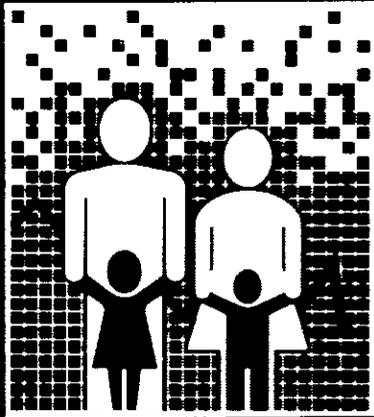
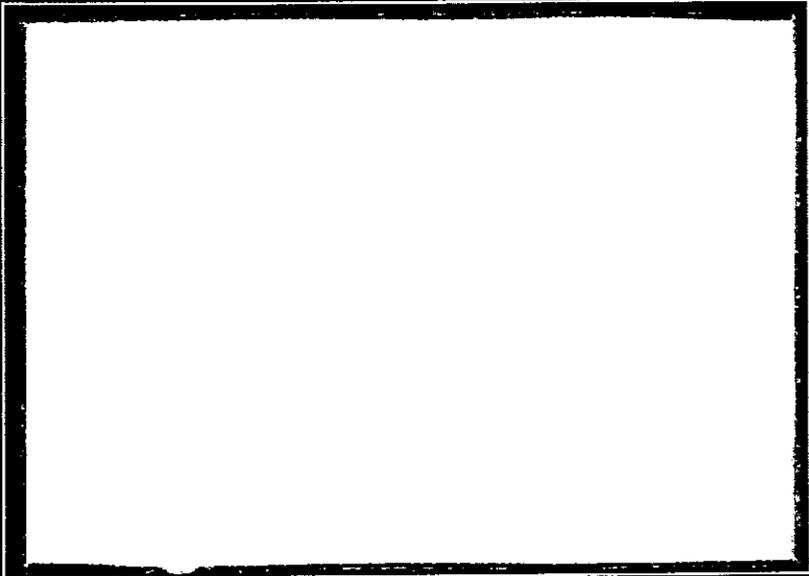


- PD-ABZ-038 -



THE POPULATION COUNCIL

**Final Report of Activities for
 “Improved Reproductive Health and
 STD Services for
 Women Presenting to Family Planning
 Services in North Jakarta”**

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**The Population Council - Jakarta and the Indonesian Ministry of Health HIV/AIDS
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List of Abbreviations

AWA	:	American Women Association
Binkesga	:	Bina Kesehatan Keluarga (Directorate Family Health)
CDC	:	Centers for Disease Control
CMT	:	Cervical Motion Tenderness
FP	:	Family Planning
HCP	:	Health Care Provider
IRB	:	Institutional Review Board
KAP	:	Knowledge, Attitude, Practice
KOH	:	Kalium Hydroxide
mg	:	milli gram
MOH	:	Ministry of Health
PMNs	:	Polimorphonuclears
POGI	:	Persatuan Obstetri Ginekologi Indonesia (the Indonesian ObGyn Association)
PUS	:	Pasangan usia subur (Reproductive age couple)
Puskesmas	:	Pusat Kesehatan Masyarakat (Primary Health Center)
RA	:	Research Assistant
RSUD	:	Rumah Sakit Umum Daerah
RTI	:	Reproductive Tract Infection
STD	:	Sexually Transmitted Diseases
TPHA	:	<i>Treponema pallidum</i> Hemagglutination Assay
WHO	:	World Health Organization

