treated at PHC by male doctor and 50 to 180 by ANM/LHV every month in approximately 20 clinic days, the lady gynaecologist serve 80 to 190 cases every month in 4 clinic days. This pave a way to meet the demand of the clients by bringing in private gynaecologist or lady doctor even once in a week regularly. Such operations research help to identify the gaps and to introduce and strengthen reproductive health services in the existing system in the most appropriate and cost effective way.

Increased Utilisation of PHCs

An attempt has been made to assess whether the patients who are treated by the lady doctors at Achhnera PHC are the same who otherwise would have been attended by ANM/LHV on the MCH clinic day at PHCs. An analysis of the time series data of the number of women served at the MCH clinics at PHC for the last 10 months shows that:

1. Number of women coming at the MCH clinics organised by ANM/LHV at the PHC on Tuesday has progressively increased from 51 to 208 per month. In other words, women have not shifted from ANM/LHV MCH clinic to OPD organised by lady doctors, just because the latter was more qualified. ANM/LHV, however, are referring complicated cases to the lady doctors' clinic on Wednesday.
2. The two clinics (one each organised by ANM/LHV and lady doctor) taken together are providing a package of reproductive health services as envisaged by RCH programme. With ANM providing registration of pregnant women, iron folic acid and tetanus toxoid.
3. Availability of these services, has increased the utility of the PHC and now number of the women utilising the PHC is considerably more than before introduction of SIFPSA Scheme for addressing to the women's RTI/RH needs. A cost analysis is in progress and relevant information is being collected to analyse economic feasibility of integrating RTI and other reproductive health services in the existing facilities of PHC.

LESSONS LEARNED

An analysis of the processes involved in implementation of the projects and preliminary findings from the three sites suggest several important points. It includes:

- Most of the CHCs, PPCs and block PHCs have lab facilities which with a marginal resource input could be made functional for confirming the clinical findings of trichomoniasis, candidiasis and bacterial vaginosis.
- In most of these clinics, reagent to perform these tests (wet mount and Gram Staining) are not available and hence its regular supply is critical to keep these laboratories functional.
- Generally the lab technicians are eager and capable to carry out these tests. A 3-5 day reorientation of lab technicians as recommended by NACO will be perhaps sufficient. A rigorous 10 days training given under present study is not required. Instead a practical reorientation after 4 months may be useful. Alternatively, on the spot checking of the lab. technicians findings as done at Mehmodabad PP centre by the lady doctor herself, also could help in maintaining a good standard of diagnosis.
- The guidelines and manuals developed by the NACO are effective and the present study shows that a 4 days training is effective in imparting knowledge about syndromic approach for the diagnosis and management of RTI to gynaecologists already treating clients with infections.

- Administrative delay in procuring the reagents and frequent transfer/absence of gynaecologist posted at the health facilities (in the present case CHC at Sidhauri) are some of the serious bottlenecks in effective implementation of the project. For instance, despite the fact that money was provided under the project to purchase reagents, it took almost 4 months before it was procured and supplied to clinics. If after training the lab technicians do not get opportunity to use their new acquired skill for long time, chance of losing the benefits of training is quite high. Similarly at CHC Sidhauri, the gynaecologist who was trained under the project was transferred soon after training. The lady doctor who replaced her went on long leave and the present doctor who is posted for attending Gyn. clinic at the CHC is an experienced ophthalmologist and has not received the training. Such administrative difficulties could easily frustrate the initiatives taken for providing RH package at these health facilities.
- Among the three types of health facilities which are being used for the present operations research, the PPCs seems to be the most appropriate one for such intervention. As generally, PPCs are attached to women hospital, a much larger number of women avail its services. Consequently, chances of getting RTI cases, frequency of using lab facilities are also significantly more. A discussion with the lab technician at PPC revealed that they were quite happy with this added responsibility, i.e. testing for RTI cases. As they were regularly doing these tests, it has become a normal task and their diagnosis as certified by the doctor were quite correct.
- In contrast to this at the Sidhauri CHCs frequent transfer/absence of lady doctor or posting of a senior eye specialist (ophthalmologist) at MCH clinic could not generate enough cases for lab testing nor the women could receive proper treatment. This is evident from the fact that only 5 cases in April and 7 cases in September were sent for lab testing. A lady doctor who was visiting the CHC under SIFPSA scheme instead of recommending the suspected RTI patients to go through the lab. tests, often diverted them to her own private clinic at Sidhauri or Lucknow. Since September, she has been shifted to another PHC (Kamlapur) as the doctor on leave reported back. Such administrative weaknesses could contribute significantly in continued under-utilization of public health facilities.
- At PHCs where only male doctors are posted does not create enough demand for the PHC services by women suffering from RTI or any other major reproductive health problems demanding internal examination. Generally they go to nearby towns (in this case to Agra) for treatment. However, as in case of Achhnera, PHC where a private female gynaecologist has been hired to visit the clinic for 3-4 hours once in a week, on an average 30 women (ranging between 20-35 per clinic day) come to avail the services. An analysis of the patient's problems revealed that 14.0 per cent were suspected cases of RTI. However, all of them were not provided a needed laboratory test. Certain logistic problems like who will take the specimen swabs from the patients and deliver to laboratory (as no ANM is attached to OPD) and occasional non-availability of laboratory technician reinforce lady doctor general habit to prescribe treatment mainly on stated symptoms and/or clinical examination.

- Both at Mehmoodabad and Achhnera, often the medicines for the treatment of RTI patients (in fact most of the patients with reproductive health problems) are in short supply. Hence in majority of the cases, particularly at Achhnera, the patients are prescribed medicines to purchase from the market. The study shows that generally the patients did not object to it and purchased the medicines. It indicates that:
 - (a) If a lady doctor is made available at the health centres even for one day in a week, it will go a long way in increasing accessibility of reproductive health services to women.
 - (b) Patients are ready for paying for their health care, at least for purchase of drugs.
 - (c) Observations from Achhnera PHC shows that such an intervention also increases the demand of PHC services. According to the study, utilisation of MCH clinics organised by ANM/LHV at PHC doubled within a year.

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NOTE: Due to space limitations, appendices are available on request from the Population Council, New Delhi.

4. Panel Discussion: RTI Service Integration

John W. Townsend, facilitator

Director, Asia and Near East OR/TA Project and Senior Associate, Population India (New Delhi)

Panel members:

Marilou P. Costello, Population Council - Philippines

Bella C. Patel, Population Council - India (Baroda)

Maggwa B. Ndugga, Population Council - Kenya

Dr. Townsend suggested a focus on three issues:

- 1) **Understanding the context in which management operates;**
- 2) **What are the management challenges at the program level, i.e. even if we had the perfect technology, what would the management issues be?; and**
- 3) **What are the client-level management issues?**

Dr. Marilou Costello. With regard to context for the feasibility of integrating reproductive health in the context of the primary health care system in the Philippines, the rural health care units are manned by a doctor, a midwife and a nurse. We started by training the health providers, upgrading the lab facilities, and assisted in the development of IEC materials and modifying the clinic record system. We ended up with two types of management: 1) pure syndromic management, for locations where there are no doctors, and 2) syndromic with microscopy, using existing microscopes. We were concerned with implementing what was feasible.

Counseling was identified as a more difficult component. We addressed this by developing IEC materials for use with patients. (The Philippines).
- Dr. Marilou Costello

The other key issue we confronted was drug provision. There was negotiation with the DOH so that we obtained drugs for use in this study from two mayors. But this is not a sustainable solution, even for those areas. There is much room for improvement. The commitment of the service providers is also a big issue in terms of sustainability. We did not do much with partner management, except to emphasize during training that providers should counsel clients to inform their partners, but this was only done in cases when clients were diagnosed with cervicitis.

Facilitator: The Philippines discussion mainly revolves around quality of care. In India the context is different. Discussion of quality generally comes after quantity. In India, the major concerns still revolve around demographics and access to services, as we hear from Dr. Bella Patel.

Dr. Bella Patel: The project started in 1995 intensively in 2 districts to really change the mindset of the people and the providers towards providing more client-centered services. In terms of context or rationale, while prevalence of infections is reportedly high, as found in various studies, most women do not seek treatment, due lack of awareness, lack of lady doctors, acceptance of RTIs as a part of women's lives and lack of treatment availability. Treatment for RTIs is limited, both in public and in private clinics. Also there is stigma attached.

[In India] women will only seek treatment if they have severe pain, excessive discharge or infertility problems.

Dr. Bella Patel

We chose three study sites, and the Population Council has been working very intensively with the district authorities. At one site where there was no lady doctor, we have a private lady doctor visiting the hospital once a week. She receives 30-40 cases each day she is there, which indicates the high unmet need from the clients' side.

In designing the interventions, we had several considerations. We used existing facilities and this was very effective, the guidelines were well received by both the trainers and trainees.

Facilitator: In India, there has been a top-down approach to reproductive health and not much community involvement. There is still a lot of stigma attached to having an STD. Also, clients see RTIs as something that women just have, and families support this idea that women do not need care. Also, there is little information on what these services would cost. But overall, expenditure on health per person per year in India is only about \$0.80. So issues of cost are critical. Let's go to Africa now to look at other issues.

Dr. Maggwa Ndugga: First it's clear that HIV rates are much higher in Africa than anywhere else in the world. So in the region we are looking for programs to address this, through existing primary health care programs, in order to maximize resources, such as facilities and staff which are rare resources in the region. Data recently originating from the region are showing now that you can have an impact on HIV by detecting and treating STDs, e.g. the famous study in Mwanza, Tanzania, which showed an upto 40% decline in the incidence of HIV infection. Also the drive towards integration was motivated by the ICPD which urged us to look at things in a more comprehensive framework. In the region, we decided that this made a lot of sense. Here we have a captive audience of women already coming for services. Over 90% of pregnant women in most countries in the region come for antenatal care. So now we are moving towards integration of RTI services to reach these women. One assumption was that the management of RTIs/HIV would require little effort if it was through integration with existing services, because many procedures were already in place, e.g. risk assessment history, etc. Also it was assumed that the facilities were already well equipped and that if clients have already accepted FP services it will be much more easy for them to accept additional services. As for cost, it was also assumed that this would rise greatly. What we did was to send out a survey to ask service centers in the

area about the nature of their integrated services, and we picked several centers to visit as case studies.

Our paper shows that most of our assumptions were wrong. The service providers did not have the required skills or knowledge, the facilities were very poorly equipped and supplies were desperately lacking. We needed to re-examine the whole scenario before we could work towards effective integration of services. Not only did we go into a program with the wrong assumptions, but also we did not even define what we mean by “integration”. Until now, we still have not really defined what this is or what it should mean.

**We need to ask, why are we integrating RTI/STD with FP services?
Is it primarily to reduce HIV infection? Or because the ICPD said we should
address RTIs in women? Or is it because we have a captive audience?
We continue to grapple with these issues in the region (Africa).
Dr. Maggwa Ndugga**

Facilitator: A few key issues come up. One, to do integration you have to set routine standards for quality of care. Secondly, people think there are standard operating procedures and that people know what they are, but in all the settings it seems there were never clear guidelines about how to manage people who are coming in, and what about the people who are not coming in? And how do we go about supervision of this, where there is no system of having more experienced people to supervise the providers. Thirdly, communication. The procedures for providing so much information can be quite cumbersome. The health system has no standard guidelines for information to provide. Finally, how do we evaluate this? What do you measure? And what do we hope to get out of this?

Questions & Answers on RTI Service Integration:

Adolescent reproductive health care

Providers' attitudes to adolescents are unreceptive and generally services are set up for married people. This is a large remaining gap in Indonesia. Similarly, in India, the “culture of silence” is a real issue also for adolescents. Many adolescents seek care at private practices, but the care and attitudes there are not necessarily better than in public clinics. In America, adolescent males are a big problem, there is no where for them to go, while adolescent girls have some access through family planning clinics. In Africa some responses are beginning to take shape in the form of youth reproductive care, but these tend to be targeted at pregnant youth, whether married or unmarried. In the Philippines this is a very politically and culturally sensitive issue. Adolescents go mostly to NGOs, of which there are a few in urban areas.

Priorities and criteria

Dr. Christopher Elias noted that as the ICPD mandate is indeed broad, often program planners don't know where to begin. The advocacy has far exceeded the programmatic research or experience about how to implement integration. We have to decide on the priorities and the criteria for benchmark interventions.

In reproductive health interventions, we must consider using these criteria:

**Relevance
Efficiency
Feasibility
Effectiveness
Sustainability
Ethical soundness**

- Dr. Christopher Elias

Approaches should be provider-friendly and easy to evaluate fast, because people need to see some fast results. So, generally strategies have been those steps that providers are most comfortable doing. Perhaps, for example, a half hour counseling session for each client is not appropriate.

Some priorities for “best practice” in reproductive health include

- **Antenatal syphilis screening**
- **Improving infection control**
- **Standardizing case management of symptomatic individuals, and**
- **Providing information and IEC materials, which address available options.**

- Dr. Christopher Elias

Providers are generally supportive of and interested in improving infection control (essential services). This can be gradually built up, depending on available resources. Also we should focus on setting up a sub-set of interventions from which we can see results and which we can build upon in the future when more complicated interventions become feasible. Evaluation at this point should focus on process. Are people's problems being addressed in some competent manner, and are people being infected through health care interventions (poor infection control)? We can assess this by whether the providers were trained, did they follow procedures, and do they need to be re-trained? There will be a need for continual retraining and monitoring of staff turnover, etc. In this way we can work gradually towards further levels of service integration.

What are the effects of integration on other services?

In India, it is suggested from the study evidence presented here that clientele increased dramatically with the availability of a lady doctor to see women clients for reproductive health care. Similarly from Africa, it has been shown that wherever integration is started, there has been an increase in the number of clients who come, not only for STD services but also for FP services. The impression of field workers is that the people are perceiving more competent services because the services are addressing a more comprehensive range of health issues.

It seems clear that integration of RTI/STD services is not affecting the FP programs negatively, but, if anything, it is improving the coverage.

- Dr. Maggwa Ndugga

V. WHAT DO WE KNOW (ABOUT RTI/STD EPIDEMIOLOGY) AND WHAT DO WE NEED TO KNOW?

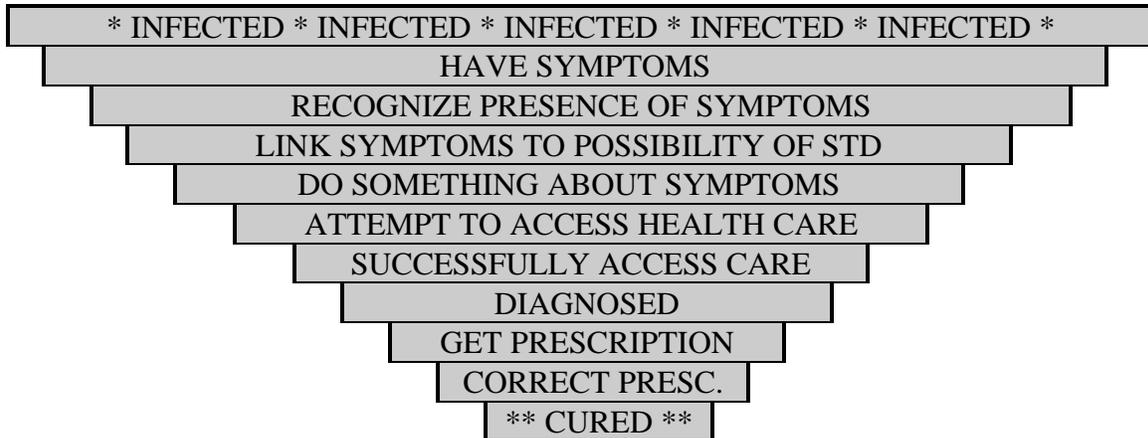
1. Day One Closing Discussion

John S. Moran (HAPP/CDC-Atlanta) and George P. Schmid (CDC-Atlanta), facilitators

Dr. Moran: How can we transfer to patients our notion that STDs are a bad thing? Very often, young men especially will not listen. Having an STD may be viewed as a rite of passage among youth. If it is perceived and experienced to be easily treatable, then the symptoms may not be viewed as enough of a reason to wear a condom. In other words, what people feel and think about STDs has a major role in determining whether or not they are motivated to prevent infection or to seek care and what kind of care to seek, and whether to comply with treatment or counseling.

Dr. Schmid: This pyramid can be a useful tool for us to realize the complexity of the processes which occur between individuals being infected and being cured. It shows just how many may never reach that final end point, due to many barriers or mishaps along the way. “Piot’s Pyramid” was developed originally in relation to tuberculosis.

Piot’s Pyramid to Estimate “Population Being Fully Reached-Out” by a Program



VI. RTI/STD STUDIES IN INDONESIA

1. Integration of RTI/STD Services into Family Planning Clinics in North Jakarta: Preliminary Results from a Two-Part Study

(by Meiwita Iskandar, Subadra Indrawati, Jane Patten and Siti Nurul Qomariyah)

Meiwita B. Iskandar, presenter

Resident Advisor, Population Council - Indonesia

Below is presented the research summary for the first part of this study, which ran from December 1996 to June 1997 (and which we will call "Stage I"). The data processing for the continuation study (Stage II), which ran until Dec. 30, 1997, is still in progress. Stage II included a new component on costs. Some preliminary prevalence and behavioral data from Stage II will be included here after the Stage I research summary. For further information or to obtain a copy of the final reports when complete, please contact the Population Council in Jakarta. Funding for Stage I of the study was provided by the U.S. Agency for International Development, and coordinated by Family Health International/AIDSCAP in collaboration with the U.S. Centers for Disease Control (CDC), while the USAID funded Population Council ANE OR/TA Project provided the financial support for Stage II.

Research Summary: Stage I (December 1996 - June 1997)

IMPROVED REPRODUCTIVE HEALTH AND STD SERVICES FOR WOMEN PRESENTING TO FAMILY PLANNING SERVICES IN NORTH JAKARTA

BACKGROUND and METHODS

Special attention is needed to alert women to Reproductive Tract Infections (RTIs) and STDs, which are often asymptomatic and can have more severe health consequences in women. Women should be encouraged to seek treatment, and also need support in using barrier methods that they can control, and in notifying their sexual partners, so that they too can be treated and prevent reinfection of the women.

Unlike STD clinic clientele, family planning (FP) clients are typically women seeking contraceptive services who are generally unaware of RTIs and STDs. They are not informed or asked about RTI/STD risk when they present themselves for FP services, and do not receive appropriate information or referrals even if presenting with potential RTI symptoms. Therefore, the overall goal of this study was to develop and test a model for integrating RTI/STD clinical services into existing family planning services.

The sites selected were two FP clinics in low-income urban neighborhoods, one at a hospital and one at a primary health center. The study ran from December, 1996, to June, 1997 and involved several phases and a quasi-experimental design as follows:

- 1) Pre-intervention observation included a six month retrospective record review and direct observation of HCP behaviors at client contact to determine existing clinical and reporting practices;
- 2) Clinical protocols were developed for use as standardized clinical evaluation procedures for the detection, treatment and management of RTI/STDs;
- 3) The initial intervention consisted of workshops for FP HCPs on diagnostic and lab skills, RTI/STD treatment, communication skills, record-keeping, and infection control practices;
- 4) The twelve week observation period (February 17 to May 9, 1997) involved observation of the HCPs at each client contact over and on-going coaching and workshops as necessary.

Over the twelve week observation period, during which the new services were provided free of charge, each of 312 eligible and consenting FP clients received a brief reproductive health history interview and a pelvic exam. Specimens were taken to detect: *Candida albicans*, *Bacterial vaginosis*, *Trichomonas vaginalis*, *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, and *Treponema pallidum* (syphilis).

FINDINGS

- There was a surprisingly high rate of chlamydia, 10.3%, among this “low risk” sample of women, according to etiologic diagnoses from the referral laboratory.
- Only five of the 312 women reported ever having had an STD and only eight admitted knowing that their partner was not monogamous. Only two reported having had more than one sex partner, while unusual vaginal discharge was reported by 59%, lower abdominal pain by 41% and 8.6% reported genital sores or lumps, all within the past three months.
- However, none of the 12 risk factors from the history-taking (including those mentioned above) was statistically significant as a predictor of infection, while among the 16 clinical signs investigated during the pelvic examination only one, vaginal lesions or ulcers, qualified ($p=0.02$).
- ◆ Providers were encouraged to attempt a clinical / syndromic diagnosis for each client (positive or negative). Doctors were more likely to attempt a diagnosis than midwives (98% vs. 68.5%) and were more likely to be accurate (41% vs. 35%).
- ◆ Fifty-six women (18%) did not receive an initial diagnosis. A total of 98 (38%) women received a correct initial diagnosis, i.e. concurrent with the final diagnosis (7% positive & 31% negative). The most likely clinical or syndromic diagnosis received was a false negative (44.1%).
- ◆ Gram stains for Bacterial vaginosis and candidiasis as performed by the trained HCPs on site, had insufficient sensitivity for clinical detection of infection (56.2% and 42.8% respectively).

- ◆ HCPs were willing to learn and perform the clinical skills necessary for the pelvic exam and specimen collection, but were more reluctant to perform tasks involving interpersonal communication (history taking, counseling, education, referral) and record keeping. This indicates a devaluing of the “less technical” components of clinical evaluation.
- ◆ Cultural barriers emerged in the form of HCP unwillingness to cause “loss of face” to clients by honestly disclosing an STD diagnosis. While clients were often treated for their infection, the HCPs seemed to disregard the vital importance of partner treatment and counseling, putting clients at risk of reinfection.
- ◆ By the end of the observation period, 73% of non sexually transmitted infections had received appropriate treatment, and 73.5% of STD infections had been appropriately treated. Only 55% (27) of the sexual partners of STD positive clients received treatment for infections.

RECOMMENDATIONS

- ◆ The high rate of chlamydia found among these “low risk” women demands further investigation and intervention, given the potentially severe consequences of this infection for women’s health.
- ◆ There is a need for improved and more detailed risk assessment, and for counseling by staff, with minimal fragmentation of client care.
- ◆ Basic communication skills must be taught and repeatedly reinforced among health care providers.
- ◆ Partner notification/treatment rates must be improved, with an emphasis on providing treatment, with or without the opportunity for examination of the partner, and on provision of condoms.
- ◆ Additional strategies for increasing the rates of partner treatment and follow-up should be explored.
- ◆ Client reproductive health care needs and ability to pay for services need to be investigated.
- ◆ Feasibility of integration of RTI/STD services on a broader scale needs to be addressed through cost study.

UTILIZATION OF RESULTS

The Indonesia Ministry of Health (MOH) has expressed intentions to incorporate portions of the Population Council's clinical protocols into MOH guidelines for the future integration of RTI/STD services into existing FP/MCH programs in Indonesia.

* * *

Preliminary Data from Both Stage I and Stage II, North Jakarta, 1997

Preliminary Data from Both Stage I and Stage II, North Jakarta, 1997

Goal:

To assess the feasibility of delivering an integrated program of RTI/STD clinical services to female family planning (FP) clients at two clinic sites

Objectives:

To Investigate

1. Prevalence of RTI/STDs
2. The Role of Risk Factors
3. Infection control practices
4. Diagnostic skills of Health Care Providers (HCPs)
5. HCP compliance with national STD treatment guidelines
6. HCP inter-personal communication skills (client risk assessment, education, counseling & partner notification)
7. Quality of the existing recording/reporting system
8. Costs of integration of services into FP clinics (Stage II only)

Table 1: Overview of Study Period and Design

December 1996 - January 1997	<u>Pre-Intervention Assessment and Preparation:</u> <ul style="list-style-type: none"> • Retrospective Review of Diagnostic Records at 2 sites • Direct Observation of HCPs in Client Contact • Development of Written Protocols
January - December, 1997	<u>Intervention:</u> <ul style="list-style-type: none"> • Initial Training Seminars • Periodic Workshops/ on-going coaching
February 17 - May 9, 1997 (12 weeks)	<u>Data Collection:</u> <ul style="list-style-type: none"> • Stage I: HCP-Client Contacts and RTI Data
June - August, 1997	<ul style="list-style-type: none"> • Data analysis, reporting and presentation • Fund-raising for Continuation Study
September 9- December 29, 1997 (16 weeks)	<u>Data Collection:</u> <ul style="list-style-type: none"> • Stage II: HCP-Client Contacts, RTI Data and Cost

HCP = Health care provider

Table 2. Study Participants, Stage I and Stage II, North Jakarta, 1997

Stage I (12 Weeks: Feb. - May)	Stage II (10 Weeks: Sept. - Dec.)
<p>Clients:</p> <p>478 FP Clients Seeking Services</p> <p>53 Unwilling to Participate</p> <p>113 Excluded (menses, antibiotics, etc.)</p> <p>312 FINAL SAMPLE</p>	<p>Clients:</p> <p>695 FP Clients Seeking Services</p> <p>185 Unwilling to Participate</p> <p>187 Excluded (menses, antibiotics, etc.)</p> <p>316 FINAL SAMPLE</p>
<p>Health Care Providers:</p> <p>3 Doctors (Koja Hospital)</p> <p>2 Midwives (Cilincing Health Center)</p> <p>5 TOTAL HCPs</p>	<p>Health Care Providers:</p> <p>4 Doctors (Hospital and PHC)</p> <p>6 Midwives (Hospital and PHC)</p> <p>10 TOTAL HCPs</p>

Note: In Stage II, 48 women refused due to prior participation in Stage I, but 14 former participants agreed to also participate in Stage II (prior participation was not a basis for exclusion).

Table 3: Selected Characteristics of Participants in Stage I and II, North Jakarta, 1997

	Stage I	Stage II
	N: 312 % (n)	N: 316 % (n)
Location :		
Koja	46.2 (144)	45.3 (143)
Cilincing	53.8 (168)	54.7 (173)
Age :		
< 25	15.4 (48)	14.2 (45)
25 -34	84.6 (264)	85.8 (271)
Current Contraception		
Injectable	36.9 (115)	35.8 (113)
IUD	26.0 (81)	29.1 (92)
Pills	23.0 (72)	21.2 (67)
Sterilization	2.9 (9)	6.6 (21)
Condoms	2.6 (8)	4.7 (15)
Norplant	1.6 (5)	0.6 (2)
Other/Missing	0.6 (2)	0.0 (0)
None	6.4 (20)	1.9 (6)
Risk Factors/Signs:		
Past history of STD	1.6 (5)	6.7 (21)
> 1 sex partner*	0.6 (2)	1.3 (4)
Intercourse without a condom*	92.6 (289)	87.5 (274)
Sex partner not monogamous*	2.6 (8)	4.0 (12)
Reported any symptoms*	74.6 (223)	75.9 (240)
Partner with any symptoms*	2.9 (8)	8.9 (28)

*In the past three months

Table 4: Procedures for Initial, On-Site and Final Diagnoses, As Followed in Stage I and II, 1997

RTI	Initial (Clinical) Diagnosis Protocols	On-site Microscopy (OSM) Diagnostic Procedures	Final (Referral Laboratory) Diagnosis Procedures
Candidiasis	white vaginal discharge like “curd”; vulvar itching; tissue inflammation	KOH Wet Mount (II)* Gram Stain	Gram Stain
Bacterial vaginosis	grey/white vaginal discharge; “fishy” odor	NaCl Wet Mount (II)* Gram Stain KOH Odor Test (I)*	Gram Stain
Trichomoniasis	yellow/green profuse and frothy vaginal discharge with foul odor; vulvar itching; dysuria/ dyspareuria; tissue inflammation; strawberry cervix.	NaCl Wet Mount	NA
Chlamydia	commonly asymptomatic but for both chlamydia and gonorrhea signs may include: abnormal vaginal discharge; dysuria; post coital spotting; lower abdominal pain; cervix with erythema; cervical ectopy; cervical friability; cervical mucopus (cloudy); cervical motion tenderness; painful palpitation to uterus and/or adnexa	NA	ELISA: (I) IDEIA™ Chlamydia (II) Syva <i>Microtrak</i> ® Chlamydia
Gonorrhea	commonly asymptomatic but signs may include: 1. single painless ulcer: 5-15 mm diameter, with raised border; smooth & clean base, firm & rubbery to touch; 2. lymph glands firm & non-tender; 3. generalized skin rash	Gram Stain	Gram Stain Culture
Syphilis	Commonly asymptomatic but signs may include: 1. single painless ulcer: 5-15 mm diameter, with raised border; smooth & clean base, firm & rubbery to touch; 2. lymph glands firm & non-tender; 3. generalized skin rash	NA	RPR/TPHA

NA=Testing for this RTI not applicable at this facility

*added/dropped in Stage II based on recommendations that emerged from Stage I (Iskandar et al., 1996)

Notes:

1) Tests were used for both Stage I & II unless indicated.

2) Referral laboratories: Cipto Mangokusomo Hospital’s Dermatovenereology Lab (Stage I); UI’s Microbiology Lab (Stage II)

Table 5: Comparative Table of RTI Prevalences According to Various Diagnostic Methods, Stage I and Stage II, North Jakarta, 1997

	Stage I			Stage II		
	Final Diagnosis N=312 %	On-Site microscopy N=312 %	Initial Diagnosis N=256* %	Final Diagnosis N=316 %	On-Site microscopy N=316 %	Initial Diagnosis N=309* %
Candidiasis	6.7	6.7	12.9	39.7	24.8	24.9
Bacterial vaginosis	5.1	5.1	14.8	14.9	14.0	9.4
Trichomoniasis	NA	5.4	1.2	NA	4.4	5.5
Gonorrhoea	0.3	0.6	0.4	26.3	15.2	20.1
Chlamydia	10.3	NA	2.0	16.5	NA	2.9
Syphilis	0.0	NA	0.0	1.6	NA	0.0
Any RTI	24.7	NA	NA	63.9	NA	NA
Any STD	14.7	NA	NA	41.8	NA	NA

*56 women received no initial diagnoses in Stage I, and 7 in Stage II.

NA: Not available

Note: There were several cases of multiple diagnosis.

Table 6: Health Care Provider Behavioral Findings

BEFORE (Pre-intervention)	AFTER (During data collection)	
Infection Control:		
	Stage I	Stage II
There was overall improvement:		
<ul style="list-style-type: none"> • Hand washing pre-exam: 12.5% • Hand-washing post- exam: 58% • Use of new gloves: 50% • Use of clean instruments: 100% 	<ul style="list-style-type: none"> • 18.6% • 22.1% • 78.8% • 99.4% 	<ul style="list-style-type: none"> • 44.1% • 52.5% • 98.3% • 99.4%
Positive Communication Skills/Attitudes:		
<ul style="list-style-type: none"> • Perceived clients as uneducated and embarrassed • Felt that it is unrealistic to expect an ordinary housewife to convince her husband to use condoms • Felt there was not enough time to include STD services in an FP client visit • None had ever recommended an HIV test to an FP client 	<ul style="list-style-type: none"> • In Stage I HCPs rarely disclosed STD diagnosis to an infected client or recommended partner treatment, but this has improved in Stage II (on-going) • In Stage I they were unwilling to improve client education and counseling skills. This has improved in Stage II with the addition of counselors. • Doctors were significantly better at explaining transmission, prescription and partner treatment than midwives • Midwives were more consistent in mentioning potential side-effects of drugs 	
Clinical & Laboratory Skills:		
<ul style="list-style-type: none"> • Only 1 HCP mentioned "Wet Mount" as a useful rapid test • Doctors were convinced that lab tests (etiologic diagnoses) are unnecessary and rarely ordered them • Doctors seldom recommended a cervical culture for gonorrhoea • HCPs did not perceive existing microscopes as accessible for their use 	<ul style="list-style-type: none"> • Willing to learn and improve technical skills (pelvic exam, taking specimens, prescribing treatment) • Concurrence of clinical (syndromic) diagnoses with final lab (etiologic) diagnoses improved somewhat at Koja but not at Cilincing during Stage I. Cilincing seems to be improving in Stage II. • Sensitivity of on-site gram stains for BV and Candidiasis were low overall and did not improve from Stage I to Stage II • Doctors showed improved motivation in recommending lab tests for clients with clinical signs of infection 	

<i>Compliance with STD Guidelines:</i>	
<ul style="list-style-type: none"> Record review showed no diagnoses of STDs in the 6 months before the study, only non specific observations of cervicitis and vaginitis. 	<ul style="list-style-type: none"> Ineffective drugs were still prescribed, especially in Stage I but this has improved in Stage II. Dosage, frequency and duration of use for each treatment regimen are sometimes forgotten
<i>Recording and Reporting:</i>	
same as above	<ul style="list-style-type: none"> Results of diagnoses and risk assessment findings during the study are not consistently entered into the clinics' own client files

Preliminary Conclusions & Recommendations

The Good News:

- Overall it was feasible to integrate STD control into Family Planning at the Primary Health Care level.
- HCPs were consistently very keen to learn or improve their technical evaluative skills (for physical exam).
- There has been improvement in Stage II in HCP attitudes towards the need for counseling, education and partner notification, but the 12 weeks of Stage I were insufficient to demonstrate behavioral and attitude changes.
- After training, HCPs gained more confidence in writing down an initial RTI/STD clinical diagnosis and a treatment plan prior to the client leaving the clinic.

The Bad News:

- Prevalence of RTI/STDs based on etiological testing among "Low-risk" population is relatively high, 24.7% - 63.9% with any RTI and 14.7% - 41.8% with any STD.
- Recording and reporting during the study has not automatically transferred to improved recording and reporting in the clinics' files.
- FP Providers need special and repeated training to improve communication skills for risk assessment, education/counseling, partner notification, and compliance with treatment guidelines (12 weeks were not sufficient).

Note: Prevalence data and comparative analysis of initial, on-site microscopy and final (referral lab) diagnoses still in processing, as are behavioral data. This presentation does not represent our final results or conclusions. Please contact the Population Council for final published results in 1998.

Discussion:

No positive results have been found for HPV or HSV during either stage. Since the protocol for diagnosis of these infections involved use of clinical examination, the non-lab specific signs that can be a basis for diagnosis of these infections were probably overlooked by providers, who were focusing on taking lab specimens for diagnosis of other infections.

In the second stage, there were many more clients who did not participate, often because they had participated in the first part of the study. This however does create the potential for selection bias since there were more potential reasons for refusal than in the first stage, it was a more select group even though they were from the same neighborhood target area. There is also the question of whether these clinics became known as places where STD services could be obtained. It seems that this is a possibility which may partly explain the higher prevalences in Stage II. Unfortunately we do not have the education and occupation risk factors for clients from Stage I to compare the samples. We can see differences in other risk factors, but another consideration is the improved provider communication skills in obtaining more accurate risk assessment/health history data.

Clearly there is much room for speculation and investigation into the causes of the major difference in prevalence findings between Stage I and Stage II. The results raise many questions about the value, validity and reliability of lab tests. Different laboratories were used for each study, but both were among the best labs in Jakarta. There were differences in the handling of the gonorrhea cultures and cervical samples for chlamydia testing, and also a different ELISA test was used for chlamydia. Furthermore, some tests used in Stage II were found to have expired. All of these questions will be evaluated in the process of analyzing and reporting on all the data for our final reports, scheduled to be completed by March, 1998. Stage II results will also be compared to a sample of double-checked tests (using GEN-PROBE) provided by HAPP-Jakarta for gonorrhea and chlamydia. Concurrence of on-site and back-up lab results also varies considerably by infection and by week of the study. The analysis and interpretation of all these results is still in early stages.

This study was well designed to evaluate behavioral processes. One suggestion is to make a list of all problems encountered and how they can be addressed. It is hoped that the results can be used by other researchers and program planners, and that any mistakes need not be repeated. In particular these results have implications for the current initiative to implement the syndromic approach throughout Indonesia.

2. STD Knowledge and Treatment Seeking Behavior and Condom Use among Selected High Risk Behavior Groups of Population in North Jakarta, Surabaya, and Manado

(by Budi Utomo)

Budi Utomo, presenter

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Abstract

The objective of this paper is to assess the extent of STD knowledge and treatment seeking behavior and condom use among selected high risk groups of population, notably, sailors and seaport laborers, truckers, and female commercial sex workers, in three seaport cities: North Jakarta, Surabaya, and Manado. The survey used a cross-sectional survey design with a structured questionnaire to collect, through interview, self-reported behavioral data related to STD/HIV. A two-stage cluster sampling was used to obtain sample of 200 to 400 respondents for each target group for each city. Most of respondents aged between 20 and 40 years, had low educational level. Two-third of male respondents were married, and the majority of female CSW respondents were in divorce status. Respondents' STD knowledge was limited to syphilis, gonorrhoea, and AIDS. The knowledge seemed to refer more to the 'word' rather than to the disease, mixing up the word of syphilis or gonorrhoea with other STDs. 'Pain and hot when urinating' was perceived as a symptom related to STD. The practice of STD self-treatment was common. More than half of those with STD related symptom sought medical treatment, particularly from private medical practice. Substantial proportion of those with STD related symptom did not seek any medical treatment. About half of male respondents ever visited female CSW. The risk of ever had STD was 8 times higher for those who ever visited female CSW than those who never visited female CSW. Among male respondents, use of condom at last sexual contact with female CSW was very low, below 10 per cent. Among female CSW respondents, use of condom at their last sexual contact varied between cities and between localization and non-localization from 15 to 50 per cent, but consistent condom use was much lower, from one to 25 per cent.

1. Introduction

STDs (sexually transmitted diseases) facilitate the spread of HIV transmissions (Holmes, Delay, and Cohen, 1996: 8). STDs, particularly the ulcerative types, biologically enhance the vulnerability of the infected individuals to HIV infection. Moreover, due to their sexually high risk behavior, persons infected with STD are also prone to acquire HIV. For these reasons, in the context of HIV/AIDS prevention and control program, it is important not only to prevent but also to medically treat the STDs. Among various associated factors, STD knowledge and treatment seeking behavior and condom use, particularly among sexually high risk behavior groups of population, are noted to be the important factors determining the successfulness of STD prevention and treatment.

Against the above background, this paper is prepared to assess the extent of STD knowledge and treatment seeking behavior and condom use among selected high risk groups of population, notably, sailors and seaport laborers, truckers, and female commercial sex workers. Such assessment would provide useful information for the basis of developing public campaign against the spread of STDs including HIV.

2. Methodology

Data used in this paper are generated from the baseline STD/HIV Risk Behavioral Surveillance Survey (BSS) conducted among selected groups of population in 1996 in three cities: North Jakarta, Surabaya, and Manado.¹ The survey was sponsored by the HIV/AIDS Prevention Project (HAPP), which is a collaborative project involving the Ministry of Health, the Family Health International, the USAID, and the Non-Governmental Organizations.

Sample size was determined on the basis of following parameters: (a) 10 per cent in the proportion of persons in the population the specified behavior being examined; 15 per cent of behavior change to be detected; 95 per cent in the confidence level of estimate; 20 per cent of statistical power; and the approximate design effect of 1.5 to two times. With such parameters, a sample size of 200 to 400 respondents was pre-determined for each target group for each city.

A two-stage cluster sampling was used in obtaining the sample. In field-set up, mapping and listing of sentinel sites (clusters) were conducted to provide a sampling frame of sentinel sites with their approximate number of eligible individuals.² The first stage of sampling was to randomly select a number of sentinel sites using PPS (probability proportionate to size),³ and the second stage was to randomly select individuals from each of selected sentinel sites. For this second stage of sampling, a sampling frame of individuals was prepared on site at the time of the survey. To accommodate behavioral variation between and within the sentinel sites, it was decided to select 10 to 20 sentinel sites and 10 to 40 individuals per sentinel site to yield the required sample size of 200 to 400 individuals.

The survey used a cross-sectional survey design with a structured questionnaire to collect self-reported sexual behavioral data related to STD/HIV including STD knowledge and treatment seeking behavior and condom use. Data were collected by interviewers specifically recruited and trained for the survey. In general, the interviews took several phases: introduction, rapport building and 'ice breaking', core questions, and closure.

As sexual behavior cannot be directly observed, validity and reliability tests on selected sexual behavior questions were conducted by comparing results of the main survey with the results of the other two smaller surveys (the pretest and the validation survey) previously conducted at different times (one week interval) by different interviewers over the same population.⁴ The reliability test demonstrated consistent results between the three surveys: the main, the pretest, and the validation survey. Even on the basis of small sample, the individual-matching comparison demonstrated a good agreement of responses (above 75 per cent) between the same respondents interviewed at two different time (about one week) by different

1 These selected groups of population include female commercial sex workers (CSWs), and sailors and seaport laborers in Jakarta, Surabaya, and Manado; truckers, and male and female factory workers in Surabaya; and male and female students in Manado.

2 A sentinel sites was defined as the site which meets the following criteria: relatively permanent locality, has clearly geo-physical boundary markers, and occupied regularly by individuals targeted by the survey.

3 See Lwanga and Lemeshow (1991).

4 Results were compared at three different levels of disaggregation: (1) no-matching comparison, (2) sentinel-matching comparison, and (3) individual-matching comparison.

interviewers. Moreover, even for the non-matching comparisons, the level of agreement increased with the increasing sample size (Utomo, 1997).

3. Results

3.1 Respondents' background characteristics

Respondents varied in their age, education, and marital status. The majority of respondents were in their reproductive ages with some of them were above 40 years. The proportion of respondents having high education, namely, completed senior high school or above, was relatively low (see Table 1). The majority of male respondents were married, while the majority of female CSWs were divorce. In Manado, however, many female CSWSs were in not-married status.

Table 1. Percentage distributions of respondents by demographic characteristics

Target groups ^a	Jakarta			Surabaya			Manado		
	S/SL	LSW	NLSW	S/SL	LSW	NLSW	TD/A	S/SL	NLSW
N	399	200	199	200	201	200	200	400	200
Age group (years)									
< 20	7.0	11.0	13.1	3.0	16.4	1.0	4.5	4.8	17.0
20 - 29	49.6	72.0	45.7	45.0	60.2	44.0	41.5	37.5	52.5
30 +	43.4	17.0	41.2	52.0	23.4	55.0	54.0	57.7	30.5
Education									
No schooling	2.5	15.5	4.0	0.0	19.9	11.0	0.5	0.0	0.5
Not finished primary	17.8	33.0	17.6	14.5	23.4	35.0	9.0	16.8	18.0
Finished primary.	29.2	36.5	34.1	22.5	37.3	26.0	32.0	24.7	21.5
Finished junior high	22.6	13.0	30.2	18.0	17.9	21.5	47.0	25.5	40.0
Finished senior high	22.6	2.0	13.1	39.0	1.5	6.0	11.5	29.7	20.0
Finished tertiary	5.3	0.0	1.0	6.0	0.0	0.5	0.0	3.3	0.0
Marital status									
Not married	35.8	9.0	15.6	39.0	26.9	16.5	28.5	24.5	45.0
Married	63.2	1.0	16.6	60.5	2.5	5.5	71.0	73.7	7.0
Divorced	1.0	77.5	58.3	0.5	59.6	66.0	0.0	1.5	32.5
Widowed	0.0	9.0	6.5	0.0	4.5	4.5	0.5	0.3	4.0
Living apart	0.0	3.5	3.0	0.0	6.5	7.0	0.0	0.0	11.0
No answer	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.5

N = Number of all respondents.

^a S/SL = Sailor/seaport laborers; LSW = Female commercial sex workers in localization; NLSW = Female commercial sex workers in non-localization; TD/A = Truck drivers/driver assistants

3.2 Knowledge of STDs

Respondents were asked whether or not they know some types of STD including gonorrhea, chlamydia, syphilis, herpes, lymphogranuloma venereum, scabies, condyloma, AIDS, or hepatitis in order to provide information regarding the extent of their knowledge and awareness concerning the diseases. The results showed three types of STDs, notably, syphilis, gonorrhea, and AIDS, as the known popular STDs with syphilis being the most popular as it was mentioned by almost 70 per cent of respondents (see Table 2). This finding may not be surprising given that syphilis has been one of the most common old STD disease.

It seems that the proportions of respondents who reported knowing syphilis or AIDS were higher in Manado than in the other two cities. In the three cities, most respondents were familiar with syphilis and *GO* (gonorrhea). It is important to note, however, that those who reported

knowing syphilis may refer to the ‘word’ rather than their knowledge of the disease.⁵ Many respondents perceive syphilis, or even other STDs, not as a threat because according to them there are now many types of medicine available for self-treatment.⁶ Substantial proportions of respondents across the target groups and cities, 10 to 65 per cent, mentioned ‘AIDS’ as an STD.

Table 2. Percentage distribution of respondent’s knowledge about STDs

Target groups ^a	Jakarta			Surabaya			Manado		
	S/SL	LSW	NLSW	S/SL	LSW	NLSW	TDA	S/SL	NLSW
N ^b	399	200	199	200	201	200	200	400	200
Know STD type (%)									
gonorrhea	39.6	25.5	23.1	26.5	16.4	47.0	16.0	16.5	23.0
chlamydia	2.3	15.5	21.1	1.0	18.9	30.0	1.0	1.5	35.0
syphilis	80.2	52.0	58.8	80.5	48.3	82.5	79.5	92.3	97.0
herpes	1.0	0.0	0.0	1.0	1.0	7.5	1.0	0.5	1.0
condyloma	1.3	3.0	1.0	1.5	7.0	10.0	0.0	0.8	1.0
AIDS	36.8	19.0	28.1	17.0	37.8	8.5	16.0	25.3	64.0
others	2.3	2.0	1.0	0.5	1.0	0.0	0.5	0.5	0.0

^a S/SL = Sailor/seaport laborers; LSW = Female commercial sex workers in localization; NLSW = Female commercial sex workers in non-localization; TD/A = Truck drivers/driver assistants

^b Number of all respondents.

3.3 Perceived experience with STDs

After being asked about their STD knowledge, respondents were questioned whether they ever had the type of STD they previously mentioned. Respondents were also asked about their previous experience with STD related symptoms. In this case, the interviewer read the predetermined listed symptoms one by one to the respondent.

Proportions of those who reported ever had STD varied across target groups and cities from 10 to 40 per cent (see Table 3). The proportions were found to be much higher among male high risk group respondents than among female commercial sex workers. It is unclear whether such figures reflect the true situation as they were the product of reported perceived illnesses. Of those who reported ever had STD, the majority mentioned syphilis or gonorrhoea as the type of STD they suffered.⁷ These reported type of STD experienced by the respondent, however, should

⁵ First, the word ‘*sipilis*’ or *GO* (*kencing nanah*) exist in social idiom, stereo-casted as ‘*penyakit kotor*’ (filthy disease) and is often used as humorous message/jokes for people who like to *jajan* (having sex with CSWs). Second, some high-risk behavior groups (such as CSWs or truck drivers) are also aware of it as ‘occupational hazard’.