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Abstract

The overall goal of this study was to develop an integrated program of RTI/STD clinical services within two family planning clinics in urban-harbor, low-income neighborhoods. Multiple training programs to introduce a standardized clinical evaluation for the detection, treatment and management of RTI/STDs were conducted. Prior and subsequent to training, observations of health care provider (HCP) and client interactions were conducted to evaluate the behavior changes of the HCP. Each consenting client received a standardized reproductive health history, pelvic exam, and provided specimens for laboratory testing to detect the RTIs of: *Candida albicans*, *Bacterial Vaginosis*, *Trichomonas vaginalis*, *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, and *Treponema pallidum*. On site laboratories performed microscopic evaluations of combined Gram stains and wet mounts. The Gram stains were validated by a referral lab at the national infectious disease hospital. Endocervical & serology specimens were sent to the referral lab for final confirmation. Of the 478 clients who presented to one of two family planning clinics within the 12 weeks, 89% (425) were willing to become study participant. A total of 53 clients refused to participate due to fear of the exam and not enough time, and 113 clients were excluded from participation due to current menstruation or antibiotics use. The final study sample was 312. Finding indicate that through universal screening of the participants by an STD referral laboratory, 24.7% (n=77) of the participants were confirmed to have one or more RTI/STD (9 women had two diagnoses). The following disease prevalences were found: chlamydia cervicitis 10.3%; candidiasis 6.7%; trichomoniasis 5.4%; bacterial vaginosis 5.1%; and gonococcal cervicitis 0.3%. No positive blood tests for syphilis were detected. HCPs were observed by trained research assistants who recorded an itemized evaluation of HCP behavioral components. The results of this 70 item observation tool showed a preference for performing physical examination tasks, and a reluctance to perform history taking, education, partner treatment plans and prevention counseling skills.

Executive Summary

With support from HAPP/AIDSCAP and the Population Council, an eight month program funded by USAID to improve reproductive health services for “ordinary housewives” was undertaken. This program included the incorporation of RTI/STD clinical services into the menu of routine services offered in two family planning (FP) clinics in North Jakarta. The two study settings included FP clinics at a 202 bed district hospital, and at a community level primary health center (PHC or *Puskesmas*). The primary target group of this study were the health care providers (HCP) who received the intervention. Five HCPs participated fully in all components of the study three doctors from the hospital and two midwives from the PHC. The clientele of these two FP clinics formed the secondary target group of the study. The clientele were in general married, multiparous, low income women whose primary risk of acquiring a sexually transmitted infection was via sexual intercourse with their spouses. The majority of these women, despite being long time consumers of contraceptive services, had never previously received pelvic examination or been tested for the presence of RTI/STDs.

Baseline data from the study area of North Jakarta were gathered by use of multiple interviews with local providers, a retrospective medical record review, and extensive observations of health care facilities and HCP/client interactions to determine the feasibility of incorporating RTI/STD clinical services into the family planning clinical setting. Despite evidence of an acceptable level of resources and facilities to begin RTI/STD care at the two study settings, there was very minimal prior experience among the staff in diagnosing or treating specific RTI/STDs.

The existence of an adequate infrastructure combined with the absence of RTI/STD case recognition pointed to the HCPs as the target group for intervention activities of this project. The primary intervention was a series of educational activities for the HCPs on RTI/STD diagnosis and case management. The main study objective was to assess the feasibility and acceptability of improving FP provider skills in provision of STD services in the two selected FP clinics. An advisory board of national experts and leaders from the fields of public health, dermatovenereology, obstetrics and gynecology, served as editors for the clinical protocols, instructors during the training, and role models for the HCPs. The basic study design was a quasi-experimental evaluation comparing the ability of HCPs to recognize and appropriately respond to RTI/STDs within their population of FP clients before and after the training intervention. A broad range of data were collected during the course of this evaluation.

The baseline assessment data and initial educational workshops were valuable inputs for the development of a standardized clinical evaluation flowsheet and clinical protocols for use in PHC family planning settings. The standardized procedures on the flowsheet included obtaining an RTI/STD risk assessment history, performing a pelvic

examination, obtaining laboratory specimens to screen for the presence of six selected treatable RTI/STDs, selecting a nationally approved treatment for identified infections, and providing client education with partner treatment for future disease prevention.

Each presenting FP client during the twelve week post intervention observation period was individually advised of the main purpose of the study and given a complete description of the clinical evaluation procedure by a trained research assistant (RA). Their consent was then requested with an assurance of voluntary participation and an option to withdraw from the study at anytime without compromising family planning benefits. All prospective participants were informed that the examination, laboratory testing and any necessary treatment would not require any additional charge. Additional project funding for the express purpose of purchasing medications to treat identified infections was obtained from the Jakarta chapter of the American Women's Association (AWA). An additional donation procured through the Indonesia ObGyn Association (POGI) Jakarta chapter consisted of 75 single dose anti-fungal treatments for non-pregnant women. No other incentives to participate were given. The content of this client disclosure was recorded on an informed consent form. This informed consent form also doubled as a record of the client's requested follow-up notification procedure in the case that final laboratory results indicated the need for additional treatment for either herself or her partner(s).

Of the majority of clients, 89% of 478 who presented to the two FP clinics during the twelve week observation, were willing and eager to participate. The requirement of a full pelvic examination did not discourage the level of participation. On the contrary, the clients' desire to learn about their reproductive health status might have been influenced by the desire to receive "free" medical care and treatment. The 53 clients who refused to participate cited fear of the exam and not enough time as the most common reasons, and another 113 clients were excluded from participation due to current menstruation or antibiotic use. The final number of study participants was 312. Day-to-day direct post-intervention observations were conducted in both sites for a twelve week period between February 17 and May 9, 1997. During that period, the 312 client evaluations were observed and a supervisory medical checklist was used to record progress and behavioral changes among the five HCPs. Biological samples from the vagina, endocervix, and blood were obtained to determine the prevalence of six treatable RTI/STDs. Three socio-demographic variables were gathered for all participating clients: age, current contraceptive use and marital status. Eleven additional potential risk factors for RTI/STD infection were also explored with each participant. Among those clients with a confirmed RTI, no risk factor was found to occur at a significantly higher rate than among uninfected clients, and none of the risk factors had predictive value.

Through universal screening of the participants by an STD referral laboratory, 24.7% (n=77) of the participants were confirmed to have one or more RTI/STD (9 women had two diagnoses). The following disease prevalences were found: chlamydia cervicitis 10.3%; candidiasis 6.7%; trichomoniasis 5.4%; bacterial vaginosis 5.1%; gonococcal cervicitis 0.3%. No positive blood tests for syphilis were detected. HCPs were asked to evaluate and record on the flowsheet the presence or absence of seventeen separate clinical signs of infection. Presence of cervical mucopus and cervical inflammation occurred at higher rates among women who were eventually confirmed to have an RTI but the difference was not statistically significant. As with the risk factors, no clinical signs were found to be predictive of final diagnosis.

Through the standardized history taking/risk assessment and physical examination procedures, HCPs were encouraged by the trainers to attempt an accurate clinical/syndromic diagnosis for each client. Doctors were much more likely to attempt an initial client diagnosis (including negative) than the midwives (98% vs 68.5%), and were much more likely to be accurate (41% vs. 35%). 56 women (18%) did not receive an initial diagnosis. Of those 256 women who did receive a syndromic diagnosis, 7% of women received correct initial positive diagnoses and 31% received correct negative diagnoses. Thus a total of 98 (38%) women received a correct initial diagnosis, ie. concurrent with the final diagnosis. The most common initial diagnosis was a false negative (44%). Concurrence between initial and final diagnoses improved at the hospital but not at the PHC. By the end of the observation period (May 9, 1997), 73% of clients with non sexually transmitted RTIs had received appropriate treatment for their confirmed infections, and 73.5% (36) of clients with STDs had received appropriate treatment. The remaining women were not treated as they did not return to the clinic. No one was treated with inappropriate medication due to pre-packaging and labeling of medications for the study. Furthermore, only 55% (27) of the sexual partners of STD positive participants received treatment for infections, potentially exposing 9 of the treated STD clients to the risk of reinfection.

This low partner treatment rate reflects the level of HCP interpersonal communication skills found overall. It was found that 62% of the time, the midwives "smiled and greeted the client respectfully", while doctors did so only 3.5% of the time. Only with one client did one HCP (a midwife) review the health effects of RTI/STDs and make a connection to birth control. Eight clients received information about the diagnosis and only 2 clients received any mention of condoms. Only 26 of 63 clients receiving prescriptions were warned of possible side effects (24 of them by a midwife). Client counseling was generally neglected and risk assessment was largely delegated to the research assistants which indicated that it was undervalued by the HCPs who were mostly unwilling to take the time or to ask such personal questions.