⁶ Some STDs, such as *sipilis* or *GO* (gonorrhoea) are perceived to be ‘immediately curable’. In most localization areas there are many stalls or *warungs* or *toko obat* (lit. medicine shop) selling various types of *jamu* (traditional herbal medicine), vitamins, antibiotics, and tonics. Blowfield (1992) in his study of commercial sex industry in Surabaya, noted that such perception may also reflect gross lack of actual knowledge about what STDs are and what their consequences are.

⁷ It is worth noting that a large proportion of female respondents noticed that they had experienced vaginal discharge-related infection which is locally known as *keputihan* (*fluor albus*, or unusual vaginal discharge). A study conducted in Lombok and Jakarta in 1994 found that the majority of female respondents did not regard *keputihan* as an RTI (reproductive tract infection). They perceived *keputihan* as a common phenomenon for women, therefore this disease persist untreated (Sadli et al., 1994:5-13). It is also striking that a quite high

be interpreted with caution as STD diagnosis generally requires medical and laboratory examination. The popularity of certain types of STD, notably syphilis and gonorrhea, may influence the respondents' perception on which type of STD they may report. It remains difficult, therefore, from the survey results to draw firm conclusion regarding the precise pattern of STDs in the target population.

Table 3. Percentage distributions of respondents who reported ever had STDs

Target groups ^a	Jakarta			Surabaya			Manado		
	S/SL	LSW	NLSW	S/SL	LSW	NLSW	TDA	S/SL	NLSW
N ^b	399	200	199	200	201	200	200	400	200
% who reported ever had STD	20.6	10.5	10.1	40.0	9.5	19.5	40.0	29.7	19.5
N ^c	82	21	20	80	19	39	80	119	39
Reported type of STD (%)									
gonorrhea	35.4	4.8	5.0	8.8	5.3	2.6	12.5	10.9	0.0
chlamydia	0.0	47.6	65.0	0.0	31.6	53.8	0.0	0.0	41.0
syphilis	50.0	33.3	25.0	52.5	26.3	17.9	50.0	55.5	5.1
herpes	1.2	0.0	0.0	0.0	5.3	0.0	1.3	0.0	0.0
itching around the genital	2.4	4.8	5.0	31.3	10.5	23.1	32.5	31.1	43.6
condyloma	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AIDS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

^a S/SL = Sailor/seaport laborers; LSW = Female commercial sex workers in localization; NLSW = Female commercial sex workers in non-localization; TD/A = Truck drivers/driver assistants.

^b Number of all respondents.

^c Number of respondents who ever had STD symptoms.

3.3.1 Reported ever had STD by age

It is interesting to compare between the target groups in regard to the percentage of respondents who reported ever had STD by age. Among female CSWs, except in Manado, the younger their ages the higher the proportions of those who reported ever had STD. Hence, younger CSWs may engage more in sexual exchange than their older counterpart. Conversely, among adult male respondents, except Manado, the older their ages the higher the proportions of those who reported ever had STD (see Table 4), suggesting the hypothesis that adult males are regular but infrequent clients of female CSWs.

Table 4. Percentage respondents who ever had STD by age, by education, and by marital status^a

Target groups ^b	Jakarta			Surabaya			Manado		
	S/SL	LSW	NLSW	S/SL	LSW	NLSW	TD/A	S/SL	NLSW
Age									
< 20	8.7 (23)	50.0 (16)	21.4 (14)	16.7 (6)	25.0 (20)	50.0 (2)	20.0 (5)	35.3 (17)	15.2 (33)
20-29	21.7 (180)	11.6 (95)	20.3 (69)	41.6 (77)	13.6 (81)	21.7 (83)	52.8 (72)	33.1 (142)	22.3 (103)
30+	26.1 (157)	8.7 (23)	4.8 (62)	52.8 (89)	8.8 (34)	21.3 (94)	43.2 (95)	30.4 (217)	18.3 (60)
Education ^c									
Low	22.2 (167)	16.7 (108)	12.3 (73)	47.2 (53)	11.9 (101)	22.6 (124)	43.9 (66)	30.1 (146)	19.5 (77)
High	23.3 (193)	11.5 (26)	15.3 (72)	46.2 (119)	20.6 (34)	20.0 (55)	48.1 (106)	32.6 (230)	20.2 (119)
Marital status									
Never	17.5 (126)	3.3 (15)	10.5 (19)	38.6 (70)	24.3 (37)	9.7 (31)	51.2 (43)	37.8 (90)	18.0 (89)
Ever	25.6 (234)	13.4 (119)	14.3 (126)	52.0 (102)	10.2 (98)	24.3 (148)	45.0 (129)	29.7 (286)	21.5 (107)

^a The number within the parentheses refers to total number of respondents at the particular demographic characteristic and target group.

^b S/SL = Sailor/seaport laborers; LSW = Female commercial sex workers in localization; NLSW = Female commercial sex workers in non-localization; TD/A = Truck drivers/driver assistants.

^c Low = no schooling to finished primary education; High = finished junior high school to tertiary education.

3.3.2 Reported ever had STD by education

While people with high education are assumed to have a greater exposure to information on STD and means of its prevention and control than their counterpart, the survey data indicate inconsistent educational pattern of ever had STD across the target groups. Thus, the data suggest, at least at the survey settings, that education may have unclear bearing on level of reported ever had STD.

3.4 Recent experiences with STD related symptoms

3.4.1 Reported STD related symptoms within the past year

The BSS gathered information regarding the respondents' previous experience with STD related symptoms, and then specified whether the experience happened within the past year. The predetermined symptoms listed in the questionnaire were read one by one by the interviewer without mentioning that the symptom is STD related, and then asked the respondent to respond either 'yes' or 'no'. The information resulted may indirectly indicate the extent of recent STD related problem in the target population.

There is high variation in the proportion of respondents who reported ever had STD related symptoms but a similar pattern in type of symptoms between the target groups. Similar patterns in type of symptom were also observed when the symptoms were delineated within the past year (see Table 5). 'Pain and hot when urinating', 'fungi and itching around the genital', and 'white purulent vaginal discharge' were the common reported symptoms, suggesting that urethral infections and itching around the genital are common. Further examination, however, is needed to see whether or not the reported symptoms are STD related.

Table 5. Distributions of respondents who reported ever had STD symptom and their health seeking behavior in the past year

Target groups ^a	Jakarta			Surabaya			Manado		
	S/SL	LSW	NLSW	S/SL	LSW	NLSW	TDA	S/SL	NLSW
N ^b	399	200	199	200	201	200	200	400	200
Ever had STD symptom (%)									
pain and hot when urinating	15.8	19.5	12.6	7.5	31.3	17.5	10.0	13.5	9.0
painless or non-itching ulcer around genital	2.8	3.5	6.5	3.5	29.4	1.0	0.5	2.3	0.5
fungi and itching around genital	7.5	4.0	7.5	12.0	2.0	13.0	13.0	11.0	9.0
white purulent discharge	0.0	15.0	9.5	0.0	11.4	31.5	0.0	0.0	9.0
N ^c	173	75	65	113	108	113	108	178	59
Last symptom in the past year									
pain and hot when urinating	50.9	45.3	26.2	41.6	30.6	17.7	50.0	47.8	23.7
painless or non-itching ulcer around genital	5.2	8.0	21.5	4.4	42.6	0.9	0.9	2.8	0.0
fungi and itching around genital	20.8	6.7	18.5	36.3	0.9	16.8	38.0	20.8	30.5
white pungent discharge	0.0	32.0	24.6	0.0	13.9	61.1	0.0	0.0	28.8
Having self treatment (%)	73.4	74.7	50.8	72.6	63.9	91.2	61.1	84.8	89.8
Seeking medical treatment (%)	52.0	76.0	80.0	51.3	75.9	61.1	54.9	53.9	78.0
Place of treatment for last symptom									
health center	8.1	5.3	1.5	7.1	13.9	7.1	0.0	7.9	22.0
family planning clinics	1.7	12.0	3.1	1.8	0.0	0.0	0.0	5.1	1.7
hospital	12.7	4.0	7.7	4.4	6.5	9.7	2.8	9.0	1.7
doctor	26.0	52.0	66.2	37.2	54.6	38.1	51.9	27.5	42.4
other	1.7	1.3	0.0	0.9	0.9	0.9	0.0	3.4	0.0
don't remember	0.6	0.0	0.0	0.0	0.0	1.8	0.0	0.0	5.1
no answer	1.2	1.3	1.5	0.0	0.0	3.5	0.0	1.1	5.1

^a S/SL = Sailor/seaport laborers; LSW = Female commercial sex workers in localization; NLSW = Female commercial sex workers in non-localization; TD/A = Truck drivers/driver assistants

^b Number of all respondents.

^c Number of respondent who have ever had STD symptom in the past year.

Besides ‘pain and hot when urinating’, ‘white purulent vaginal discharge’ was also a symptom commonly reported by female commercial sex workers. As respondents may have different perception towards the idea of ‘white purulent vaginal discharge’, and as such, the symptom may not be a reliable indicator of STDs. Thus, the variation in the proportion of those who reported such a symptom may not necessarily reflect the variation in the STD related problem. Moreover, many female CSW respondents also said that vaginal discharge (including *keputihan*) could be regarded as normal and would disappear on its own. Many women with this symptom are usually reluctant to seek treatment unless the symptom is persistent. Even so, many women would likely consult their unusual vaginal discharge when they visit family planning or ante natal clinic.⁸

Table 6. Cross-tabulation (2 by 2) between reported ever had STD and reported ever had particular symptom

Reported symptom	Ever had STD								
	syphilis				gonorrhoea				
	yes	no	OR	p	yes	no	OR	p	
Male respondents									
Hot and pain when urinating									
yes	184	191	13.02	0.00	57	318	27.27	0.00	
no	9	1216			8	1217			
Itching around genital									
yes	10	42	1.78	0.11	7	45	4.00	0.00	
no	183	1365			58	1490			
Female CSW respondents									
Hot and pain when urinating									
yes	22	183	23.77	0.00	2	203	3.91	0.14	
no	4	791			2	793			
Itching around genital									
yes	5	85	2.49	0.07	1	89	3.40	0.26	
no	21	889			3	907			
white purulent discharge									
yes	7	172	1.72	0.22	1	178	1.53	0.71	
no	19	802			3	818			

3.4.2 Reported ever had STD and STD related symptom

Table 6 presents 2x2 tables cross-tabulating between a variable on ‘reported ever had STD’, notably, syphilis or gonorrhoea, and a variable on a particular STD related symptom, notably, ‘hot and pain when urinating’, painless and non-itching ulcer around genital’, or ‘white purulent vaginal discharge’. The strength of relationship between the reported ever had STD variable and the reported ever had STD related symptom variable could be statistically assessed through the value of OR (Odds Ratio) and its significant probability. The stronger relationship is indicated by the farther of the OR value from one and the significant probability of lesser than 0.05. Among the three reported different symptoms, ‘hot and pain when urinating’ seems to be the reported symptom associated with the reported perceived STD. However, ‘hot and pain when urinating’, which is clinically supposed to be a symptom of gonorrhoea, was recognized more by the majority of respondents, both the males (sailors and seaport laborers and truckers) and the female commercial sex workers, as a symptom of syphilis rather than a symptom of gonorrhoea. It seems that ‘painless and non-itching ulcer around genital’ and also ‘white purulent vaginal discharge’ were the reported symptoms not associated with STD.

⁸ Women’s Studies Program, University of Indonesia, 1994.

3.5. *STD treatment seeking behavior*

In the context of public health measure, information regarding STD treatment seeking behavior is needed in order to assess the potential source of STD/HIV transmission in the population. In the BSS, respondents who reported ever had the predetermined symptom in the past year were probed whether or not they sought medical treatment, and, if they did, where they sought for such a treatment.

Of those who reported ever had STD, the majority (60 to 90 per cent) performed self-treatment. For most part, the self-treatment was performed by the respondents by taking oral antibiotics, drinking *jamu*, applying antiseptic, or combining these various self-treatment.⁹ People can easily buy oral antibiotics without prescription as a variety of antibiotics and other medicine are generally available in free market, notably, in street vendors or stalls nearby area of CSW localization or traditional market. Respondents usually bought oral antibiotics or medicine in incomplete treatment schedule, and used oral antibiotics not only for self-treatment but, in many cases, also for self-prevention. In this later case, a person took oral antibiotic immediately before sexual exchange. This common practice of taking improper or incomplete treatment schedule of oral antibiotics for STD self-prevention and treatment creates concern as such practice increases the problem of antibiotic resistance.

Of those who reported ever had STD symptom in the past year, 50 to 80 per cent sought modern medical treatment.¹⁰ In fact, many of those who sought medical treatment had previously performed self-treatment. They sought medical treatment after self-treatment did not cure the disease. Of those who seek medical treatment, 25 to 70 per cent went to private medical practice, and a few of them went to local health centers/ *Puskesmas* (see Table 5). Thus, the survey indicated that 20 to 50 per cent of those who reported ever had STD did not seek any medical treatment, despite the fact that most people in the three cities have good access to various types of local health services (hospitals, doctors, health centers, private clinics, etc.). Various factors, such as socioeconomic factors, and accessibility and availability of affordable STD services contribute to such STD treatment seeking behavior.

3.6. *Condom use*

3.6.1 *Male respondents*

Among male respondents who ever had sex, besides being solicited for their sexual behavior, they were also probed for information on their condom use behavior including reasons for using and not using condom at their episodes of sexual contact, including last sexual contact in the past year, with their spouse, casual partner, or commercial sex worker. Of those who ever had sex, 78 to 90 per cent reported ever had sex with non-CSW women (see Table 7). Of those who reported ever had sex with non-CSW women, 10 to 20 per cent reported ever had sex with non-CSW women other than their own wife (casual sex).

⁹ In local social context, rumors or stories about the effectiveness (and also cheapness) of self-medication or the potency of some type of *jamu* or anti-biotics abounds, and seem to be contributing to higher number of people who self-treat STDs.

¹⁰ It is very easy for anybody to obtain antibiotic and antiseptic in the open market. In some cases there are regular visits by social-health workers from the local services (*DinSos and DinKes*) to 'registered' localization, and occasionally non-localization sites providing penicillin oil injections while at the same time taking blood samples for sero-surveillance purposes.

Among male respondents who reported ever had sex, their mean number of sexual contact with non-CSW women in the past year was 20 to 70 times with their first woman, and 3 to 67 times with their second woman. Use of condom at that sexual contact was very low as indicated by the fact that the mean number of using condom at the respective sexual contacts with both the first and the second woman was only 4 times or less (see Table 7).

In regard to sexual exchange with female CSWs, 45 to 55 per cent of male respondents (sailors and seaport laborers and truckers) reported ever had sexual contact with female CSW, and of those who ever visited CSW, about 50 per cent did visit CSW in the past year (see Table 8). The mean reported number of visits to CSW in the past year varied between cities from 4 to 15 times. Use of condom at sexual exchange with CSW is very low. The survey indicated that of those who ever had sex with CSW, only 5 to 15 per cent used condom at their last sexual contact.

Table 7. Percentage distributions of respondents who ever had sexual contact with women other than CSWs

Target group ^a	Jakarta		Surabaya	Manado
	S/SL	S/SL	TD/A	S/SL
N ^b	337	171	173	384
Ever had sexual contact with non-CSW women (%)	78.3	86.5	87.9	91.1
N ^c	264	148	152	350
Status of sexual partner (%):				
Wife	87.1	79.7	93.4	83.1
Girl friend	9.5	16.2	6.6	16.9
Acquaintance	9.1	6.8	5.3	14.0
Other	0.8	0.7	0.7	0.6
No response	0.0	0.0	0.7	0.3
Number of non-CSW women in the past year				
Mean	1.2	1.3	1.1	1.3
Median	0.0	1.0	1.0	1.0
Standard deviation	1.0	1.4	0.4	0.9
Number of cases	258	148	149	345
Status of the first woman (%):				
Wife	87.1	81.1	92.8	82.6
Girl friend	7.6	13.5	3.3	16.0
Acquaintance	5.3	5.4	3.9	1.4
Others	0.0	0.0	0.0	0.0
	100.0	100.0	100.0	100.0
Number of sexual contact with the first woman in the past year				
Mean	56.1	58.1	70.3	20.1
Median	48.0	48.0	52.0	12.0
Standard deviation	52.2	51.0	47.6	18.9
Number of cases	241	145	149	101
Number of using condom with the first woman in the past year				
Mean	2.5	2.8	1.7	0.3
Median	0.0	0.0	0.0	0.0
Standard deviation	13.6	13.4	11.5	0.3
Number of cases	244	119	149	340
Status of the second woman (%) ^d				
Wife	1.9	0.7	0.7	1.7
Girl friend	2.3	4.7	3.3	2.9
Acquaintance	5.7	5.4	2.7	13.4
Other	0.4	0.7	0.7	0.9
Number of sexual contact with the second woman in the past year				
Mean	45.2	22.8	66.7	2.6
Median	4.5	7.0	29.0	2.0
Standard deviation	70.34	31.2	83.2	1.8
Number of cases	22	17	12	40
Number using condom with the second woman in the past year				
Mean	4.4	1.0	0.1	0.1
Median	2.0	1.0	1.0	0.0
Standard deviation	17.3	3.8	0.3	0.5
Number of cases	25	17	12	62

^a S/SL = Sailor/seaport laborers; TD/A = Truck drivers/driver assistants

^b Number of respondents who reported ever had sex.

^c Number of respondents who reported ever had sexual relationships with non-CSW women.

^d Apply to respondents who reported ever had sexual relationships with non-CSW women.

‘Ever visited CSW’ is shown to be an important risk factor for being infected with STD. The survey data indicate that the risk of ever had STD is about 8 times higher for those who ever visited CSW than those who never visit CSW (see Table 9). On the other hand, as the level of condom use is very low, the survey data were unable to be used for evaluating the protection effect of condom use on STD infection.

Table 8. STD/HIV risk indicators for males respondents (sailors/seaport laborers, truckers)

Indicators	Jakarta	Surabaya		Manado
	S/SL	S/SL	TD/A	S/SL
% know at least 2 ways of prevention	70.3	74.5	77.0	83.0
% ever had sex with female CSW	53.7	55.5	54.0	45.2
% ever had sex with f-CSW in the past year ^a	62.2	65.8	56.5	37.0
Mean # of visits to f-CSW in the past year ^a	14.4	7.7	12.5	3.5
% use condom at last sex with CSW	14.0	9.9	6.5	9.9

Notes:

S/SL= sailors/seaport laborers; TD/A = truck drivers/their assistants; CSW= commercial sex workers; STD= sexually transmitted diseases

^a from respondents who ever had sex with CSW

^d from respondents who ever had last STD symptom in the past year

Table 9. The relationship between ‘ever visited CSW’ and ‘ever had STD’ among male respondents

		Ever had STD		Total	
		Yes	No		
Ever visited CSW	Yes	299 (46.0)	351 (54.0)	650 (100.0)	OR= 8.45 p= 0.00
	No	87 (9.2)	863 (90.8)	950 (100.0)	

3.6.2 Female commercial sex workers

Information regarding condom use among CSWs is important as it reflects not only their awareness of their potential as a source of infections to their clients, but also awareness of their own vulnerability to STD infections. Information on condom use collected in the survey included condom use in the past week, condom use in last sex, sources of condom, and reasons for using or not using condoms.

When all the CSWs were asked whether or not they used condom in sexual contact with their clients in the past week, 21 per cent replied ‘never’, 43 per cent replied ‘occasionally’, 25 per cent ‘often’, and 11 per cent replied ‘always’ (see Table 10). Thus, it was only about 10 per cent of female commercial sex workers who consistently used condom when having sex with their clients in the past week. Surprisingly, when all the CSWs were asked about whether or not they use condom in their last sex with their clients, much higher percentage, from 15 per cent in Manado and around 50 per cent in Jakarta, reported using condom. These high reported figures, however, should be treated with caution as the reliability study indicated a tendency among the CSWs to over report condom use in order to please the officials or the interviewers.¹¹

¹¹ The reliability study is presented in the coming BSS complete report; see also Utomo (1997), ‘Reliability of selected STD/HIV indicators’, Paper presented at the Behavioral Surveillance Workshop, the Family Health International, Bangkok, 11-14 August.

Table 10. Percentage distribution of CSWs by their sexual behavior patterns and condom use

Target groups ^a	Jakarta		Surabaya		Manado	Total
	LSW	NLSW	LSW	NLSW	NLSW	
N ^b	200	199	201	200	200	1000
Number of guests served in the last week						
Mean	6.2	6.4	11.7	12.7	4.7	8.4
Median	4.0	5.0	8.0	7.0	4.0	5.6
Standard deviation	6.6	6.4	9.8	12.3	3.0	7.7
Condom use (%)						
Never	15.5	25.1	14.4	39.0	12.0	21.2
Occasionally/ sometimes	31.5	25.6	36.3	43.0	77.0	42.7
Often	37.0	24.1	39.3	14.5	9.0	24.8
Always	15.0	25.1	10.0	3.0	0.5	10.7
Don't remember	1.0	0.0	0.0	0.0	1.0	0.4
No response	0.0	0.0	0.0	0.5	0.5	0.2
N ^c	169	149	172	122	176	788
Sources of condom (%):						
Guest	65.1	50.3	72.1	66.4	81.3	67.6
Other CSWs	2.4	3.4	5.2	18.9	17.0	9.0
Place of work	11.2	37.6	30.8	16.4	9.7	20.9
Stalls/ drug store/ apothecary	29.0	43.0	41.9	59.8	42.6	42.3
Others	1.2	0.7	0.0	0.0	0.6	0.5
Don't know	2.7	2.0	0.0	1.6	0.0	1.2
No response	2.4	0.7	0.0	1.6	2.3	1.4
Depkes/Dinsos/NGOs/ health worker	35.5	2.7	25.0	9.0	2.3	15.5
Using condom at last sexual contact (%)	48.0	54.3	42.3	22.5	14.5	36.3
N ^d	96	108	85	45	29	363
Reasons for using condom (%)						
Avoid pregnancy	2.1	17.6	12.9	22.2	20.7	13.2
Avoid STDs	86.5	85.2	81.2	91.1	89.7	85.7
Others	2.1	1.9	2.4	4.4	0.0	2.2
Don't know	2.1	1.9	8.2	0.0	0.0	3.0
Requested by the guest	8.3	8.3	10.6	17.8	0.0	9.4
N ^e	103	91	115	153	169	631
Reasons for not using condom (%)						
Condom reduces pleasure/ comfort	7.8	14.3	9.6	17.0	16.0	13.5
Hard to get condom	2.9	0.0	0.0	2.6	2.4	1.7
Partner don't want to use condom	35.0	26.4	51.3	47.7	66.9	48.4
Know partner	12.6	7.7	21.7	2.6	1.8	8.2
Out of stock	8.7	2.2	4.3	2.0	20.7	8.6
Guest is clean	2.9	14.3	3.5	0.7	0.6	3.5
Did not think about using condom	0.0	0.0	0.9	2.0	0.0	0.6
No need/ tedious	0.0	2.2	2.6	0.0	1.2	1.1
Others	2.9	5.5	1.7	4.6	0.0	2.7
Don't know	27.2	26.4	10.4	24.8	4.7	17.4
No response	2.9	4.4	0.9	9.8	1.8	4.1

^a LSW = Female commercial sex workers in localization; NLSW = Female commercial sex workers in non-localization.