Findings on infection control varied. In only 2 out of 312 examinations did the HCP not use visibly clean instruments, and for 79% of pelvic examinations, a new/disinfected glove was used. However, rates of hand washing before and after the exam were low, about 20% each over the (post-intervention) observation period.

A six month retrospective medical record review (July 1 to December 31, 1996) showed that essentially it is a non-existent practice to categorize gynecological problems with a disease specific diagnosis. At Koja Hospital, more than 100 diagnosis each of vaginitis and cervicitis were made, but no further diagnoses or records of counseling were made. Also there was no evidence of a standardized prescriptive regimen. At Cilincing, a monthly disease report revealed a total of three RTI/STD diagnoses, all for gonorrhea. These could not be linked to medical records to assess treatment or interventions as no client identifiers were included.

The main findings revealed that the provision of medical care by the HCPs and return rate of laboratory results from the referral lab were the greatest constraints to service integration. Both doctors and midwives were willing to perform standardized clinical physical examinations with the collection of laboratory specimens from the vagina and endocervix. However, they were not as consistent in performing education and partner treatment plans for RTI/STD positive clients. The referral laboratory could not provide a consistent rate of turn around time for final lab reports. The actual length of time between initial evaluation and final lab reports varied from one to four weeks. Future studies of RTI/STDs should strive to improve diagnostic microscopy skills that have a more rapid final report rate which do not need to be sent to a referral laboratory.

Another side-product of this study is a RTI/STD treatment formulary, which was selected after reviewing the costs and benefits associated with each treatment regimen included in the recently published national STD Treatment Guidelines (Daili, et al., 1996). Medications were purchased and individually prepackaged for the six treatable infections that all clients were screened for.

Future efforts to improve reproductive health and STD services for clients of family planning clinics must also investigate strategies to strengthen or supplement the skills of the HCP in conducting risk assessment and providing counseling and partner treatment for clients discovered to be STD positive. The widely held HCP belief that factually informing a client of the discovery of an RTI/STD would cause emotional distress was not validated during a single encounter with a client, according to the RAs. Additional exploration of the client's and affected partner's perceptions of participating in such a program would be invaluable in developing future strategies to overcome the reluctance of HCPs to see the truth, and speak the truth about RTI/STDs in the real lives of ordinary housewives.

I. Introduction and Literature Review

I.A. Introduction

In the national workshop on Reproductive Health (RH) last May 1996, representatives from the Indonesian Ministry of Health (MOH or *DepKes*), the National Family Planning Coordinating Board (NFPCB or *BKKBN*), other public sector programs, NGOs, professional organizations, and donor agencies, agreed on four services which will become the main components of the new *Essential Reproductive Health Care (ERHC) Package* at the primary health care (PHC) level. These components are: a) Safe Motherhood; b) Family Planning; c) Management of Reproductive Tract Infections/Sexually Transmitted Diseases (RTI/STD); and d) Adolescent Reproductive Health.

This ERHC initiative is a major step towards the implementation of the International Conference on Population and Development (Cairo, 1994). The ICPD platform recommended that family planning (FP) services be expanded to include the prevention and treatment of sexually transmitted diseases (STDs), including HIV/AIDS, in a reproductive health context, aimed largely at reducing reproductive morbidity from RTIs in women (Jain, 1995; Zizic, 1994). The HIV epidemic has made the prevention and treatment of RTI/STDs a high priority on the world's reproductive health agenda. Unfortunately, despite the formulation of the ERHC package one year ago, Indonesia's MOH currently has no reproductive health program. The maternal and child health (MCH)/FP programs and STD control programs deliver their services independently, with the latter targeted primarily at men and high risk groups. This vertical structure poses potential obstacles to service integration, although conceptually it seems to be a natural union (Fox, Williamson, Cates and Dalabetta, 1996). The high disease burden of STDs, both in terms of morbidity and mortality, demand that family planning and infectious disease control programs work together.