^b Number of all respondents.

^c Number of respondents who ever used condom.

^d Number of respondents who used condom in last sex with their clients.

^e Number of respondents who did not use condom in last sex with their client.

Of those who reported using condom in their last sex with their client, the majority (68 per cent) cited their client as the source of condom. The other cited main sources of condom include: stalls, drug stores, or apothecary; place of work; and the NGOs. The survey results that indicated clients as the main source of condom and high level of condom use among CSWs in their last sex (50 per cent) invite our curiosity especially if these figures are compared with the relatively low level of condom use (below 10 per cent) among male respondents who half of them may act as regular clients of female CSWs. It is likely that female CSWs tend to over report condom use in their last sexual contact.

When those who reported using condom in their last sex were asked about their reason for using condom, the majority (86 per cent) replied 'to avoid being infected with STDs'. Since condom they used in their last sexual contact was mostly supplied by their clients, this high figure may not necessarily be indicative of their awareness of being infected with STDs. Of those who reported not using condom in their last sex, almost half of them provided a reason that their 'guest/client does not want to use condom' as condom reduces 'sexual pleasure' or 'comfort'. The female CSWs usually do not use condom in their sexual contact with their boyfriend or their regular clients. They will also not insist their sexual client to use condom if the client is 'clean'. Most CSWs have their own method of checking their client whom they suspect as 'diseased' or 'infected' just by looking at the tell-tale signs in the underwear, or the urethra opening.

4. Conclusion

Respondents' STD knowledge was limited to only few STDs, notably, syphilis, gonorrhea, and AIDS. Moreover, such knowledge, on the basis of their reported symptoms, seemed to refer more to the 'word' rather than to the disease. Most respondents mixed-up syphilis or gonorrhea with other STDs. Of those who reported ever had STD, many of them cited syphilis as the type of STD they ever had, but, at the same time, they inconsistently cited 'pain and hot when urinating' as the symptom they ever had.

Substantial proportions of respondents, particularly male respondents (sailors and seaport laborers and truckers), reported ever had STD in the past year. The analysis revealed that among various STD related symptoms addressed in the survey, 'pain and hot when urinating' was perceived by the majority of respondents as the STD related symptom. Among the many respondents, other symptoms, such as 'painless and non-itching ulcer around genital', 'itching around genital', and 'white purulent discharge', may not be regarded as the STD related symptoms.

The practice of STD self-treatment by use of oral antibiotics, drinking *jamu*, and/or local antiseptic was common. Non-prescribed oral antibiotics was also often used for STD self-prevention by taking them immediately before the sexual exchange. More than half of those with STD related symptom sought medical treatment, particularly from private medical practice. However, many of those who reported to seek medical treatment also reported performing self-treatment. Thus, in general, people with STD related symptom are likely to perform self-treatment before seeking medical treatment. The survey indicated that 20 to 50 per cent of those with the STD related symptom did not seek any medical treatment.

Among male respondents, about half reported ever visited female CSW, and about one-fourth reported ever visited female CSW in the past year. The survey showed that the risk of ever had STD was 8 times higher for those who ever visited female CSW than those who never visited female CSW. Use of condom at last sexual contact with female CSW was very low, below 10 per cent.

Among female CSW respondents, the average number of their clients per day was from one to two. Use of condom at their last sexual contact varied between cities and between localization and non-localization from 15 to 50 per cent. But the percentage of those who always use condom at their sexual exchange was very low from one to 25 per cent. Most female CSW did not consistent in using condom. They usually did not use condom when having sex with their boyfriend or their regular clients. The fact that those who reported using condom cited their client as the source of condom and those who reported not using condom cited their client did not want to use condom confirm the notion that clients have a more dominant role in the decision of using or not using condom in the sexual exchange.

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* * *

Discussion:

People are generally not aware of differences between STDs, but they do distinguish AIDS/HIV. People tend to call all STDs "syphilis" or "GO" (gonorrhoea) or use the term "*kencing nanah*". Information is mostly obtained from TV and radio, especially for HIV. Also there was a sense that female sex workers tend to report higher rates of condom use than the male clients. Low risk populations tend to underreport their high risk behaviors. But FSWs are more open, especially if the interviewer is a man, according to Dr. Utomo. From various results, however, he feels that FSWs tend to over-report use of condoms at last contact, because consistent use was always about 4 times lower. Here we are talking about people with multiple partners. There may also be some pressure to supply the expected answer to the interviewer, so they report condom use. There is no way to verify this except possibly by use of diary reports etc. But to get around this, this study did not rely on only one indicator, but used many variables from which to draw the conclusions.

3. Reproductive Tract Infections/Sexually Transmitted Diseases Among Women of Reproductive Age Attending Outpatient Services in Three Hospitals in South Kalimantan, Indonesia

(by Surekha Cohen and Ali Zazri)

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I. Introduction

In Indonesia, while there has been discussion and consensus on the need to address RTIs/STDs in the primary health care context along with safe motherhood, family planning and adolescent reproductive health, there is still little information about the magnitude of the problem and the best way to integrate these services into the MCH program. Given the potential morbidity and mortality for pregnant women associated with RTIs/STDs, MotherCare Indonesia included RTI/STD screening and management as a possible intervention in the project design. However, in order first to determine the presence and magnitude of a RTI/STD problem, MotherCare conducted a prevalence study in the three targeted districts of South Kalimantan province from May-October 1996.

II. Background

MotherCare Indonesia is a USAID-funded project (1995-1998) working with the Ministry of Health (MOH) in South Kalimantan province in Indonesia to design an innovative and integrated approach to improving maternal and neonatal health with the ultimate goal of reducing maternal and perinatal mortality. These interventions are designed to improve maternal health by providing and improving access to better emergency obstetrical care, reducing anemia, encouraging family planning in the postpartum period and also, if appropriate, diagnosing and treating reproductive tract infections. In-service training for village midwives in South Kalimantan developed through MotherCare includes some training on referral if a vaginal discharge is detected. However, current capacity for screening at the community level is almost non-existent.

III. Study Objectives

This study had four main objectives:

- ▶ To determine the prevalence of reproductive tract infections in women attending various outpatient services in three hospitals in South Kalimantan
- ▶ To determine the prevalence of neonatal conjunctivitis due to gonorrhoea and chlamydia
- ▶ To develop a targeted RTI intervention strategy for the integrated Safe Motherhood program in South Kalimantan if needed
- ▶ To initiate policy dialogue amongst the MOH, other relevant government agencies and donors on the appropriateness of integrating STD/RTI control into MCH programs

The study also had three subobjectives:

- ▶ To identify risk factors for women with RTIs/STDs
- ▶ To identify appropriate diagnostic techniques for the setting
- ▶ To strengthen the local laboratory capacity.

Since the time to obtain this data and develop an intervention was limited, it was decided that conducting a community-based study would require a tremendous effort and too much time. Instead, MotherCare conducted a facility-based study of women of reproductive age seeking services at outpatient clinics at three major hospitals. While the results of this study were not meant to be representative of the general population, they were expected to give an indication of the presence and magnitude of the problem and to help determine the need for enhancing MCH services through the inclusion of RTI detection and treatment.

IV. Study Design and Methodology

This study was a multi-center cross sectional prevalence survey in three hospitals -- Ulin Provincial Hospital in Banjarmasin, Banjar Baru Hospital in Banjar District and Kandangan Hospital in Hulu Sungai Selatan District. A Principal Investigator (PI) at each hospital was responsible for managing the study at each site. All adult women attending antenatal clinic, obstetrical services and gynecological/family planning clinic in all three hospitals, additionally, women attending the dermatovenereology specialty clinic in Ulin were invited to participate in this investigation. The duration of the survey was intended to be until 500 subjects were enrolled or six months, whichever came first.

Women were given an internal exam and tested for vaginitis (bacterial vaginosis, candidiasis, trichomoniasis), cervicitis (gonorrhea, chlamydia), syphilis and hepatitis B. Most of the tests were conducted at the hospital laboratories. Bacterial vaginosis was diagnosed by presence of two of the following: clue cells in vaginal discharge, positive amine odor test and pH >5. Candidiasis was diagnosed by KOH wet mount, and trichomoniasis also by wet mount. Gonorrhea was diagnosed by Ligase Chain Reaction (LCR) using an endocervical swab and chlamydia also by LCR using a cervical swab. Syphilis was presumed after positive RPR test and confirmed by positive TPHA test on serum samples. Hepatitis B was diagnosed by presence of HBsAg (surface antigen) in serum. (Table 1 excluded here for lack of space)

In most cases routine testing procedures were used. The wet mount, Gram's stain and RPR procedures were done at each hospital laboratory. The pH test was done directly in the clinic at the time of the physical examination by touching the filter paper to the speculum. The TPHA test for all positive RPRs was done at Ulin Hospital, and the other two facilities referred positive RPRs to this site.

The hepatitis B testing, both surface antigen and antibody, was done at the Naval Medical Research Unit (NAMRU-2) in Jakarta. NAMRU-2 also conducted the Ligase Chain Reaction (LCR) test for gonorrhea and chlamydia.

V. Enrollment Criteria

The enrollment criteria for the women in this study were:

- ▶ married women
- ▶ age 18 to 45 years (reproductive age, but with lower limit at legal age for marriage)
- ▶ had **not** taken antibiotics within the last two weeks
- ▶ **not** menstruating at the time of specimen collection

The physicians conducting the study indicated that Indonesian medical ethics prohibit conducting an internal gynecological examination on an unmarried woman, therefore only married women were included in the study.

VI. Study Implementation

Each patient coming to the above service delivery points, if they fit the study criteria, were asked whether they would be willing to participate in the study, and offered the incentive of free testing. Participants who agreed were enrolled and then a (1) a physical exam was conducted by a midwife or obstetrician, (2) specimens were collected, and (3) each participant was interviewed using a pretested questionnaire on sociodemographics, knowledge and sexual behavior and medical history. Prior to initiating enrollment of participants, the laboratories were assessed and then prepared for the study, including training of lab technicians on how to conduct the relevant tests and providing necessary equipment and supplies.¹²

VII. Findings and Analysis

A. RTI/STD Prevalence

Of the 349 women enrolled in the study through the antenatal, obstetric and gynecology clinics (ie. excluding the dermatovenereology clinic patients), 23% (81 women) were found to be positive for at least one RTI/STD. This goes up to 44% (154 women) if we include candidiasis (see Table 2a). 12.6% (44 women) tested positive for more than one RTI/STD (including candidiasis). Based on the results of LCR testing 4.3% of women were positive for gonorrhea and 7.7% positive for chlamydia. No women tested positive for syphilis. Six (1.4%) had reactive RPRs but none of these had reactive TPAs indicating they were biological false positives. Hepatitis B results, 4.0% positive, are based on the surface antigen test which tests positive for those currently infected or chronic carriers.¹³ The prevalence of bacterial vaginosis was 30.7%, trichomoniasis was 4.5%, and candidiasis was 24.1%.

¹² The assessment was conducted by PATH and the training was conducted jointly by PATH and NAMRU-2.

¹³ The Hepatitis B antibody test (positive for those who have recovered from Hepatitis B or have been vaccinated) was also done to assess the cumulative incidence of hepatitis B virus infection by age cohort in this population and showed that, overall, 148 (35.1%) had been vaccinated or recovered from past infection.

Table 2a. Cumulative prevalence data

	OVERALL PREVALENCE (n=422)	PREVALENCE FOR ANTENATAL, OBSTETRIC AND GYNECOLOGY CLINICS ONLY (n=349)
Any RTI/STD	46% (195)	44% (154)
Any RTI/STD (excluding candidiasis)	22% (94)	23% (81)
Women with > 1 infection	14% (60)	12.6% (44)

Table 2b. Prevalence of RTIs/STDs

RTI/STD	OVERALL PREVALENCE (n=422)	PREVALENCE FOR ANTENATAL, OBSTETRIC AND GYNECOLOGY CLINICS (n=349)	PREVALENCE FOR DERMATO- VENEREOLOGY CLINIC (n=73)
Gonorrhea	5.9% (25)	4.3% (15)	13.7% (10)
Chlamydia	9% (38)	7.7% (27)	15.1% (11)
Bacterial Vaginosis	28.2% (119)	30.7% (107)	16.4% (12)
Trichomoniasis	4.5% (19)	4.5% (19)	0% (0)
Candidiasis	26.3% (111)	24.1% (84)	37% (27)
Syphilis	0% (0)	0% (0)	0% (0)
Hepatitis B	4.3% (18)	4.0% (14)	.5% (4)

B. Comparative Prevalence of Gonorrhea and Chlamydia

The prevalence of gonorrhea and chlamydia was relatively high for what was expected to be a low risk population (married women in a relatively remote province of whom 92% claimed to have had only one lifetime partner). When compared with the findings of other studies in similarly "low risk" populations, the rate of gonococcal infection in particular, 4.3%, stands out. It is interesting that this relatively high prevalence of gonorrhea is even higher than that found by the Joesoef study (1996) in which only pregnant women who tested positive for bacterial vaginosis, therefore already at higher risk, were included. The rate of chlamydia, though within the range of findings in other studies, may still be seen as demanding attention given the other studies were done in highly urban areas such as Jakarta and Surabaya.

Table 4. Comparison of gonorrhoea and chlamydia infection rates in studies of maternal health populations in Indonesia

Author	Study Population	Gonorrhoea	Chlamydia
Present study	Married women of reproductive age attending outpatient antenatal, obstetric, gynecology clinics at hospitals in South Kalimantan (N=349)	4.3%	7.7%
Joesoef, MR, et. al., Intl Journal of STD & AIDS, Jan/Feb 1996	Pregnant women attending maternity clinics in Jakarta and Surabaya who tested positive for bacterial vaginosis (N=745)	3.2%	19.5%
Joesoef MR, et al., Am J Obstet Gynecol, Jan 1996	Women seeking prenatal care at clinics in Surabaya (N=599)	0.8%	8.2%
Joesoef MR, et al., Am J Obstet Gynecol, July 1993	Women seeking prenatal care at hospitals in Jakarta (N=697)	0%	not tested
I. Susanti, 1987-1989	Women coming in for early abortion to the Family Planning Clinic of the IPPA in Bali (N=695)	1%	5.2%
Population Council, Indonesia, 1997	FP clinic clients in North Jakarta (N=312 Stage I)	0.3%	10.3%

C. Profile of the respondents

We enrolled 442 of the desired 500 women within the 6 month time limit. Of the 442 women enrolled, 10 were dropped because they had taken antibiotics, 5 women were dropped because we did not have their questionnaires and an additional 5 were dropped because NAMRU-2 did not receive sera or swabs for them, leaving 422 subjects included in the analysis.

Almost all the respondents were currently married (99%) following the study enrollment criteria; however, there were 4 women who were widowed or divorced. Twenty-one percent were 25 years or younger, with 17 years old being the youngest. Ten women who were >45 years old and slipped through the selection criteria, were kept as part of the study since their profile did not seem to bias the data. Almost half the respondents had a relatively high level of education, having finished their schooling or having reached a higher level of education (high school or above) and "academy"/tertiary education institution (44% and 11%). The data on the occupation of the respondents showed that they generally fit into two main groups which are housewives (54%) and civil servants/government employees (31%). While 48% had between 1 or 2 children.

A similar profile can be seen from the data about their husbands. Their husbands largely work for the government (44%), have a private business (22%) or work for the private sector (20%) and the remainder work as farmers or fishermen. Women were also asked whether their husbands often were away from home. Of all the respondents, only 31% responded that their husband's work might cause them to be away from home overnight. The period they might be away varied from several days in one week (36%) to several days in one month (33%). In response to the question whether their husband might have another wife, 9% answered "yes" and 5% said they "didn't know", while most said "no".

The mobility of this group was not very high, as can be seen from the length of time they have been living where they are now, 41.5% have already lived 5-10 years in the same place while 25% of all respondents had never moved to another area.

Age of first intercourse: Analysis of the data showed that half the respondents in this study had had sexual intercourse for the first time between the ages of 15 to 20 years (55%) while 8.5% of them were less than 15 years old. While early age of first intercourse is often viewed as a risk factor for infection, the early age of first intercourse here is likely to correspond with early marriage. This is corroborated by information from the Central Bureau of Statistics (BPS) that women in South Kalimantan generally marry below 16 years of age, and only a few get married when they are older than 25 years. Data only from Banjarmasin city indicates marriage age over 25 years is only 9.29%. While in other districts of South Kalimantan, the marriage age is still predominantly under 25 years (BPS, 1997) . Therefore, age of first intercourse may not be helpful in South Kalimantan to identify increased risk.

Sexual Activity: At the time of this study, almost all the respondents were still sexually active, with 79% indicating they had had their last sexual intercourse less than a week ago and only 4% indicating more than one month ago. In response to questions about sexual partners, only 8.5% indicated having more than one partner during her lifetime. The fact that 91.5% indicated they had had only one sexual partner is difficult to analyze in this cultural context because the possibility of married women indicating having more than one sexual partner at a time is very low. Though data was not collected on number of marriages, given the social context, it is unlikely that those reporting more than one partner are indicating they are not monogamous. Rather they are indicating they have been married more than once. This might explain why what is usually considered a high risk behavior does not seem to apply in this case. If we compare the positive cases among those who indicated having more than partner (29 women), with those who indicated only one partner, the prevalence for gonorrhea, chlamydia, bacterial vaginosis and trichomoniasis are in fact higher for those stating they had only one lifetime partner than for those stating they have had more than one partner (see Table 5 below).

Table 5. RTI/STD Prevalence by Number of Lifetime Sexual Partners

RTI/STD	Women Indicating Only 1 Partner (n=320)	Women Indicating > 1 Partner (n=29)	p value
Gonorrhea	4.4% (14)	4.0% (1)	0.910
Chlamydia	8.4% (27)	0% (0)	0.266
Bacterial Vaginosis	32.5% (104)	12% (3)	0.041
Trichomoniasis	5.6% (18)	4.0% (1)	0.839
Candidiasis	22.8% (73)	37.9% (11)	0.158
Hepatitis B	3.8% (12)	8.0% (2)	0.540

Douching: Respondents were also asked about douching practices since douching has been found to be associated with RTIs. The majority of respondents (74%) indicated they did not douche. Those who douched used betelnut leaf water, Betadine, or a retail product called Whim. Among those who do douche, 86% douched within the last 7 days prior to the interview. When

douching was cross tabulated with infections (excluding hepatitis B), of those who douched, only 16% were infected with an RTI (i.e., does not include hepatitis B), suggesting that douching amongst this population is not a strong predictor of infection with an RTI.

Risk Profile: When we compared the sociodemographic data for those infected versus non-infected from the non-dermatovenereology group, a distinct high risk profile did not emerge (Table 6 not included due to lack of space). It appears that age is a factor ($p=0.062$), with those infected being generally younger than those not infected. Those who are infected are also somewhat less well-educated ($p=0.071$). In addition, the proportion of husbands who are self-employed or work with the private sector is relatively higher for those infected than for those not infected ($p=0.001$). Behavioral factors usually considered to increase risk such as more than one lifetime sexual partner ($p=0.761$), douching ($p=0.086$) and husband traveling for work ($p=0.863$), do not seem to be significant determinants of increased risk in this population.

D Prevalence Findings

Prevalence Among Pregnant Women: Since one of the primary objectives of this study is determine the need for an RTI intervention integrated into MCH services, it is important for our purposes to look at the prevalence data for pregnant women. These pregnant women can also be assumed to be least likely to be attending the hospital specifically for a RTI/STD related complaint (therefore in some ways most representative of the general population). When we look only at the pregnant women in the study sample (still only among those enrolled in the non-dermatovenereology clinics), the prevalence of most RTIs is lower than for the overall non-dermatovenereology, with the gonorrhea prevalence dropping to 2.4% and chlamydia to 6.1%. When comparing the prevalence rates for pregnant versus non-pregnant, all except hepatitis B and candidiasis are higher for the non-pregnant women.

Table 7. RTI/STD Prevalence by Pregnancy Status

RTI/STD	All Women (n=349)	Not Pregnant (n=267)	Pregnant (n=82)	p-value
Gonorrhea	4.3% (15)	4.9% (13)	2.4% (2)	0.343
Chlamydia	7.7% (27)	8.2% (22)	6.1% (5)	0.525
Bacterial Vaginosis	30.7% (107)	35.6% (95)	14.6% (12)	0.00
Trichomoniasis	4.5% (19)	5.6% (15)	4.9% (4)	0.796
Candidiasis	24.1% (84)	22.1% (59)	30.5% (25)	0.120
Hepatitis B	4.0% (14)	3.4% (9)	6.3% (5)	0.254

STD/RTI Prevalence by Facility: The areas in which this study was conducted have some variation. Ulin Hospital is located in Banjarmasin, the provincial capital. Banjar Baru Hospital is at the district level, but is also located in a fairly urban setting. Kandangan Hospital is in a remote district with a more rural population base. The prevalence data broken down by facility is shown in Table 8.

Table 8. RTI/STD Prevalence by Facility

RTI/STD	Banjar Baru Hospital (n=181)	Ulin Hospital		Kandangan Hospital (n=75)
		overall (n=166)	excluding dermatovenereology (n=93)	
Gonorrhoea	9 (5%)	14 (8.4%)	4 (4%)	2 (2.7%)
Chlamydia	15 (8.3%)	21 (12.7%)	10 (11%)	2 (2.7%)
Bacterial Vaginosis	72 (40%)	35 (21%)	23 (25%)	12 (16%)
Trichomoniasis	10 (6%)	6 (4%)	6 (6%)	3 (4%)
Candidiasis	28 (15%)	43 (26%)	16 (17%)	40 (53%)
Syphilis	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Hepatitis B	5 (2.8%)	9 (5.4%)	5 (5%)	4 (5.3%)

The prevalence of gonorrhoea, chlamydia and hepatitis B is highest at Ulin. If we exclude the patients from the dermatovenereology clinic, the prevalence at Ulin is almost halved for gonorrhoea. Banjar Baru has a much higher rate of bacterial vaginosis than the other facilities while Kandangan seems to show the highest rate of candidiasis.

E. Vaginal Discharge and Syndromic Management

From the study, of the women who were positive for any RTI (not including hepatitis B), 67.4% (sensitivity) complained of having a discharge within the last 30 days that was itchy and smelled. The specificity for vaginal discharge with odor and itching was 48.1%. However, if we begin from the existence of a vaginal discharge, as one would with syndromic management, only 25% (positive predictive value) of those who had a discharge that was itchy and smelled tested positive for an RTI (see below). Since syndromic management relies on high sensitivity in order for people with an infection not to slip through, vaginal discharge does not seem to be a good indicator for infection with an RTI.

		Positive for any RTI (not incl. Hepatitis B)		
		yes	no	
Discharge with odor and itching	yes	58 25.0 67.4	174 75.0 51.9	232 55.0
	no	28 14.8 32.6	161 85.2 48.1	189 44.8
		86 20.4	335 79.6	422 100

This would mean that if a treatment program was put into place based on syndromic management of vaginal discharge, only one of four women treated might actually be infected. The ethical and cost implications of this overtreatment must be considered along with the potential benefits.