I.B. Literature Review

I.B.1 RTI/STD in Low Risk Populations and Women

RTIs include: (1) STDs, such as chlamydia, gonorrhea, trichomoniasis, syphilis, chancroid, genital herpes, genital warts, and HIV infection; (2) endogenous infections caused by overgrowth of organisms in the genital tract of healthy women, such as bacterial vaginosis and vulvovaginal candidiasis; and (3) iatrogenic infections, which are brought about by medical procedures (Wasserheit and Holmes, 1992:7). All these infections are preventable or treatable, but current health and FP programs give them low priority.

Women are more often asymptomatic and thus more difficult to diagnose than men, but their health is also more seriously threatened by STDs than men. STDs can cause pelvic inflammatory disease (PID) and tubal infertility, and several STDs can be passed perinatally to infants (Fortney, 1995:6). Women are also more vulnerable to STD transmission from men than vice versa (Fox et al., 1996). In addition, women suffer more social stigma associated with sexual morbidity (Fortney, 1995:8). Thus, special attention is needed to alert women to RTI/STDs, encourage them to seek treatment, use more effective barrier methods that they can control, and notify their sexual partners so that they too can be treated and prevent reinfection of the woman.

Worldwide, the most common STDs are trichomoniasis, genital chlamydia, human papilloma virus, gonorrhea, and genital herpes (Fox, et al., 1996). Estimates from selected studies of low-risk populations (FP/prenatal clients and adults in population-based studies) show that among these women, risk of STD/HIV is largely determined by the behavior of their male partners (Fox et al., 1996:131). Studies in developing countries indicate that among prenatal clinic attendees, gonorrhea rates are 10 to 15 times higher, chlamydia rates 2 to 3 times higher, and syphilis rates 10 to 100 times higher than among comparable women in developed countries. Risk assessment surveys in FP clinics found that 25% of clients report behaviors that put them at increased risk for STDs (Cates and Stone, 1992:125).

I.B.2 RTI/STD/HIV/AIDS in Indonesia

The magnitude of the HIV/AIDS epidemic in Indonesia is still unknown because of the lack of a well-monitored surveillance system. Based on a passive recording and reporting system, 413 HIV(+) cases including 132 AIDS cases were recorded in 21 out of the 27 provinces of Indonesia, as of May, 1997 (Yayasan Pelita Ilmu, 1997). Over one-third (31.4%) of these cases were residents of Jakarta. The first HIV+ baby was announced on October 5, 1996 (*the Jakarta Post*, October 5, 1996).

In Indonesia, there is precious little data on STDs in non-high risk populations. In 1994, the Kusuma Buana Foundation (*YKB*, an NGO working in the FP and HIV fields) announced a disturbing finding of nearly 29% STD prevalence among 6,666 women aged 25-45 years who came for Pap-tests at six clinics in Jakarta and were also tested for STDs (cited in Daili, Nuning and Asri, 1994:4-5). Another study among 695 women presenting for menstrual regulation (abortion) in 1987 and 1988 at an urban clinic in Bali, found that 53% had one or more RTI/STD, including 16.3% bacterial vaginosis, 15.5% candidiasis, 7.3% trichomoniasis and 5.2% chlamydia, among others (Susanti, 1993). While 67% of these women were unmarried, they did not fall into any high-risk group category. A review of studies and articles on STDs in Indonesia

published between 1988 and 1994 found that the two most frequently mentioned were gonorrhoea (16% to 58%) and non-gonorrhoeal urethritis (24% to 54%) (Daili, Masjkuri and Adisasmita, 1994:2-6). The reviewers suspected that these data were limited by the availability of diagnostic facilities (*ibid*).

Although anyone may be infected, RTI/STDs tend to be diseases of poverty. Conditions of economic deprivation, social disenfranchisement, and gender inequality, have a detrimental impact on women's reproductive health from a very young age (see Sadli, et al., 1994:6). In general in Indonesia, women seeking care at a primary health center, or *Puskesmas*, tend to be of lower socio economic status. They are not informed or asked about STD/RTI risks when they present themselves for FP services, and do not receive appropriate information or referrals even if presenting with potential RTI symptoms. A survey needs assessment on reproductive health among 318 women (96% married) in rural Bali found that 53.5% of the women had ever experienced an adverse symptom, including discolored discharge (36%), odorous discharge (17%), itchiness (34%), genital sores (4%), dysuria (9.5%) and lower abdominal pain with fever (13.5%). Women were more likely to have experienced symptoms if they were pill or IUD users or if their husband's work required him to travel frequently or live elsewhere. 70% of the afflicted women sought health care for the problems, 55% of them at a *puskesmas*. However 53% of the participants expressed some form of dissatisfaction with the available services and only 35% had ever received any form of information on STDs (Susanti and Patten, 1996). There is a great need to address prevailing undiagnosed RTI/STD problems among poor or rural women.