If we look more specifically at women who tested positive for either gonorrhea or chlamydia, 65.4% complained of a discharge with odor and itchiness within the last 30 days (sensitivity). However, if once again we look at it from the syndromic approach of vaginal discharge, of those who reported an unusual discharge within the last 30 days, 14.7% tested positive for gonorrhea or chlamydia, which is not a very high positive predictive value. According to the WHO guidelines on syndromic management, when no vaginal examination or laboratory tests are available, if a woman reports a vaginal discharge and if there is a history of high risk or if prevalence of gonorrhea and/or chlamydia exceeds 10-20% in patients with vaginal discharge, treatment should be given for gonorrhea or chlamydia (WHO, 1991). In this study, the prevalence of gonorrhea among those reporting a discharge was 7.3% and for chlamydia was 9.9%.

If the issue of pregnancy is brought into play, vaginal discharge becomes even more difficult to use as a means of screening. Of those women who reported being pregnant (n=88) 6.2% reported an unusual discharge within the last 30 days. If we cross tabulate pregnant women reporting a discharge with positives for any RTI (i.e., not including hepatitis B), of those who tested positive, 34.6% reported a vaginal discharge (sensitivity).

VIII. Discussion

A. Magnitude of the Problem

The prevalence of RTIs/STDs found in this study indicate that RTIs may be a significant health issue in South Kalimantan. Though the prevalence was facility based, the fact that study participants were married women and would not usually be considered high risk (such as commercial sex workers) may indicate that there is a health problem requiring further investigation within the general population in South Kalimantan. The prevalence of gonorrhea is of particular concern, given the high incidence when compared with other studies in Indonesia. The finding of no syphilis is reassuring, and consistent with low syphilis prevalence in other studies in Indonesia¹⁴ (Joesoef, et. al, 1995, Joesoef, et. al, 1996, The Population Council, 1997, Saifuddin, 1996, and Susanti, 1993).

Further research (both qualitative and quantitative) would be helpful if an intervention were developed to determine a high risk profile and permit the design of a targeted intervention. Factors influencing prevalence such as women's education, access to information, status including

¹⁴ This absence of syphilis in South Kalimantan was corroborated by another small study done by MotherCare from samples collected on filter paper during a community household survey (sample size 396 of which 55 were not sufficient to test). These specimen were analyzed by the U.S. Centers for Disease Control (CDC) using the RPR and MHATP. The prevalence was 1.8% (6 positive) based on RPR and 0% using MHATP.

age of first intercourse, and male behavior including taboos against sex encouraging men to seek out prostitutes, may also emerge more clearly from further study.

To determine the public health implications of these findings within the general reproductive health context, we would also suggest further research into complications associated with these diseases, including infertility, ectopic pregnancy, fetal wastage, low birth weight and congenital disease (including neonatal ophthalmia). The disease burden from RTIs/STDs might help to determine the relative value of a public health intervention.

B. MCH Program Context

1. Screening

Since there was no syphilis found, there is no indication for routine screening for syphilis among pregnant women. Trichomoniasis (4.5%) is also not a concern since it appears to be within the usual range among both the general non-dermatovenereology population as well as the pregnant only population. Though bacterial vaginosis appears to be the RTI that most affects pregnant women in this sample, 30.7%, and treatment would undoubtedly have value in improving women's discomfort, research has shown that screening for bacterial vaginosis and treatment with a topical antibiotic does not improve pregnancy outcome (Joesoef, 1995).

The prevalence of gonorrhea and chlamydia (2.4% and 6.1% respectively) among the pregnant population is within the range of other studies in Indonesia. If an intervention were introduced, since a distinct high-risk profile does not emerge from the sociobehavioral data, the most effective means to detect and treat RTIs among pregnant woman in this population would be through mass screening antenatally. This would mean introducing testing and treatment capability at the community level as part of antenatal care. Given the findings of relatively low prevalence among pregnant women, along with the existing challenges within the current MCH program to address life threatening direct obstetrical complications and providing basic antenatal care, and the additional logistical and cost implications of an RTI intervention at the community level, integrating screening for RTIs as part of antenatal care is not indicated at this time for the MCH program in South Kalimantan.

Other means of simplifying RTI screening including rapid tests and syndromic management remain possibilities, but would require further research before being implemented on a broad scale as part of the MCH program. MotherCare has already worked with the MOH to include management and referral for vaginal discharge in the training of village midwives. Syndromic management, as discussed earlier (see section on "Vaginal Discharge and Syndromic Management"), while possibly suitable for the FP context, does not seem to be appropriate for this setting. As the WHO indicates, "Protocols that do not include any laboratory support or an adequate genital examination will lead to high rates of misdiagnosis and mistreatment. They will be least satisfactory in women owing to the inherent low sensitivity and specificity of the clinical signs and symptoms" (WHO, 1991, p. 50).

Testing for gonorrhea and chlamydia remains problematic. Since simple microscopy is insensitive

for identifying gonorrhoea and cannot be used for chlamydia, the possibility of introducing cheaper and easier diagnostics that could be used by community level providers, such as village midwives or the community health center could increase the potential for screening antenatally. This study ultimately relied on very sophisticated and expensive testing to make definitive diagnoses of gonorrhoea and chlamydia. The feasibility of making such testing available at community level is very low. Finding low-priced and appropriate diagnostics, especially for a low-risk population where the risk of false positives is higher, remains a challenge.

2. Treatment

Though this study did not include an assessment of the most appropriate treatment for the various RTIs/STDs, some discussion in the context of the MCH program is possible. Since the ascent of cervicitis into the upper reproductive tract is the major cause of infertility, chronic morbidity, and related mortality, a single dose or 24 hour course of prophylactic antibiotics is recommended prior to any transcervical procedure in some countries. In Indonesia, however, most gonococcal strains are resistant to penicillin and tetracycline, two inexpensive and widely available antibiotics.

Given the cost and logistical constraints of developing capacity to diagnose and treat all women with gonorrhoea and chlamydia, researchers recommend an approach that can prevent blindness in children caused by gonococcal and chlamydial infections (MotherCare, 1991). Since there is evidence of gonorrhoea and chlamydia among pregnant women in South Kalimantan, it would be beneficial to conduct routine eye prophylaxis. WHO has identified prophylaxis against gonococcal ophthalmia neonatorum as one of the five cost effective interventions for reducing maternal and infant infectious morbidity (WHO, 1992, cited in Pachauri, 1994). There is currently some use of silver nitrate for prophylaxis at hospitals in South Kalimantan, but it is not routinely done at the community level. Such eye prophylaxis of all newborns with silver nitrate 1%¹⁵ should be no later than 4 hours after birth, after which time risk of ophthalmic neonatorum increases 4 to 5 fold (MotherCare, 1991). In South Kalimantan, since many births occur in the community, the most effective route would be through the community level village midwife or traditional birth attendant.

In the case of hepatitis B, WHO recommends that since pregnant women with a hepatitis B infection can transmit this infection to their infants at delivery, *if it is indicated by the epidemiological situation and resources permit*, all pregnant women should be screened for HbsAg and if found positive their newborns should receive post-exposure prophylaxis. (WHO, 1991). Though the prevalence of hepatitis B does not indicate the need for routine antenatal testing, MotherCare is already promoting immunization for the newborn as part of an enhanced postpartum program through community midwives.

¹⁵ Though silver nitrate is the least costly regimen, it is not effective with chlamydia. Tetracycline 1% would usually be another option for treating conjunctivitis caused by either gonorrhoea and chlamydia; however in Indonesia there are several tetracycline resistant gonococcal strains. Since gonococcal eye infection can result in blindness and chlamydia infection does not, silver nitrate may be the most appropriate for the Indonesian context.

3. Prevention

Any treatment and prevention program to improve the RTI/STD situation for women, would have to include husbands since these women were all married. Since there is no evident high risk profile among the women in this study, MotherCare would suggest that any intervention to screen and treat RTIs include further research on husband's knowledge, beliefs and sexual behavior. Since the MCH program context may not be the most appropriate to target husbands, prevention and treatment efforts should also continue to look at FP and other points of contact where men can be included.

MotherCare is also attempting to reduce the spread of RTIs/STDs and other infectious diseases by the inclusion of infection prevention techniques at all facilities and as part of in-service training for all providers (doctors, midwives and village midwives).

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Discussion:

The analysis of this data are still in early stages and this is the first time these data have been presented. Ms. Cohen welcomed any feedback and comments.

With regard to knowledge and beliefs, local terminology was used to refer to RTIs and STDs. 76% had heard of some kind of RTI and 27.5% had heard of someone who was infected. This kind of qualitative data were not very in depth at this point in the study.

Dr. Chris Elias suggested that the use of the expensive (about \$15 per test) and very sensitive LCR test for gonorrhea may have some implications for the interpretation of prevalence results. A higher finding with the LCR may be equivalent to lower findings with a culture which is more difficult to take and transport and read, and also less sensitive. LCR and PCR tests on urine are good tests but tend to turn up more positives and possibly false positives. Dr. Moran pointed out that since these tests detect DNA rather than live organisms, we may be getting positive results for people whose infections are already cured but dead DNA remnants can still be detected in the specimen.

With regard to the syndromic approach, the study used the 1991 WHO guidelines for management without access to any laboratory or physical exam facilities. The syndromic approach was looked at within the MCH context among women coming in for ANC. If they reported discharge and were treated according to these guidelines, the conclusion was that we would be treating 4 times as many women as were infected. The question raised by Dr. Elias was, what would the women be treated for? Treatments vary for cervical and vaginal infections. Local prevalences of infection should ideally be used, but may not be known. Some syndromic protocols are 30-40% predictive, and perhaps its OK to over treat 2 or 3 times as many women in order to treat the infected women. However for only cervical infections, probably the predictive value is much lower than one in four or one in three, so it may not make sense to treat for cervical infections. It depends on the prevalence. Dr. Moran however, added that it may make sense also to treat for vaginal infections in order to respond to women's symptoms, even if for some reason a gram stain did not detect BV or candida.

VII. COST COMPONENT

1. An Overview of Economics and Economic Analysis

George P. Schmid, presenter

Assistant Chief for Science Translation, Division of STD Prevention, CDC-Atlanta

Dr. George Schmid was invited from CDC-Atlanta to attend this workshop in order to provide some basic guidelines on cost components of reproductive health care and how to assess and analyze the costs associated with integration of services. Costs are really the bottom line issue for governments and donors in deciding whether to implement public health programs, and there is so far a lack of cost data and example studies addressing reproductive health programs, and lack of technical expertise in this area among many program planners and researchers currently tackling issues of reproductive health intervention strategies. We asked for help and are grateful that Dr. Schmid could make it all the way to Jakarta.

Economics is a way of thinking. Whether you are a National Senator deciding whether to spend \$2 million on chlamydia screening or on air safety measures, or the Minister of Health for Indonesia, deciding whether \$1 million would be better spent on adolescent reproductive health or diabetes, or the head of a Jakarta STD program choosing between peer education or partner notification programs for a \$100,000 HIV intervention, you have to make decisions about how to gain the most amount of benefit out of the money at your disposal. “From what do we get the most for our money?” There are also decisions to be made about program continuation or replication. All of these decisions require information on costs. The basics of economics are easy to grasp.

An economist has been defined as “One who explains the obvious in terms of the incomprehensible” (Adolph Knopf).

Opportunity Costs is one key concept that we must all keep in mind and address in our proposals and program plans. This refers to the opportunity you forego by using resources for a specific purpose. For example, you all are hear listening to me but you could spending the same precious time sitting by the pool. There will always be other programs, other strategies, into which the time, money or other resources could be put.

Utility is the value or worth of something to an individual or society. We all want to know the worth of what we are buying. How do we assess it? Well, if you were considering buying my Volkswagen Camper, you would probably want to ask quite a few questions about it first, such as what year it is and how many miles it has on the clock. But is Health Care a Free Market? We don’t all have access to the same information. Doctors and other health care providers have an information advantage and cannot convey all the relevant information to clients. There is “information impactedness” which creates an “agency relationship.” We need to be thinking of the patient’s best interests. Costs and outcomes can be viewed from three different perspectives in health care: the payer, the patient and society.

Economic analysis is the comparative analysis of alternative courses of action in terms of both their consequences and costs. This involves evaluation. The potential issues that an evaluation can address are: 1) Was the intervention delivered as intended? 2) Were the desired outcomes achieved (and quantified)? 3) Can the outcomes be attributed to the intervention? and 4) What is the public health pay off for the resources expended? These questions can be addressed through different types of evaluations, including process evaluation, outcome evaluation, causality and costing, respectively.

**Perhaps the most useful question in terms of choosing how to use resources for public health programs is:
What is the public health pay off for the resources expended?
- Dr. George Schmid**

All interventions should be costed, and we should plan for this before the intervention starts. At a minimum we should know the cost of the intervention. More elaborate costing, however, is nicer. The benefits to public health may be in terms of process, outcome or impact objectives. The latter are preferable but may not be possible, although other sources may already have shown a link between them and you can use these to help you translate outcome into impact. Examples of answers to different levels of evaluation questions are: 1) condoms were distributed to all schools (process evaluation); 2) achieved 80% of students using a condom at last intercourse (outcome evaluation); 3) prevented 10 cases of chlamydia per 100 female students and 3 pregnancies per 100 female students; and 4) saved two times the amount of money spent on the intervention. Many times we can find out or estimate the costs of the consequences we prevented by doing a literature search. If this data are not available, basic research would be needed to come up with this type of answer.

So how will the results of the evaluation and costing be used? This is the most critical question you can ask.

There are three types of costs: Direct, Indirect and Intangible.

Direct costs are the costs of organizing and operating a program, e.g., buildings, land, personnel, equipment and operating costs (utilities, laundry etc.). **Indirect costs** are production costs. These include lost wages from participating in an intervention, lost wages from illness or gained wages from illness averted (a negative cost), and cost of time spent by a family transporting a patient (which some might count as direct costs). **Intangible costs** are those such as inconvenience, pain and suffering. But these things are indeed often costed in dollar terms, as we see in the court system. These cannot be ignored and a good cost analysis accounts for intangible costs.

The “honest economist” includes all possible costs. For example, you have a program that has screened 1,000 women and detected 100 cases of chlamydia. The program cost \$100,000 (\$1,000 per case). The cost of the illness (COI) was: 1) direct costs (of PID averted) \$700 per

case of chlamydia; 2) direct and indirect costs \$1,200 per case, and 3) direct, indirect and intangible costs, \$1,800 per case.

So how do we do costing? In assessing costs, we can look at capital and recurrent costs. **Capital costs** are those which are purchased once and (hopefully) last the life of the project, such as buildings and laboratory equipment. Then there are **recurrent costs**, which are associated with items purchased regularly, such as salaries, laboratory supplies, etc. Then there are methods of annuitizing capital costs.

Direct costs can be fixed or variable. Fixed costs remain constant during a time period (usually a year), like facilitates (rent, etc.) and some personnel (e.g. the director). Variable costs respond proportionately to the volume of activity, such as some personnel (e.g. peer educators and outreach workers) and client education materials (e.g. pamphlets, etc.). Finally there are **Financial vs. Economic costs.** Financial costs are those costs which are paid for by the program, while economic costs are all costs which are incurred by the program, such as volunteer time, donated materials and donated space. Both of these are needed to calculate the total costs. Some items or staff used by the program may be shared with other programs so that % time allocation will have to be calculated to determine the cost of the allocation used for our purposes.

Also we must not forget that **costs do not equal charges.** A charge, such as listed on a bill, usually does not reflect the actual cost of that item or service. It may be adjusted based on your status, for example in a clinic with a sliding scale fee system for lower income clients. Economists prefer to use costs when calculating costs. If you must use charges, don't mix them with costs, it would be mixing apples and oranges in an analysis.

Another reminder, **money is not the same from year to year.** Money loses value from year to year (inflation) and there is a time preference for money (related to opportunity costs) referred to as discounting. The solution is to convert money to a base year and always site the year when stating costs.

Sensitivity analysis allows us to examine uncertainty. It can be used with both costs and probabilities. There are various types of sensitivity analysis, one-way, two-way, best case or worst-case, and threshold. The scope and time for this talk does not allow for elaboration here.

Costing can be performed prospectively or retrospectively. Cost analysis can be by average, marginal or incremental analysis. Average analysis examines the average cost of an intervention. Marginal analysis examines the effect of making an additional investment in an intervention (e.g. if I make an investment of X\$ what will I get for it? or if I want to get Y, what will it cost?). Incremental analysis examines the relationship between making an investment in differing interventions. There is a process known as the Basic Assessment Scheme for Intervention Costs and Consequences (BASICC). It involves: 1) description of program, services provided and time frame; 2) health outcomes averted, and time between program implementation and outcomes averted; 3) rate of outcomes with and without the program; 4) costs of the program; 5) costs of the outcomes averted; and 6) audience (or advocacy).

So which proposal will the Jakarta Health Director fund? Suppose he is provided with the following information from programs competing for the \$2 million for the first year: 1) the Diabetes Center will detect 100 cases and treat 500 cases; 2) the Reproductive Health Center will prevent 5,000 women from becoming pregnant unwillingly (and save \$2 million), and prevent 300 cases of PID (and thus 45 cases of infertility, 24 cases of ectopic pregnancy, and one death) (and save \$3 million) for a total savings of \$3 million. I think he would have to choose the second program.

Remember that economics does not determine policy, but it is a very important consideration.

In summary:

- Economics is about resource utilization
- Economics is a way of thinking
- Economics answers the question: “what am I getting for my money?”
- As with many fields, the terminology is confusing, but we all intuitively understand the principles
- We should think of cost and outcome in all our ventures, and preferably earlier than later
- In the end, we need to decide, “Is it worth it?”

One further useful tool:

Distinguishing characteristics of health care evaluations

		Are both costs (inputs) and consequences (outputs) of the alternatives examined?		
		NO		YES
		Examines only consequences	Examines only costs	
Is there comparison of two or more alternatives?	NO	1A PARTIAL EVALUATION	1B	2 PARTIAL EVALUATION Cost-outcome description
		Outcome description	Cost description	
	YES	3A PARTIAL EVALUATION	3B	4 FULL ECONOMIC EVALUATION Cost-effectiveness analysis Cost-utility analysis Cost-benefit analysis
		Efficacy or effectiveness evaluation	Cost analysis	

Source: Drummond MF, Stoddart GL, Torrance GW. Methods for the Economic Evaluation of Health Care Programs. Oxford University Press, 1987.

Examples of these evaluations in the context of a chlamydia control program:

- 1A. The program detected 100 cases (of chlamydia)
- 1B. The program cost \$50,000
- 2. The program detected 100 cases and cost \$50,000 (\$500/case)

- 3A The program at the Family Planning Clinic detected 100 cases and the program at the STD Clinic detected 150 cases
- 3B The program at the Family Planning Clinic cost \$50,000 and the one at the STD Clinic cost \$100,000
- 4 The program at the Family Planning Clinic detected 100 cases and cost \$50,000 (\$500/case) and the program at the STD Clinic detected 150 cases and cost \$100,000 (\$667/case)

2. A Model of Costs of RTI Case Management Services in Uttar Pradesh

(by Saumya RamaRao, John W. Townsend and M.E. Khan, Population Council, New Delhi, India)

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Introduction: Costs of Managing Reproductive Tract Infection in India

The Government of India has adopted a Reproductive and Child Health (RCH) approach as the basis of its new family welfare policy. One component of the RCH package is the management of reproductive tract infections (RTIs). There is evidence that considerable proportions of women in India may suffer from an RTI. Four recent studies found that from 10 to 60 percent of the women in community surveys across India report symptoms indicative of RTIs, such as excessive vaginal discharge and lower abdominal pain, which were largely confirmed by clinical exams. Studies suggest that about half the women with RTI do not present symptoms, and that RTIs are not a problem limited to high risk populations.

The Population Council's Asia and the Near East Operations Research and Technical Assistance (ANE OR/TA) Project, in collaboration with the State of Uttar Pradesh, Ministry of Health and Family Welfare, is conducting a study on the feasibility and cost of providing RTI case management at the primary care level. Based on conservative estimates of incidence of infections, costs of preventive community based IEC, and only 15 percent utilization of the public health system for RTI detection and treatment, the estimated annual cost of RTI case management at the district level (about 2 million population) would be about US\$ 64,000. The cost per district is critical as operational budget in India are defined at the district level. The State of Uttar Pradesh, for example, has 68 districts and India nearly 500 districts. Estimated costs per client served range from US\$1.75 to US\$4.30, depending on local incidence and level of clinic utilization. From the analysis, it is clear that the average annual drug budget of a Primary Health Care Centre in India, approximately US\$500, is inadequate even if used only for subsidized RTI case management.

Policy makers and programme managers are using this data to examine both the initial and continuing costs of RTI case management within the overall RCH package in India, with a focus on quality and sustainability. Alternatives for controlling costs include better efforts at primary prevention, partner participation to reduce reinfection, user fees, and more private sector involvement in reproductive health care.

Background

For programme and policy purposes it is critical to have information on service delivery. Typically answers are sought for the feasibility of primary care systems expanding to include prevention, diagnosis, and treatment programmes for RTIs and the need for resources within

current structures (Ronald and Aral, 1992). The most basic and frequently asked question is whether the public sector *can indeed* provide RTI services. A second question relates to the type of case management strategy to be adopted. A third question relates to the type and amount of resources required. Other associated and important issues pertain to cost-effectiveness and programme sustainability.

It is often cited that the financial costs and technical difficulty of RTI interventions greatly outweigh the biomedical, social and programmatic costs of these diseases. In terms of cost effective interventions related to reproductive tract infections, it is suggested that one of the five most cost-effective interventions is prenatal screening and treatment for maternal syphilis (World Bank, 1996). The World Bank report also indicates that a managed case of syphilis can achieve a disability-adjusted life year (DALY) for \$0.10 to \$40 depending on the prevalence of disease and the strategy used to detect the infection. The new GOI programme is innovative and provides an opportunity to obtain information on a number of unanswered questions raised above.

There is sufficient evidence to indicate that considerable proportions of Indian women may have an RTI. The evidence is based on women's self reporting of symptoms and, clinical and laboratory examinations from several community studies (listed in the Annexure, not included in this printing).

This paper develops a model of standardized RTI case management in the public sector. The model uses the guidelines prepared by the National Aids Control Organization (NACO) for the management and treatment of symptomatic patients. The rationale for this model are two fold. One, definitive cost data are not available. All that is known at the current moment suggests that RTI prevention, education, and services are less costly than treatment of the consequences of RTIs. Second, the type and magnitude of resources required to provide the services are not well defined. As a result, financing and sustainability issues remain. For these reasons, the model will estimate the additional cost of providing the new service. It will specify the various elements of service provision ranging from training to service provision and their associated costs. The paper will also discuss the costs of upscaling the service to similar sites in the districts.

Objectives

The objectives of the paper are:

- To present the estimated costs of providing standardized RTI case management services through the public sector health structure.
- To present a model of cost representing two levels of care to illustrate the options available to program managers in planning for service delivery.

Methodology

The production process methodology which describes how resources or inputs are converted by processes to outputs and outcomes is used (Janowitz and Bratt, 1994). Thus, each component of the RTI service intervention is broken down into clusters of inputs, processes and outputs. For example, the principal inputs are personnel, clinic space and the necessary equipment. These

inputs are combined and utilized to provide RTI services at the clinic. The outputs in this system include the clients who seek RTI services; the education and counseling that they receive; laboratory testing and treatment.

The model estimates the cost of adding RTI laboratory testing and treatment services to the existing health and family welfare services provided by the public health centers. As service expansion rather than setting up of a new health delivery system is the focus, only those costs incurred in the expansion will be costed in the model. Thus items such as personnel who are already in place, clinic space, and other existing supplies are not costed. The assumption is that existing inputs, particularly space and personnel, can be utilized for the new service without significant additional expense because they are under utilized.

Two types of costs are presented: fixed and variable. Fixed costs do not vary with the number of clients served and refer to expenditures on items such as equipment, training, and IEC. Unlike fixed costs, variable costs vary with the numbers of clients served. Thus this type of cost covers laboratory tests and treatment for the clients. The total cost estimate is the sum of fixed and variable costs. On each line item in the model, a range of cost estimates is provided. This is to indicate the variations in the resources used and the coverage of the service. Finally, the total cost of the service is related to the numbers of clients served in order to provide an estimate of effectiveness.

Data

Data were collected from several sources on the various input parameters. Data on the prevalence of specific RTIs and conditions were collected from various research conducted in India and are listed in the annexure. Data on health personnel's allowances and the market prices of various drugs were collected from the Operations Research field sites of the Population Council in Agra and Sitapur districts of Uttar Pradesh. Costs of equipment and supplies were collected from suppliers and users in Lucknow and New Delhi. The market costs of conducting specific laboratory tests were collected in New Delhi, Bangalore and Lucknow from medical college and commercial laboratories. These data are used as input parameters to estimate the cost of RTI service provision.

Model

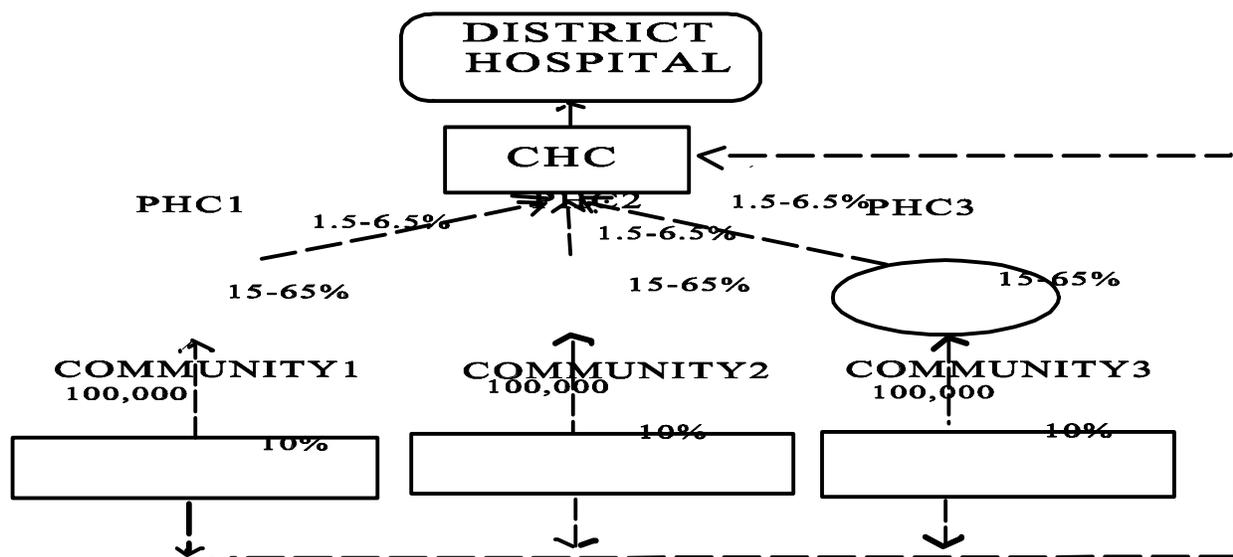
According to the Government of India guidelines, different components of RTI case management are being considered to be offered at different levels: at the community, Sub-Centre, PHC, CHC and other referral institutions (GOI, 1996). Laboratory confirmation and treatment services will be available only at Primary Health Centers (PHCs) and referral institutions such as Community Health Centers (CHC), Post-Partum Centers (PPCs) and district hospitals. Services such as condom distribution and IEC activities will be available at all the levels; the intensity of IEC activities across the levels will differ. As the model estimates the full range of activities from IEC to treatment, the sites of service provision are taken to be the block PHC and the CHC.

Block PHCs and CHCs provide a range of preventive and curative services--MCH, FP, and

curative. The block PHC covers a population of 100,000 with a staffing norm of 2 doctors, 7 paramedical and 7 administrative staff (World Bank, 1995b). Generally, there is one male doctor in position. Thus gynaecological examinations are not done by the doctors. The SIFPSA programme in Uttar Pradesh is testing the feasibility of providing gynaecological services through contracted lady doctors. These private doctors provide reproductive health services for a fee at fixed PHCs on fixed days. A CHC is the first referral unit for about three to six block PHCs. Being the first referral unit, a CHC is better staffed and equipped than a block PHC. The CHCs are meant to bridge the capacities of the larger district and sub-district hospitals and the purely outpatient and extension/promotion functions of the PHCs (World Bank, 1995b). The staffing norm for a CHC is four doctors, 13 paramedical and 8 administrative staff. One of the four doctors is usually a female physician. Unlike lower levels of health facilities the presence of a female physician who can examine women clients is an important feature of the CHC in Uttar Pradesh. Both CHCs and PHCs have laboratories which are equipped to conduct blood, urine, malaria and TB sputum tests. Examination of wet smears and simple gram staining for the detection of infections such as bacterial vaginosis, trichomoniasis and candidiasis are thus feasible in this setting. It is thus possible to provide improved RTI case management with laboratory support through block PHCs and CHCs.

Thus, it is clear that a community of 100,000 is served by both a block PHC and a CHC. The model developed in this paper envisages providing RTI case management services at both the block PHC and CHC levels. It estimates the cost of providing RTI case management at a PHC and at a CHC and by extension to the district. The activities that are provided by the two types of health centers differ according to the resources available. The following services will be provided by the block PHC: IEC activities through its health workers at the community level, laboratory tests for some RTIs, treatment, counseling and referral. The CHC being further removed from the community will only provide laboratory tests, treatment and counseling.

The model is depicted in the diagram below:



Research has indicated that not all infected individuals are aware of their morbidity and seek care; and of those seeking care, considerable proportions seek services in the non public sector. Hence, the model assumes that a minimum of twenty five percent to a maximum of seventy five percent of infected symptomatic women may seek services at various levels of the public health care: the block PHC and the CHC. At the block PHC, the utilization rate varies from a minimum of 15 percent of infected individuals to a maximum of 65 percent with ten percent choosing to use the CHC. In addition, there is a referral from the block PHC to the CHC, with about ten percent of the cases attending the block PHC being sent on to the CHC. Thus, the CHC would serve those clients who seek care directly and those who are referred from the PHCs. The model defines its clients as symptomatic women and for sexually transmitted diseases their partners as well. Thus according to the model service provision begins with symptomatic women seeking care and includes partners if required. The treatment costs include treatment of both partners in cases of STDs.

The cost estimates of providing the services through a PHC and a CHC are presented separately. In both models, the initial costs of setting up the service and the costs in the subsequent year are also given. It should be noted that the model is static in the sense that inflationary pressure (approximately 6-10% annually) and seniority considerations in salary adjustments are assumed to be constant and are not included in the cost estimates. In order to highlight the range in service coverage, the model incorporates two different patterns of RTI prevalence: a low level of prevalence of all infections and a high level of prevalence of all infections (see Annexure for the two patterns). In addition it also assumes differential utilization of the services at both the levels of service. The specific assumptions used in the model building are listed in the annexure.

Results

We first begin with estimating the cost of providing the Government of India recommended standardized case management for RTIs through a block PHC. The various activities that take place such as training, honorarium for the visiting female physician, capital equipment, equipment maintenance, IEC activities, quality assurance, laboratory tests and treatment are listed and costs estimated.

Table 1 presents the costs assuming a low prevalence infection pattern with 15 percent of infected clients seeking care at the PHC. The total cost in the first year is higher than in the second year due to training of personnel and equipment purchase before the services can be provided. The first year cost ranges from Rs.121715 to Rs. 186196 or US\$ 3429-\$5245 using the exchange rate of Rs. 35.5 per US\$. Costs come down in the second year and are in the range of Rs. 58335 to Rs. 99986. In the first year, less than a quarter (17%) of the cost is spent on the combination of training (8% to 10%) and purchase of capital equipment (7% to 9%). IEC activities constitute a significant portion of the total costs (46% to 54% in the first year). This allocation reflects the notion that prevention is the best form of cure, and hence the stress on educational activities at the community. The combined costs of conducting the laboratory tests (9%) and treatment (14%-21%) are about a quarter of total costs.

In the second year of service delivery, the distribution of costs across the line items changes primarily due to changes in the activities. The proportion of the cost spent on IEC decreases and that spent on tests and treatment increases. Most of the IEC expenses occur in the first year. Checks on quality are a new activity in the second year and constitute about five percent of the cost. It is also clear that the cost per client served is much lower than in the first year. For example, using the minimum cost estimates, the cost per client is halved from Rs. 212 to Rs. 102 in the second and subsequent years.

The cost per client served can also be reduced with higher utilization. Table 2 presents the total costs and cost per client served under different utilization rates, ranging from 15 percent of infected women to 65 percent seeking services. Fixed costs remain constant while variable costs change with the numbers of clients served. With higher utilization, fixed costs get distributed over a greater number of clients thus bringing down the cost per client served. For example, the cost per client served decreases from Rs. 157 to Rs. 102 (a 35% decrease) when utilization increases from 15 percent to 30 percent of infected women. However, reductions in the cost per client served are not as steep at the higher levels of utilization. In other words, the reductions in cost per client served are large at lower levels of utilization.

Similar to the analysis presented above, Tables 3 and 4 are based on the second infection pattern indicating the higher prevalence level of all infections. In other words, the numbers of potential clients served annually nearly doubles from 574 to 1122. Consequently, the costs also increase but not as proportionately. For example, the total cost increases by 19% from Rs. 121715 (Table 1) to Rs.150150 (Table 3) which is less than the increase in the number of clients. In terms of the cost structure, there is a relatively higher proportion spent on laboratory testing and treatment. For example, while between a quarter to a third of the total cost was spent on these line items in the first year under the low infection scenario, these increase to two-fifths to one-half in the high infection scenario. We observe that the cost of serving a single client is also lower than in the low prevalence scenario. For example, the minimum cost of serving an average client in the first year is Rs. 212 in the first infection scenario and Rs. 134 in the second scenario. The decline in the cost per client served with greater utilization can also be observed in Table 4, with costs dropping from Rs.106 per client at the lowest utilization level to Rs.63 at the highest utilization level.

Tables 5 to 8 relate to the cost of RTI case management at a CHC. Recall that the services at a CHC include counseling of patients, laboratory testing and treatment. Being a First Referral Unit (FRU), outreach activities such as IEC at the level of the community are not conducted. This focus of the CHC is reflected in the higher proportionate share of total cost of items such as laboratory testing and treatment. Table 5 indicates that in the first year, three quarters of the total costs are attributed to laboratory testing and treatment: testing contributes 26%-29% and treatment 45%-64%. Purchase of capital equipment and IEC pamphlets are other items which consume 6 percent to 21percent of costs. The CHC also serves a minimum of 1320 clients annually which is considerably higher than the load at a block PHC. The higher client load reduces the cost per client served, which is in the range of Rs. 64 to Rs. 96 in the first year. The

structure of total costs in the second year is similar to the first year, with greater proportion spent on testing and treating. Total costs of the service are considerably lower than in the first year. The lowered costs are also reflected in the lower cost per client served of Rs.57 to Rs. 93.

Table 6 presents the range of total costs at the low estimates of infection prevalence under different utilization rates. The total costs do not vary much: at the lowest utilization level, 2640 clients can be served for Rs. 159,748 while at the highest utilization level, 3786 clients are served for Rs. 214234. Tables 7 and 8 present a similar analysis for the higher infection prevalence pattern. The cost structure is similar to the low infection prevalence pattern.

Discussion

Thus the preceding sections presented the costs of providing RTI management services at the levels of a block PHC and a CHC. From the analysis it is clear that costs of treatment are considerable and the drug budgets of the facilities may not be adequate. For example, the average annual drug budget of a block PHC is in the range of Rs. 17000 to 20000 and RTI case management would require doubling of the existing budgets. There is a possibility of cost reductions if generic drugs are purchased at wholesale prices. However, the drug budgets have to be increased if RTI case management is to be included as a service. At the present moment, there appear to be no quantity or expenditure norms for drugs and supplies. Supply requirements do not seem to be based on the need or demand and are often inadequate and often budgets are provided on "per facility" basis which are based on the amount of funds available (World Bank, 1995b). Also, the sources and flow of drugs and supplies for specific facilities and programs are not clear. State governments purchase drugs and supplies for health facilities and at the district level, the Chief Medical Officer (CMO) decides the distribution of drugs to CHCs, PHCs and Sub-Centers. It is also not clear whether there is duplication in supply between different health and family welfare programmes or whether the supply is combined but the distribution is uneven due to higher level facilities releasing drugs to lower level ones (World Bank, 1995b).

The model also presents options about which level of the health system the services should be made available. While making services available at a lower level like the block PHC increases coverage, it makes staffing, training and quality control more difficult, resulting in inevitable cost increases. For example, the availability of the required staff such as the lab technician is crucial for service delivery. However, about fifty percent of the laboratory technicians' positions nationwide are vacant (World Bank, 1995a). There is a similar shortage of lady doctors and the contracting of private lady doctors from the private sector has to be studied in detail for sustained service delivery. Given this type of scenario, the option of providing services at a higher level of the health system where a minimum standard of care can be ensured gains strength. Another option may be to provide gynaecological services in a camp setting where the required technical and support systems can be arranged as is being currently done in sterilization camps. A collaborative effort of a PHC, NGOs and the Gynaecology and Obstetrics department of a city government hospital resulted in a gynaecological camp in Gujarat (Chetna, 1993). During the camp, women were clinically examined, diagnosed, treated, counseled, shown videos, and provided with educational material. The follow-up of the women was the responsibility of the local NGO. The approximate expenditure per person was worked out to be Rs. 93 (Chetna, 1993).

Another discussion point is that of upscaling and replicability. The model presented describes the activities and the cost estimates at a single block PHC and a single CHC. A district on average has 20 block PHCs and six CHCs. Based on the cost estimates presented in Tables 1 and 5, we extrapolate the potential costs at the district level. Based on the low infection scenario with the lowest level of utilization, the estimated annual cost of RTI case management at the level of block PHCs would be a minimum of Rs. 1800000 (US\$ 51000) to a maximum of Rs. 2900000 (US\$ 81000). Similarly the estimated annual cost at the level of CHCs would be in the range of Rs.480000 (US\$ 13000) to Rs. 1700000 (US\$ 47000). This implies that the annual costs at the district level of providing RTI case management at all the block PHCs and CHCs would be a minimum of Rs. 2300000 or US\$ 64000. Given that Uttar Pradesh has 68 districts it is debatable whether the state's resources can be stretched to provide RTI case management among the whole range of reproductive and child health services throughout the state. At the national level, the new Reproductive and Child Health (RCH) approach envisages that 1.7 billion is required over a period of 5 years. Of this amount, 83 percent is allotted to meeting existing governmental norms on infrastructure supplies and personnel, while 17 percent is allotted for new services. Given this macro environment the cost of RTI case management are considerable.

Some economies of scale are possible while upscaling, such as the organization of group training sessions and the bulk purchase of equipment and supplies. Thus while total costs may decrease while upscaling, they will still remain additive. Another way to exploit the positive economies of scale would be to introduce the whole range of reproductive health services. This would then spread some fixed costs over a range of services, thus bringing down the cost of individual services.

Given that the high resource requirements, sustainability of the service is a critical issue. Sustainability would require not only commitment in terms of resources but also the willingness to continue to provide the services. It also requires that innovative ideas for cost sharing be tested. At the present moment, services provided in the public sector are free of cost. Passing on a portion of the recurring costs to some or all clients may be an option. Households spend up to five percent of their income on health care. In addition on the non availability of drugs from the public health centers, clients do purchase them in the private sector. Thus it is possible that some users may be paying users. As the greater proportion of public sector clients are economically disadvantaged, the portion of costs that could be passed on to such users has to be analyzed. A second option could encourage organized sector employers to provide health care for their employees.

The paper will not be complete without a discussion of its limitations. One limitation of this model is that it aims to treat symptomatic women and through them their infected partners. Though important, issues such as treatment of asymptomatic women and men, and case screening are not addressed by this model. The rationale for this model is that it addresses the needs of symptomatic women who have so far been ignored by the programme. There is clearly a need for further information to detect asymptomatic men and women and provide the necessary management.

A second limitation is that the outcome measure is the numbers of clients served and not clients successfully treated. This has to be so as the efficacy of treatment in the mid term is not known and there is no field experience of the syndromic approach of RTI case management. In addition, the model has not costed gold standard laboratory tests which are sensitive and specific enough to provide accurate information for diagnosis. However, the mode has costed only those tests which can be feasible in a primary health care centre.

These limitations may be reduced as pilot projects on RTI case management get underway across the country providing opportunities for information gathering. The model and the cost estimates can then be modified based on the lessons learnt from actual service delivery. Effectiveness may also improve over time with greater familiarity and ease of providing the new service. The model presented here can be used by district planners to understand the implications for decisions. The following section presents some broad conclusions based on the analysis and discussion above.

Conclusions

- The costs of RTI case management vary widely by levels of utilization, levels of infection and the capability of health centers to provide the services.
- The model of RTI case management indicates that laboratory testing and treatment costs are higher than currently expected. However, as with other health programmes, preventive measures may be cost-effective in the long run. It stresses the importance of community outreach and IEC activities.
- The estimated total costs for RTI management are beyond existing budgets. It is possible that some cost savings are possible if the whole reproductive health package is included.
- Policy makers and programme managers need to examine both initial and continuing costs to examine the quality and sustainability of RTI case management in the context of the entire RCH package.

Table 1: Costs of RTI Case Management at a PHC: Low Estimates of Infection (In Rupees)

Item	Year 1		Year 2	
	Minimum	Maximum	Minimum	Maximum
Fixed Costs				
Training	9740	18900	0	0
Refresher Training	0	0	4860	7670
Honorarium for doctor	6000	12000	6000	12000
Capital	11500	12200	0	0
Capital Maintenance	1150	1220	1150	2440
IEC Activities	66000	86000	16000	16000
Quality Assurance	0	0	3000	6000
Variable Costs				
Lab Tests	10710	16440	10710	16440
Treatment	16615	39436	16615	39436
Total Costs	121715	186196	58335	99986
Cost per client	212	292	102	157

Note: Number of clients =574 to 638 per year under a 15% utilization rate. See Annexure table A-1 (not included here) for the low estimates of infection of the various RTIs.

Table 2: Costs of RTI Case Management at a PHC under Different Levels of Utilization (In Rupees)

	Fixed Costs	Variable Costs	Total Costs	Cost per Client
15 % Utilization	125400	54650	180050	157
30% Utilization	125400	109334	234734	102
45% Utilization	125400	163348	288748	87
65% Utilization	125400	236568	361968	73

Note: The costs cover a two year period and reflect the minimum estimates of fixed, variable and total costs in Table 1. The same low estimates of infection are assumed.

Table 3: Costs of RTI Case Management at a PHC: High Estimates of Infection (In Rupees)

Item	Year 1		Year 2	
	Minimum	Maximum	Minimum	Maximum
Fixed Costs				
Training	9740	18900	0	0
Refresher Training	0	0	4860	7670
Honorarium for doctor	6000	12000	6000	12000
Capital	11500	12200	0	0
Capital Maintenance	1150	1220	1150	2440
IEC Activities	66000	86000	16000	16000
Quality Assurance	0	0	3000	6000
Variable Costs				
Lab Tests	18390	25290	18390	25290
Treatment	37370	112709	37370	112709
Total Costs	150150	268319	86770	182109
Cost per client	134	215	77	146

Note: Number of clients =1122 to 1250 per year under at 15% utilization rate. See Annexure table A-1 (not included here) for the high estimates of the various RTIs.

Table 4: Costs of RTI Case Management at a PHC under Different Levels of Utilization (In Rupees)

	Fixed Costs	Variable Costs	Total Costs	Cost per Client
15 % Utilization	125400	111520	236920	106
30% Utilization	125400	222894	348294	78
45% Utilization	125400	333936	459336	68
65% Utilization	125400	482374	607774	63

Note: The costs cover a two year period and reflect the minimum estimates of fixed, variable and total costs in Table 3. The same high estimates of infection has been assumed.

Table 5: Costs of RTI Case Management at a CHC: Low Estimates of Infection (In Rupees)

Item	Year 1		Year 2	
	Minimum	Maximum	Minimum	Maximum
Fixed Costs				
Training	3065	5775	0	0
Refresher Training	0	0	2155	2895
Capital	11500	12200	0	0
Capital Maintenance	1150	1220	1150	2440
IEC pamphlets	6000	6000	6000	6000
Quality Assurance	0	0	3000	6000
Variable Costs				
Lab Tests	24660	75720	24660	75720
Treatment	38204	180164	38204	180164
Total Costs	84579	281079	75169	273219
Cost per client	64	96	57	93

Note: See Annexure for the low estimates for various RTIs assumed (not included in this printing).

The utilization rate is 10% of direct clients plus 10% of referrals from the 15% attendees at a block PHC. Number of clients served range from 1320 to 2933 depending upon whether the PHCs covered are three or six (see Table A-2).

Table 6: Costs of RTI Case Management at a CHC under Different Levels of Utilization: Low Estimates of Infection (In Rupees)

	Fixed Costs	Variable Costs	Total Costs	Cost per Client
Utilization rate 1	34020	125728	159748	61
Utilization rate 2	34020	141876	175896	59
Utilization rate 3	34020	158434	192454	58
Utilization rate 4	34020	180214	214234	57

Note: The costs cover a two year period and reflect the minimum estimates of fixed, variable and total costs in Table 5. The same low estimates of infection have been used.

The utilization rates refers to ten percent of the clients from each community plus a referral rate of 10 percent of the 15-65 percent attendees at a PHC (see Table A-2).

Table 7: Costs of RTI Case Management at a CHC: High Estimates of Infection (In Rupees)

Item	Year 1		Year 2	
	Minimum	Maximum	Minimum	Maximum
Fixed Costs				
Training	3065	5775	0	0
Refresher Training	0	0	2155	2895
Capital	11500	12200	0	0
Capital Maintenance	1150	1220	1150	2440
IEC pamphlets	6000	6000	6000	6000
Quality Assurance	0	0	3000	6000
Variable Costs				
Lab Tests	42240	116160	42240	116160
Treatment	85881	517673	85881	517673
Total Costs	149836	659028	140426	651168
Cost per client	58	115	54	113

Note: See Annexure of the high estimates for various RTIs assumed (not included in this printing).

The utilization rate is 10% of direct clients plus 10% of referrals from the 15% attendees at a block PHC. The number of clients served range from 2581 to 5748 depending upon whether the PHCs covered are three or six (see Table A-3).

Table 8: Costs of RTI Case Management at a CHC under Different Levels of Utilization: High Estimates of Infection (In Rupees)

	Fixed Costs	Variable Costs	Total Costs	Cost per Client
Utilization rate 1	34020	256242	290262	56
Utilization rate 2	34020	289644	323664	55
Utilization rate 3	34020	323070	357090	55
Utilization rate 4	34020	367218	401238	54

Note: The costs cover a two year period and reflect the minimum estimates of fixed, variable and total costs in Table 7. The same high estimates of infection have been used.

The utilization rates refers to ten percent of the clients from each community plus a referral rate of 10 percent of the 15-65 percent attendees at a PHC (see Annexure table A-3, not included in this printing).

Note: The sections entitled “DATA AND ASSUMPTIONS” and “ANNEXURE” have not been included here due to limitations of space. For a complete version of the report, please contact the Population Council, New Delhi.

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Further input from Co-Author:

Dr. John Townsend: This project looked at a model of how a program might operate, and sensitivity is built into the model. Most existing health facilities are under-utilized, so those costs were not added in. The model also did not look at costs to patients or social costs as we don't have data on these or know very much about this so far. As for how these results were use, in the end the government has not yet invested in IEC (information, education and communication) and does not pay for drugs. Also there is low compliance of laboratory technicians. So at this point, both the costs AND the quality are lower in actuality than estimated. But this is early stages, the RCH (reproductive and child health) just began in April, 1997.

3. Integrating RTI Services In Philippine LGU Health Centers: A Cost Analysis

(by Jesus Encena and Carmeli Chaves)

Carmeli M. C. Chaves, presenter

Research Associate, Population Council - Philippines

The Philippine RTI integration study had two main objectives. First, it aimed to describe and assess the operational implications of a nationwide integration of RTI case management within the Philippine Family Planning program. Second, it sought to investigate the financial implications of such a programmatic change, with the related end of exploring sustainability and replication issues. A cost analysis of adding RTI services within the Family Planning program is particularly important in the Philippine setting, where primary health care is currently being provided by devolved local government units (LGUs). Clearly, LGU officials are not going to support such a change without at first being able to assess its financial implications.

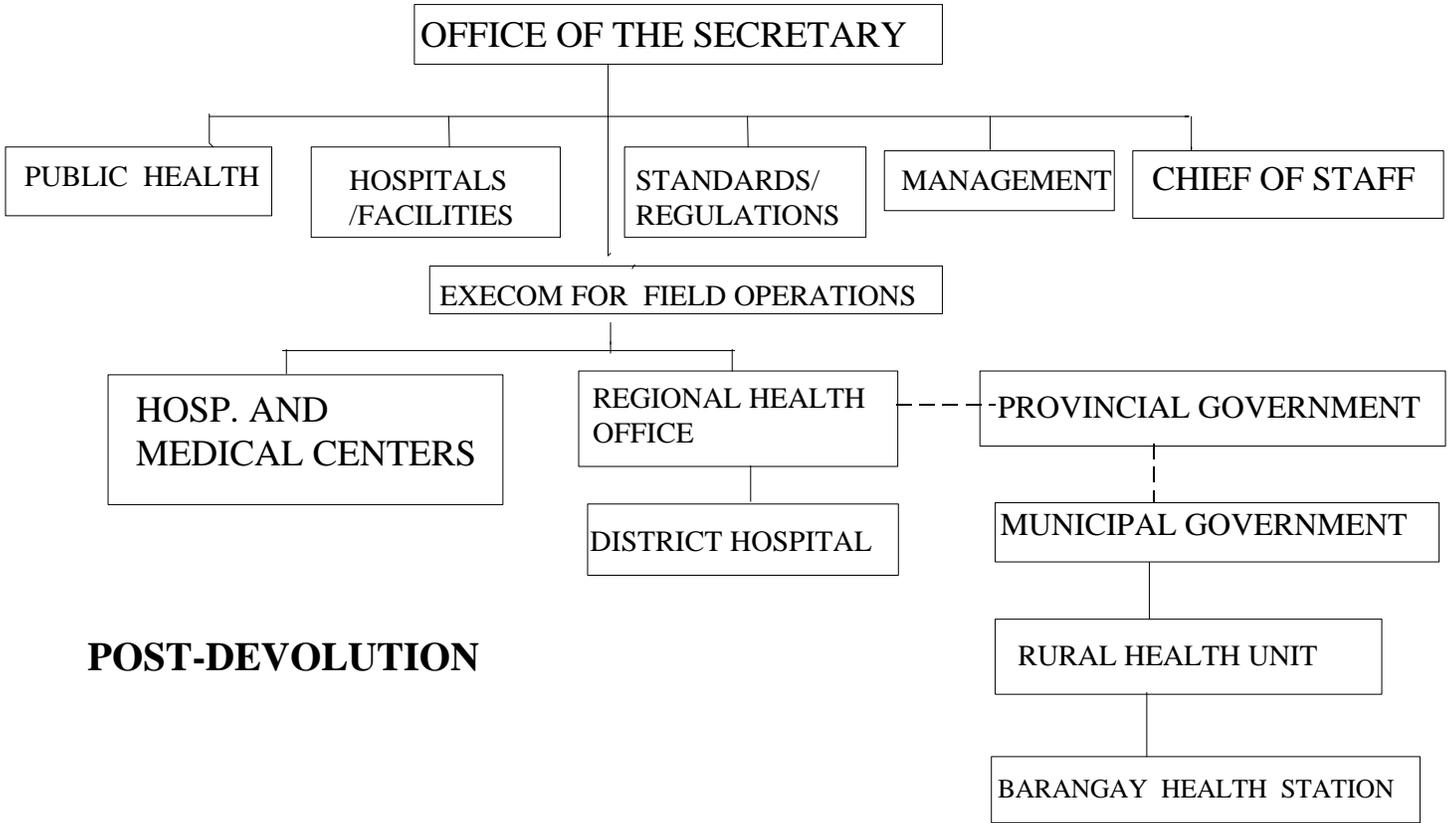
Objectives

The primary objectives of this cost analysis are twofold: (1) to provide estimated costs of a standardized RTI management in the local health centers; and (2) to provide cost models applicable to two types of clinics: one with a laboratory and one without a laboratory.

Unit of Study

Data were collected at the level of a centrally located health care center, known as Rural Health Unit (RHU) for rural areas and Urban Health Center for urban areas. Under each RHU are Barangay Health Stations, each of which is usually managed by a midwife. The RHU is typically staffed by a medical officer, a public health nurse, a public health midwife, and a clinic aide. Some clinics have a dentist and a medical technologist. The standard doctor-patient ratio in the public health system is supposed to be 1: 25,000, although in reality the client load is typically much bigger.

DEPARTMENT OF HEALTH ORGANIZATIONAL CHART



Methodology

In this cost analysis, the production process methodology will be used. This approach describes how resources or inputs are converted by processes to outputs and outcomes (Janowitz and Bratt, 1994). The components of RTI service delivery are grouped as either inputs, processes, or outputs. Inputs include personnel, training, clinic and laboratory equipment and supplies, IEC materials, and drugs. These components combine to provide RTI service delivery in the health center. The expected outputs are clients who seek RTI services, RTI counseling and education (both one-on-one and community-wide), laboratory testing, and treatment.

The two models describe the **marginal cost** of RTI service delivery. Only additional resources needed to provide RTI services are costed. Building rent and salaries of personnel, for instance, are not included in the cost analysis.

Costs were classified as being either **fixed** or **variable**. **Fixed costs** are costs that do not vary with the number of clients who avail of RTI services. These include didactic and practicum training of service providers, IEC activities, clinic equipment, and laboratory equipment. In contrast, **variable costs** will be affected by the number of clients who avail of RTI services. Variable costs would therefore include MIS forms, clinic supplies, laboratory tests, and actual treatment of RTIs.

Costs are computed for the first year of integrating RTI services. Minimum and maximum costs are computed to allow for cost differences in certain items as travel allowances, sizes of clinic equipment, wholesale vs. retail prices, and type of drugs used.

Sources of Data

Data on training costs were sourced from the Economic Development Foundation, an NGO that the Department of Health has contracted to conduct all its health training programs. The costs of clinic equipment and supplies, laboratory equipment, reagents, RTI drugs, and IEC materials were based on prevailing market rates in Metro Manila and Cagayan de Oro City.

Description of Models and Line Items

MODEL 1 : CLINIC WITHOUT LABORATORY (Syndromic Management)

Model 1 describes cost requirements in integrating RTI management services in a main health center that has no laboratory capacity. The clinic personnel use the syndromic management approach, which the Philippine Department of Health has endorsed for the management of RTI cases. Diagnosis and management make use of algorithms for specific syndromes.

Training of doctors, nurses, and midwives

The Medical Officer, Public Health Nurse, and at least two midwives responsible for providing family planning services in the main health center are trained as a team in the management of reproductive tract infections. The RTI training, which is conducted for health workers at all levels, is held at the nearest training center for four days. This training enhances the service providers' skills in history taking, physical examination, syndromic management, counseling and health education, and in conducting community awareness campaigns.

On-site training

A supervisor (medical doctor) with clinical experience in RTI management visits the health center for at least five working days to provide post-training technical assistance. This will enable service providers to apply the skills and knowledge they have gained during the didactic portion of the training and to overcome initial constraints in integrating RTI management in the health center.

IEC activities

In order to raise community awareness and education about RTIs, several activities have to be conducted such as mothers/fathers classes, "bench talks", and community meetings. Brochures and pamphlets are given out during these activities and an "RTI Corner" is put up in the health center. A penile model is also provided for use in demonstrating the correct use of the condom during counseling and health education.

Clinic equipment

Existing clinic equipment for the physical examination of clients needs to be upgraded to meet the minimum clinical standards in RTI management. These include sterilizers, speculums, and a goose-necked lamp.

Equipment maintenance

Over time, clinic equipment needs to be maintained. Ten percent of the purchase cost for clinic equipment is allotted for this.

MIS forms

In keeping a management record of clients with RTIs, two types of forms are designed: an individual treatment form and a monthly RTI patient registry. Records are placed in an expanding file to ensure confidentiality and to protect from damage. This file is kept inside a locked cabinet.

Costs of treatment

Each type of RTI requires a different treatment regimen. Drug costs will vary according to the severity of infection and the type of drugs being used (e.g. whether first or second generation drugs, whether branded or generic, locally manufactured or imported). In this study, drugs have been chosen according to the recommendations set by the National STD Management Guidelines of the Department of Health. The costs of treating the regular sex partners of clients with STDs (or parents in cases of neonatal eye discharge) are also included. It is assumed that 100% of such partners are given treatment.

Clinic supplies

These include disposable gloves used during physical examination and condoms distributed to clients during counseling and health education sessions.

Number of clients

The number of clients is computed as the actual number of patients with an RTI plus their partners if they are diagnosed with an STD. For cases of herpes, however, the partner is excluded. For neonatal conjunctivitis, both the neonate's parents must be treated.

MODEL 2: CLINIC WITH LABORATORY (Etiologic and Clinical Management)

Model 2 describes a main health center that has laboratory capacity. Data and assumptions for Model 2 are generally similar to those for Model 1. As such, only items that are different from the previous model will be described.

Training of medical technologists

The medical technologist assigned in the health center is trained in basic laboratory methods such as gram staining (for gonorrhea, chlamydia, bacterial vaginosis), saline wet mount (trichomoniasis), KOH wet mount (candidiasis) and the VDRL Cards Test (syphilis). A three-day training held in the laboratory of the nearest tertiary government hospital is provided for.

Laboratory equipment

A minimal amount is spent in buying an alcohol lamp, which is used for the gram staining procedure. It is assumed that all other equipment is already available.

Equipment maintenance

Clinic and laboratory equipment is maintained at 10% of their purchase cost.

Costs of treatment

The choice of drugs for etiologic management of RTIs is essentially the same as in syndromic management (Model 1). However, since etiologic diagnosis tends to be more specific, multiple drug therapy is often avoided; thus, the treatment costs in this model refer to the specific condition.

Laboratory diagnosis

The cost of laboratory testing varies according to the infection and the laboratory technique used. Some of the pathogens can be identified by simple microscopic examination of wet mounts while others may require gram stain or some other procedure. Some clients also undergo more than one type of test. As such, costs may vary.

Results

The following tables summarize the results of the cost analysis.

**Table 1: Annual Peso Cost of RTI Case Management at a Clinic Without Laboratory (MODEL 1)
(In Pesos)**

ITEM	MINIMUM	MAXIMUM
Fixed Costs	22,503	30,560
• Training	11,220	16,700
• On-site Training (Facilitative Supervision)	2,000	3,125
• IEC Activities	1,605	1,605
• Clinic Equipment	6,980	8,300
• Equipment Maintenance	698	830
Variable Costs	46,122	70,153
• MIS Forms	450	610
• Treatment cost	43,472	66,143
• Clinic Supplies	2,200	3,400
Total Cost	68,625	100,713
Cost per client	399	586
	\$ 13*	\$ 20*

N=172 clients (Partners included for clients with STDs)

*\$ 1= P 30

The number of clients (172) is the number of actual RTI cases found in four clinics using syndromic management in Quezon City and Cagayan de Oro City within a three-month observation period. Table 1 shows us the following significant findings:

For a clinic without a laboratory, cost per client ranges between \$13 - \$20. Seventy percent of this total cost is for diagnosis and treatment alone. This can be explained by the fact that RTI drugs are often costly. Since this study assumes that both the client and her partner complete the treatment regimen, treatment cost thus increases.

Variable costs are at least twice as much as the fixed costs. Thus, what largely determines the overall cost of RTI services in Model 1 is the number of clients served, rather than initial investments in training and equipment.

Table 2: Cost for Various Annual Estimates of Patients in Clinics Without a Laboratory

MODEL 1	ITEM	ACTUAL N=172	50% INCREASE N = 258	100% INCREASE N=344
	Fixed Costs	22,503	22,503	22,503
	Variable Costs	46,122	69,183	92,244
	Total	68,625	91,686	114,747
	Cost per Client	399	355	334
		\$ 13	\$ 12	\$ 11

Note: Using minimum estimates from Table 1

Using the minimum costs from Table 1, various annual estimates of RTI clients were made. The actual number of clients (172) was increased by 50% and 100%. We see that, while fixed costs remained the same and variable costs increased, cost per client decreased by \$1 with a 50% increase, and by \$2 when the number of clients was increased another 50%. Thus, in Model 1, cost per client decreases somewhat as more clients are served.

Note, however, that these decreases are actually rather minimal. The reason for this lies in the relatively minor role played by fixed costs in this study. As such, we can say that start-up costs for an RTI management program under this model are fairly small. Conversely, though, we cannot claim that the growth in caseloads over time will result in significant gains in cost per client.

Now let us go to Model 2.

Table 3: Cost of RTI Case Management at a Clinic with Laboratory (MODEL 2) (In Pesos)

ITEM	MINIMUM	MAXIMUM
Fixed Costs	26,658	35,930
• Training		
> Doctors, Nurses, Midwives	11,220	16,700
> Medical Technologists	4,100	5,315
• On-site Training (Facilitative Supervision) for Doctors, Nurses, Midwives)	2,000	3,125
• IEC Activities	1,605	1,605
• Clinic Equipment	6,980	8,300
• Laboratory Equipment	50	50
• Equipment Maintenance	703	835
Variable Costs	11,412	20,064
• MIS Forms	350	454
• Laboratory diagnosis	1,760	1,760
• Treatment cost	8,777	17,039
• Clinic Supplies	525	811
Total Costs	38,070	55,994
Cost per client	906	1,333
	\$30*	\$44*

N=42 clients (Partners included for clients with STDs)

* \$1 = P30

In a clinic with a laboratory, fixed costs exceed variable costs. Fixed costs, mainly on training and laboratory equipment, account for about two-thirds of the total cost. Diagnosis and treatment costs, meanwhile, are only about a quarter of the total cost. This lower treatment cost is due to the specificity of treatment in the etiologic management of RTIs, compared to multiple drug treatments (the so-called "shotgun approach") in syndromic management.

The cost per client for a clinic with a laboratory is between \$30 - \$44. The bulk of this total amount is spent on fixed costs. These include first-year investments in training the doctor, nurse, midwife, and medical technologist, as well as purchasing clinic and laboratory equipment.

Various annual client estimates, at 50% increase and 100% increase, were also made for Model 2.

Table 4: Cost for Various Annual Estimates of Patients in Clinics With Laboratory

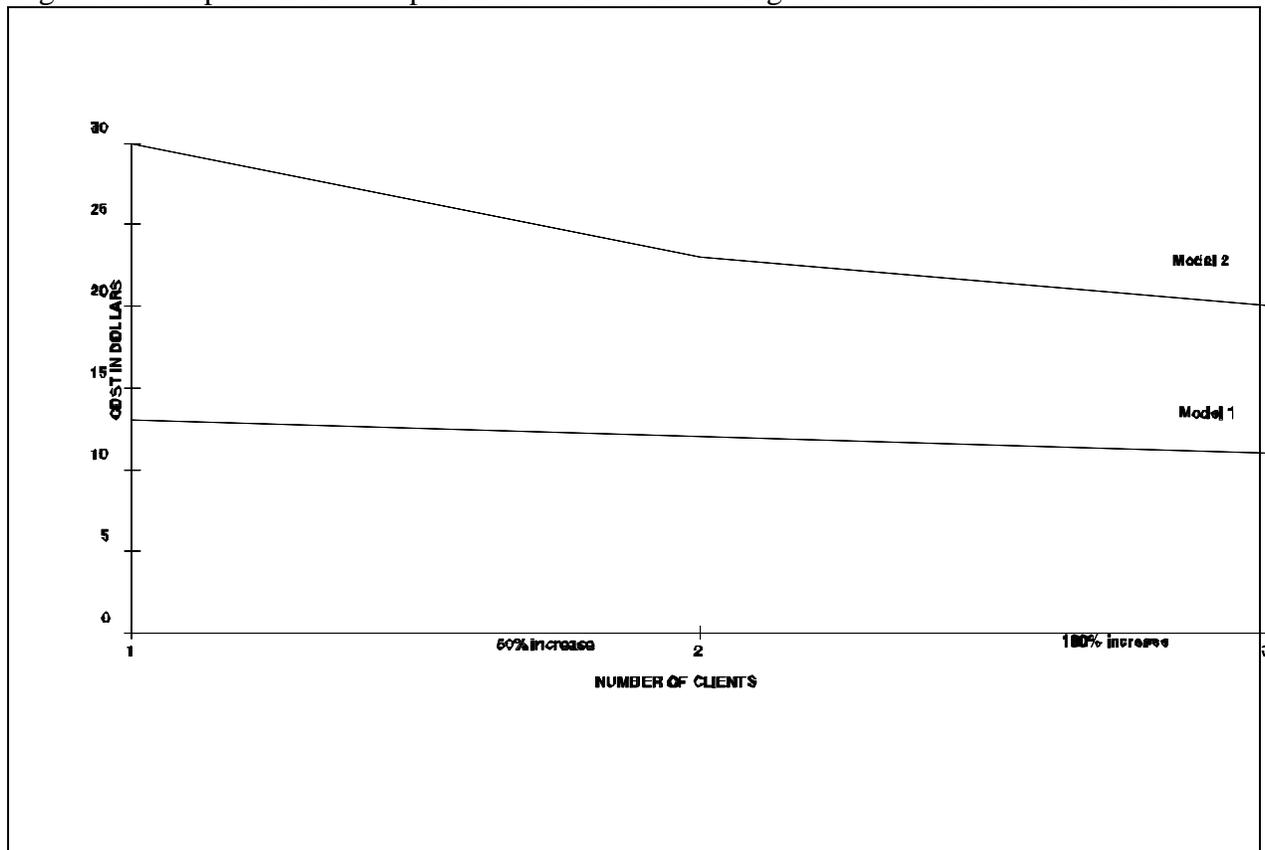
MODEL 2	ITEM	ACTUAL N=42	50% INCREASE N = 63	100% INCREASE N=84
	Fixed Costs	26,658	26,658	26,658
Variable Costs	11,412	17,118	22,824	
Total	38,070	43,776	49,482	
Cost per Client	906	695	589	
	\$ 30	\$ 23	\$ 20	

\$1= P30

Note: Using minimum estimates from Table 2.

As in Model 1, fixed costs remain the same while variable costs increase with a larger number of clients. As expected, cost per client in Model 2 decreases as well, but the decline is more pronounced than in Model 1. When clients were increased 50%, cost per client decreased by \$7 and when clients were increased another 50%, cost decreased by an additional \$3.

Figure 1. Comparison of costs per client with an increasing client load for Models 1 and 2



Finally, the study made a comparison of costs between Model 1 and Model 2. To make a valid comparison, the number of clients for both models was kept at 100. The "standardized" models show the following results:

Table 5: Comparison of Costs Between Model 1 & Model 2 for 100 Patients

ITEM	MODEL 1 (Clinic Without Laboratory)	MODEL 2 (Clinic With Laboratory)
Fixed Cost	22,503	26,658
Variable Cost	26,815	27,171
Total	49,318	53,829
Cost per Client	493	538
	\$ 16	\$ 18

\$1= P30

Thus, the cost per client turns out to be \$16 for Model 1 and \$18 for Model 2. There is only a \$2 difference in the cost per client in a clinic without laboratory and a clinic with laboratory, assuming that each serves 100 clients. This \$2 difference further decreases with additional clients.

In sum, then, what makes syndromic management expensive is the cost of treatment, which expectedly increases with the number of clients. Etiologic management spends less on drugs (since treatment is more specific) and more on training and equipment in the first year of integration. As the number of clients increases, however, the initial investment in fixed costs is offset, at least on a per client basis.

Finally, in comparing the two models, we must remember that we are computing for the marginal costs. Existing resources in both models are not included in the costing. For instance, existing laboratory facilities and equipment as well as the salary of the medical technologist in Model 2 are not costed. The \$2 difference between Model 2 and Model 1 assumes therefore two different clinic set-ups. This cost analysis simply estimates how much it would take to add RTI services in two existing clinic set-ups, one with a laboratory and one without.

To make the integration of RTI services within the local health clinics more sustainable, government officials would do well to maximize the clinic set-up and resources at hand, since, first, there is only a minimal increase in costs for adding RTI services under the laboratory set-up, and, second, RTI diagnosis under this model is likely to minimize the problem of overtreatment.

Reference

Janowitz, Barbara. and Bratt, John. 1994. Methods for Costing Family Planning Services. New York, USA

4. Preliminary Cost Findings from an RTI Integration Study in North Jakarta FP Clinics

Meiwita B. Iskandar, presenter

Resident Advisor, Population Council - Indonesia

OBJECTIVES:

- To determine the total cost of integration of RTI/STD services (one year and up to five years)
- To determine the unit cost RTI/STD services per client contact
- To determine the community's ability to pay (ATP) for RTI/STD services

COST STUDY COMPONENTS:

- 1) Recurrent/variable/operation costs
- 2) Investment/ fixed costs
- 3) Training costs
- 4) Client ability to pay (ATP) (not yet available)
- 5) Secondary analysis of data from the 1996 National Economic Survey (SUSENAS) (not yet available)

CLIENT ATP SURVEY

- 250 women = 150 study participants + 100 community members
- Socio demographic data
- Reproductive history
- Pap smear utilization (payment experience)
- Household expenditures
 - food
 - non-food, including health expenditures

(Data analysis still in progress. This data will be used to determine the scale of the necessary government subsidy for RTI/STD service integration)

ASSUMPTIONS (HOSPITAL & PUSKESMAS)

Recurrent Costs Components

1. Total clients/year = 1605 (hospital)
= 1440 (*puskesmas*)
(based on 1995/96 hospital medical records)
2. Drugs according to National STD Guidelines
 - Most expensive drugs of choice

- Least expensive drugs of choice
 - 3. Lab supply costs according to supplier's pricing level (reagents, disposable gloves, etc.)
 - 4. Medical supplies: gauze, cotton-swab, alcohol, towels, etc.
 - 5. Salary consists of:
 - Core salary
 - Incentives for dependents
 - Incentives for additional activities
- Including a total of:
- 1 Ob-Gyn, 2 GPs, 2 midwives, 1 lab-specialist, and 2 lab-technicians (hospital)
 - 1 GP, 3 midwives, 1 analyst and 1 nurse (*puskesmas*)
6. Maintenance cost of lab equipment:
 - Repair cost every 2 years
 - Life time: 5 years
7. Stationary / supply costs
(Pens, paper, notebooks, medical records, etc.)

Investment Costs Components

1. **Lab Equipment:** Incubator, autoclave, burner, centrifuge, timer, candle jars, etc.
2. **Medical Equipment:** Speculum, lithotomy table, weighing scale, instruments table, spot-light, stethoscope, instruments basin, etc.
3. **Non-Medical Equipment:** Curtain, refrigerator, office furniture, filing cabinet, air-conditioner, computer, trash-can, etc.
4. **Building:** Appraisal of building cost/square-meter covering examination & waiting rooms

Training Costs Components

1. 8 staff (hospital)
6 staff (*puskesmas*)
2. 12 days of training (5 sessions/day)
3. provisions of meals & transportation costs
4. honoraria for facilitators
5. stationary and photocopying
6. venue

Note: For final results, please contact the Population Council - Jakarta

5. Summary Box: Cost Study Recommendations

Cost Study Recommendations:

- In attempting a cost analysis, don't worry too much about the cost details of small items, **focus on the "big ticket" items** which will have a real impact on the final results and their implications. Many of the key areas have been pointed out by the studies presented here.
- Dr. George Schmid, CDC-Atlanta
- **Think about the long term.** These studies tend to focus on one or two year periods, but it would be ideal and yield more realistic data to look at the bigger picture and see how these cost issues play out over time for reproductive health services.
- Dr. John Townsend, PC-New Delhi
- **Training** is a big issue in this new area of integrating reproductive health. We have found that providers and technicians used to providing other services generally need intensive re-training or refresher training to be able to provide new services. This is one key area that must be planned for with cost studies.
- Dr. Christopher Elias, PC-Bangkok

VIII. RECOMMENDATIONS AND CLOSING

1. Panel Discussion: Policy Implications of Recent Research on Reproductive Health and Priorities for Future Research and Intervention in Reproductive Health

Panel Members:

John S. Moran, HAPP/CDC-Atlanta

John W. Townsend, Population Council - India

George P. Schmid, CDC-Atlanta

Christopher J. Elias, Population Council - Thailand

Dr. John Townsend:

- 1) We need to clarify our goals - what kind of policy would we like to have - what are the priority issues for each of us, or for each country?
- 2) Documentation is critical. So much information is often lost to us because it is not well documented and made available.
- 3) Next steps: we need to think of up-scaling our thinking to consider bigger time frames.
- 4) It is important to lay out the model and the assumptions in advance of conducting a cost study.
- 5) Up-grading lab facilities may be a major area for future investment.

**There is already a wealth of information for policy makers about operating systems, case management, how the systems work, what are the elements, etc.
- Dr. John Townsend**

Dr. George Schmid:

In terms of cost studies, from the presentations today, there has been a lot of good work on costs and much has been done right, in terms of focusing on what is being spent and what the benefits are (what we get for the money). It makes sense to use different methodologies in different settings. However, these were generally looking at *process*. In the future, we need to start investigating the consequences of the services. We need to go further, but we have made a good start. For one thing, we need to look at whether needs are being met. Clearly there are big issues and questions in terms of laboratory procedures. Why aren't these tasks simple and straightforward? In order to move beyond the syndromic approach (and it seems clear that we must) we need to be able to rely on laboratories.

**We must always be striving for something better and not settle for something that doesn't meet the needs just because it is an easier or cheaper option.
- Dr. George Schmid**

Dr. John Moran:

We have seen here a lot of cross-sectional data and many cases where people are not appropriately managed. What's missing is the kind of study where we compare the costs and benefits of new services with those of existing services. It should be recognized that only a small proportion of STD/RTI infected individuals go on to have severe complications. In other words, not all these people, if untreated, will remain infected and infectious forever. Their immune systems or incidental consumption of the right antibiotics taken for a different ailment will lead to many of them being cured along the line. We really should account for this in cost studies.

The fact is, we are trying to bring about marginal improvements (i.e. prevention for those few who would end up with severe complications). We need to know what people would have done had they not been treated by our program.

- Dr. John Moran

Perhaps eventually they would have developed symptoms, gone to private doctors, or taken other steps. Basically, we could probably all retire tomorrow and people would still be treated for STDs in Asia!

Dr. Christopher Elias:

People do a lot of things to address their morbidities, often this includes a cascade of self-treatment, quack doctors or healers, and perhaps eventually a health center or hospital. Qualitative data implies that it takes a long time for people to get appropriate treatment and in the meantime they may be exposed to harmful interventions. Some intervention is necessary. People are getting the wrong drugs for the wrong conditions.

The syndromic approach has been shown to work well for a few conditions, but it fails totally in dealing with combinations of symptoms like vaginal discharge, odor and/or itching. We need to look closely at the flowcharts and re-think the process. The women with discharge have no greater risk of having a cervical infection than any other group of women, but they are more likely to have a vaginal infection. The majority of cervical infections are asymptomatic, we still need some case finding strategy. How do we do this?

Is there a way to ration our efforts and resources towards people for whom negative consequences would have greater impact, such as younger people, or women who still want to have children?

- Dr. Christopher Elias

Maybe with improved confidentiality we could improve the utility of risk assessment. This may be one avenue to pursue. Another might be case-finding via partners of symptomatic men. We at least must recognize that attempts to address cervical infections based on vaginal discharge have failed. This has resulted and continues to result in severe over-treatment and thus high costs. So what can we do about cervical infection? This is a big unanswered question.

Discussion:

The issues of the client's perspective was raised by one participant who wondered whether it might be valuable to investigate what benefits the client is interested in and how the public health care system can better assist clients in making the best use of the money that they will spend in seeking a solution to their problems. One suggestion was to look into ways to certify certain traditional healers whose therapies are generally beneficial or who tend to provide medications (e.g. antibiotics, often mixed into other ingredients), so that these providers would give more consistently appropriate treatments so that the money clients spend on these types of services would be more likely to yield health benefits.

Ideally, as a first step we need to come up with “best practices” or minimum standards, and teach everyone how to implement these. Before doing this, we need to look into all the alternatives.

Lack of confidentiality and judgmental or moralistic attitudes of providers emerged as a big problem, according to examples given from both Indonesia and Bangladesh.

There was a call from one participant to re-focus on priority issues of prevention, condom promotion, partner notification and targeting core/high risk groups. The discussion then returned to that difficult issue of informing someone that they have a sexually transmissible disease and attempting partner management.

While there is much resistance, it was suggested that many years ago there were other topics that we found it unthinkable to talk about. We have to be straightforward in addressing this. Often NGOs can move faster in advocating for and implementing strategies that may seem overly sensitive in the early stages.

BIOGRAPHICAL DATA OF WORKSHOP PARTICIPANTS

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Directorate of Family Health, Indonesian Ministry of Health

Dr. Ardi has been Chief of the Subdirectorate of Maternal Health since 1992. She received her MD (1977) from Padjajaran University in Bandung (West Java) and her MPH (1986) from the School of Public Health, University of North Carolina, Chapel Hill, USA, specializing in MCH.

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Koja Hospital, North Jakarta

Dr. Bambang has been working as an Ob/Gyn at Koja Hospital since 1984. He was an active collaborator in PC Indonesia's recent study on Integration of RTI/STD services into FP Clinic services, which included the FP Clinic at Koja Hospital as one of its two study sites. Dr. Bambang holds an MD from the University of Indonesia (1968) and his Ob/Gyn specialization from the same institution (1980). In 1971 he conducted Epidemiological Surveillance with the Indonesian MOH in collaboration with WHO and CDC-Atlanta.

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USAID Jakarta

Dr. Boedihardjo is the Maternal and Child Health & Nutrition Program Advisor at USAID in Jakarta. Prior to this, she was the Head of Family Health & Nutrition Program Division, for the Regional Office of the Indonesian MOH in Jakarta. Dr. Boedihardjo holds an MD from the University of Indonesia (General Practice, 1972), an M.Sc. from the London School of Hygiene and Tropical Medicine, London University, in Human Nutrition (1982) and a Doctoral in Public Health from the Royal Institute of Public Health, London University (1985).

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Center for Health Research, University of Indonesia

Dr. Budi has been the Director of the CHR at UI from 1986 to 1993 and from 1996 to the present. He has conducted studies on Infant Feeding and Child Health in Indramayu (West Java) and on STD/HIV Risk Behavioral Surveillance survey, in North Jakarta, Surabaya, and Maluku. He holds an MD from UI (1974), an MPH from the University of Hawaii School of Public Health (1977), and a Ph.D. in Demography from the Australian National University in Canberra (1996).

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Dr. Caleb has been the Program Officer for PC in New Delhi since April, 1997. Prior to this she was a PC-Country Fellow in India (1995-1996) and before that completed her Pre-Doctoral Fellowship (Population Council) in the USA from 1992-1993. She holds a B.Sc. in Nursing from the University of Delhi (1988), an MA in English Literature from Panjab University (1990) and an Sc.D. in MCH from the Johns Hopkins University School of Public Health (1995).

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Ms. Chaves is a Research Associate for PC in Manila and has for the past year and a half been working on the Philippines RTI Integration Study. Before working for PC Manila, she was Area Supervisor for the 1996 Philippine Elderly Survey and the 1995 Philippine Census of Population. Ms. Chaves holds an MA in Demography (1996) and is currently a Ph.D candidate in Urban and Regional Planning, both at the University of the Philippines.

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Ms. Cohen has been Program Manager for MotherCare in Jakarta since 1995. Prior to this, she was a Consultant in Singapore for the Women's Health Project *Engender* (Dec. 1994-April 1995) and before that worked as Regional Manager for Asia, Omni Project, John Snow Inc. (Sept 1993-August 1994) in Washington, DC. Ms. Cohen holds a BA from Princeton University, New Jersey, in Romance Languages & Literature (1987), and an MA from the Elliott School of International Affairs, George Washington University, Washington, DC. in Economic Development and International Health (1994).

Marilou P. Costello, MS., Ph.D.

Population Council Philippines

Dr. Costello is the Program Associate & Host Country Director for PC in Manila. She has worked for PC for 5 years, and has established close working ties with the Family Planning services and the Department of Health (DOH) in the Philippines. Dr. Costello has also served as a member of the proposal review committee of the World Health Organization's Global Program on AIDS, Geneva (1994-1995) and of the National Health Task Force on Reproductive Health (1990-present) funded by Ford Foundation. Under Dr. Costello's leadership, PC Philippines has also collaborated with UNFPA and AVSC to maximize use of existing resources. Dr. Costello holds an MS in Sociology from Xavier University, Philippines (1969), and a Ph.D, also in Sociology from the University of Chicago (1980).

Leslie B. Curtin, MA.

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Ms. Curtin is Chief of FP and Reproductive Health in the Office of Population and Nutrition at USAID in Jakarta. Prior to this position, she worked at USAID in Washington and in Haiti. Ms. Curtin holds an MA in Sociology/Demography from Georgetown University, Washington, DC (1981).

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DKT Indonesia

Mr. Darden is currently Country Director for DKT Indonesia and was previously Country Director in the Philippines. He holds a BA (1973) in Marketing and Sociology from Stetson University, Delano, Florida. DKT is an international NGO which works mainly in the areas of AIDS prevention and social marketing of condoms.

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PATH/Indonesia

Mr. Douglas has been the PATH Country Director in Indonesia for 5 years and prior to that held the same post in Thailand for 7 years. He holds an MBA from George Washington University (1983). PATH (the Program for Appropriate Technology in Health) is an international NGO with headquarters in Seattle.

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Dr. Elias is Senior Associate and Country Representative for The Population Council in Thailand. He has been involved in design and analysis of a range of research projects concerning RTIs throughout Asia and also in coordinating the Population Council's attempts to develop and test a woman-controlled HIV protection technology. Dr. Elias holds a BS (1979) in Chemistry and Sociology and an MD (1983), both from Creighton University, Omaha, Nebraska, and also an MPH (1990) from the University of Washington in Seattle.

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Dr. Endang has been the Country Director for MotherCare Indonesia since 1994. Since 1989, she has also been a lecturer at the School of Public Health, of the University of Indonesia and a research coordinator for UI's Center for Family Welfare (PUSKA). From 1978 to 1984 she practiced medicine at a Primary Health Center (Puskesmas) in Jakarta. She holds an MD from the University of Indonesia (1977) and both an MPH (1985) and a Dr.PH. (1990) in Public Health Nutrition from Johns Hopkins University in Baltimore.

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Dr. Faldas is a Medical Specialist for Region XI at the Department of Health in the Philippines. Within the Department of Health, Region XI, Dr. Faldas has been designated as program coordinator on the STD/AIDS program and Clinic Physician at the Regional Social Hygiene Clinic. Dr. Faldas holds a BS in Biology (1976) from the University of San Carlos in Cebu City and an MD from the Davao Medical School Foundation, Davao City (1981), and an MPH from the University of The Philippines College of Public Health.

Farida Zubier, MD.

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Dr. Farida is a Dermatovenereologist involved in STD research in the Department of Dermatovenereology in the School of Medicine. She is also a lecturer in the School of Medicine

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Flora K. Tanudyaya, MD.

HAPP/FHI-USAID

Dr. Flora began working this year as the Assistant to the Chief of Party at HAPP/USAID in Jakarta. Prior to that she was Head of the Primary Health Center (Puskesmas) of Pantai Kelapa in Dili, East Timor for one year, before which she worked as GP and Program Coordinator for Immunization and FP/MCH in Dili, since 1994. She received her MD from Gadjah Mada University in Yogyakarta in 1993.

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Population Council Bangladesh

Dr. Hossain has been a Program Officer for PC in Dhaka, Bangladesh for three years. During that time, he has conducted research on STD/HIV, worked on Operations Research on Family Planning and on STD/HIV, Blood Testing and Laboratory Facilities in Bangladesh, a prevalence study on HBV, HCV, HIV on pregnant women, provided Technical Assistance to sub-grantees and worked with both private medical practitioners and rural medical practitioners. He holds an MBBS from Chittagong Medical College, Chittagong, Bangladesh (1988) and an MPH from the National Institute of Preventive and Social Medicine (NIPSOM) in Dhaka, Bangladesh (1993).

Inne Susanti, MD.

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Dr. Susanti has been the Medical Director for *Yayasan Sehati* since she founded the organization in January of 1997. She is currently running operations of *Yayasan Sehati's* new Women's Health Mobile Clinic in rural areas of Bali. She has also been on the faculty at the School of Medicine, Udayana University, Denpasar, Bali, as a lecturer in Pathology for more than 20 years. She holds an MD (1968) and a specialization in Pathology (DSPA, 1976) both from the School of Medicine at Airlangga University, in Surabaya (East Java).

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Dr. Iskandar has been the Resident Advisor for PC in Jakarta since 1996. She is also a lecturer for the University of Indonesia, a staff member of the Department of Population and Biostatistics since 1984, and a lecturer for the Graduate Program for Women's Studies, since 1993. Dr. Iskandar was the Director of the Center for Health Research of the University of Indonesia from 1993 to 1996, and before that she was a Resident Consultant in the Department of Human Capital at RAND Corporation in Santa Monica, California. Dr. Iskandar received her MD from the Atma Jaya Catholic University in Jakarta (1980), her Master of Public Administration from the

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Dr. Moran is an STD Advisor from CDC-Atlanta, currently placed at HAPP in Jakarta since 1996. Prior to this, he was Medical Epidemiologist in the Division of STD Prevention at CDC-Atlanta, from 1990-1996. Dr. Moran holds a BA from the University of California, San Diego, in Biology (1973), an MD from the University of California, Irvine (1980), and an MPH from Emory University, Atlanta, in Epidemiology (1996).

Maggwa B. Ndugga, MD., M.Sc.

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Originally from Uganda, Dr. Maggwa has been Program Associate at PC Kenya since 1995. Dr. Maggwa has been a consultant Obstetrician/Gynecologist since 1987 and a Senior Research Fellow of the University of Nairobi Medical School until 1991. He is also a Fellow of the Harvard AIDS Institute. His research has been in the area of integration of STD/HIV services with MCH/FP services in SubSaharan Africa. He holds an MD (MBChB., 1980) and an MSc. in Epidemiology (1992) from Harvard University.

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Ms. Noble is currently a USAID/Michigan Fellow placed with PC in Lima. She is responsible for project monitoring and providing technical assistance on two situation analysis studies in Brazil in addition to projects on contraceptive and reproductive health service delivery in Peru. She has previously worked for the Population Reference Bureau in Washington, DC. Ms. Noble holds a BA in International Relations from the University of Colorado, Boulder (1990), and an MA in Latin American Studies with a specialization in Reproductive Health from the University of California at Berkeley (1995).

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Dr. Patel is a program officer with PC India in Baroda, and also a project team member on the Asia & Near East Operations Research/Technical Assistance Project. Prior to this, she was Officer in Charge, providing Technical Assistance to grantees under a small grants scheme project and strengthening social science research capacity in women's health. Dr. Patel has a Ph.D in

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Jane H. Patten, MPH.

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Ms. Patten has been a part-time consultant for PC in Jakarta since June 1997. She has also been a volunteer for *Yayasan Sehati* in Bali since February 1997, working on project development targeting rural Balinese women. Ms. Patten received a BS in Human Ecology (1993) from Cornell University, Ithaca, New York, and an MPH from the University of California at Berkeley in MCH and International Health (1996), with field-work in Bali.

Sabrinah Prasetyo, MD., MS.

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Dr. Sabrinah has been on the academic staff at the UI SPH since 1982. She has also been the Head of the Computer Unit at the SPH since 1995. She was a consultant on epidemiology from the NGO PKMI from 1989-1990 and a consultant on reproductive health from the Ministry of Health (Directorate of Family Health) in 1997. She is also currently on the Advisory Team for Executive Academic Affairs at UI (since 1995) and a consultant for Statistical Analysis at the UI School of Medicine (since 1994). She holds an MD from UI (1981) and an MS in Biostatistics from the Post Graduate Program of UI (1988). She also completed a one year study program at the University of North Carolina (UNC-Chapel Hill) in the USA (1990).

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Dr. Schmid has been the Assistant Chief for Science Translation, in the Program Development and Support Branch of the Division of STD Prevention at Centers for Disease Control and Prevention (CDC) in Atlanta since 1994. Dr. Schmid holds a BA (1969) from Mac Murray College, Jacksonville, Illinois, an MD (1973) from North Western University in Chicago and an M.Sc. from the London School of Hygiene and Tropical Medicine (1994).

Anton Schneider

The Futures Group - Jakarta Office

Mr. Schneider has been the Asia Deputy Manager of SOMARC, a project of The Futures Group, since 1995. Prior to that, he was Vice President of the International Division of Porter/Novelli, where he worked from 1990 to 1995. Anton Schneider holds two Bachelor of Arts degrees, one in from The University of Pennsylvania (Philadelphia, PA) in Development Communication (1988) and one from the University of Chicago, Illinois, in Humanities (1974).

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Sigit Priohutomo, MD., MPH.

Directorate Gen. for Communicable Disease Control & Environmental Health, MOH

Dr. Sigit has been Head of Evaluation Section of the MOH's National STD & AIDS Control Program within the Directorate General for Communicable Disease Control and Environmental Health since 1996. He is currently working on a project to conduct provider training for syndromic approach management throughout Indonesia. From 1993-1996, Dr. Sigit worked for the National Tuberculosis Control Program. Dr. Sigit holds an MD from the University of Indonesia (1984) and an MPH in Urban Health from the Faculty of Public Health, Mahidol University, Thailand (1990).

Gurmukh Singh, MD.

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Dr. Singh has been a practicing Obstetrician/Gynecologist at Koja Hospital in North Jakarta since 1994. Dr. Singh has been an active collaborator with PC Indonesia on the RTI service integration study. He holds his MD in Ob/Gyn from Kerala University, in India (MBBS, 1974).

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Dr. Siti Nurul has been the Project Officer for PC Indonesia's RTI service integration study since January 1997. Prior to that, she was a staff doctor at Karya Medika Clinic in Bekasi, West Java. Dr. Siti Nurul holds an MD from Gadjah Mada University in Yogyakarta (1991).

Subadra Indrawati Molyneaux, MPH.

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Ms. Molyneaux has been the Operations Research Fellow (USAID funded) at PC in Jakarta for 2 years. She received a BA in Anthropology (1986) from the University of Indonesia and an MPH in International Health from the University of Hawaii (1995). Prior to her studies in Hawaii, she worked for Kusuma Buana Foundation (YKB) in Jakarta, a local NGO working in the field of family planning and AIDS prevention.

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Dr. Sundari is a staff Obstetrician/Gynecologist at Koja Hospital in North Jakarta. She has been an active collaborator in PC Indonesia's study on RTI service integration for which Koja was one of the study sites. She holds an MD (General Practice) from the Faculty of Medicine, University of Indonesia (1973).

John W. Townsend, Ph.D.

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Dr. Townsend has been at the PC office in New Delhi as the Senior Associate and Director of the Asia and Near East Operations Research Project since 1993. He holds a BA in Psychology (1970) from Marquette University and a Ph.D. in Social Psychology (1978) from the University of Minnesota in the USA.

Rachmi Untoro, MD., MPH.

Directorate of Family Health, Indonesian Ministry of Health

Dr. Untoro is the currently Director of the MOH's Directorate of Family Health. Prior to this she was Chief of the Subdirector of Reproductive Health in 1996 and Chief of the Subdirector of Under-fives (1989). Dr. Untoro holds an MD from the University of Indonesia (1975) and an MPH from Johns Hopkins University in Baltimore (1984).

Wartini Pramana, Ph.D.

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Ali Zazri

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Mr. Ali Zazri has worked with MotherCare as a Research Coordinator since 1996 and is Co-Author of the recent report on the MotherCare Study in South Kalimantan. Prior to this, he was research assistant at the Center for Child Survival (*Puska*) of the University of Indonesia, from 1991-1995. He holds an S-1 (Bachelor's) Degree in Sociology from the University of Indonesia in Jakarta (1991).