Clearly Indonesian women are vulnerable to RTIs including STDs and HIV/AIDS, infertility, and reproductive tract cancers. There is an unmet demand and need for services and information. A study on women's perspectives of RTI's quoted a Jakarta woman's complaint, "*if we go to the doctor and ask whether this [vaginal discharge] is serious or not, the doctor always answers 'no problem'*" (Hull, Widyantoro and Fetters, 1996).

Why, then, has the primary health care system in Indonesia been incapable of addressing RTI/STDs? There are four possible answers: (1) women are generally unaware of RTI/STDs symptoms and do not seek care; (2) only STD clinics offer STD diagnosis and treatment, and women do not go to STD clinics, thus they are not approachable; (3) health care providers at the FP clinic (or MCH) fail to recognize RTI/STD symptoms; and (4) health care providers who recognize RTI/STD do not inform the client, record the case, nor report it in the monthly statistics.

I.B.3 Family planning and STDs

Clearly there are differences in clientele and training orientation between FP and STD services. Unlike STD clinic clientele, FP clients are typically women seeking contraceptive services who are generally unaware of STDs. FP providers are more physiologically oriented than microbiologically, and are trained to offer a choice of options (not a strict treatment regimen). Furthermore, the most common FP methods have no value for STD prevention, and FP providers are not trained to ask personal questions about sexual behavior.

In Indonesia, at the hospital and subdistrict health center (*Puskemas*) level, there are very few records of STD diagnoses among FP clients. This is not only due to a lack of medical and laboratory facilities, but also because FP providers prefer not to take on uncomfortable topics, such as STDs and extramarital transmission. Providers avoid confronting the reality of STDs and the need for partner notification and treatment in their efforts to help patients "save face".

At the PHC level, there is little evidence of counseling on effectiveness, advantages and disadvantages of available FP methods, or careful screening of potential IUD users by history and pelvic examination. All in all, there is a broad lack of the communication skills (e.g., risk assessment, education, counseling) and clinical examination skills that are necessary in providing *both* FP and STD/RTI care.

Professional re-training is needed because the FP and other primary health care providers are not uniformly aware of STD diagnosis, tests and treatment regimens. Currently, even in areas with high STD and HIV prevalence rates, many FP workers are not aware of or equipped to address the risk behaviors of their clients. On the other hand, the existing STD interventions are not targeted at women in general, but at high risk groups. FP providers can be trained to make a diagnosis based on a standardized clinical evaluation, or at the very least, to do a risk assessment, provide education and make a referral for care.

Risk assessment tools for use with all FP clients can be developed to include STD risk issues for little additional cost (Fox et al., 1995:131), thus opening the door for discussion of prevention and counseling. Even just a commitment to offer simple advice from the FP provider on condom and spermicide use can provide protection against STDs (Cates and Stone, 1992:122), and is a step up from STD services available from many FP clinics.

I.B.4 Costs of FP and STD integration

The costs of adding STD services are always a concern to FP programs. A recent cost study on RTI management services in India used a production process analysis model to analyze inputs, processes and outputs, looking at both fixed and variable costs. It was found that costs vary widely by level of utilization, level of infection and existing capability of health centers in terms of facilities and staff. Laboratory testing and treatment costs were found to be high, pointing to an emphasis on prevention a vital cost-saving strategy in the long term. The authors of this study recommend that program 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 reproductive health package (RamaRao, Townsend and Khan, 1996).

I.B.5 Feasibility, Sustainability and Risks

If women in the general population are to get STD services, public and private FP/MCH programs are the most logical place to provide them, as they are women's primary contact with the health care system. Ideally, FP providers should be able to understand client needs and be capable of advising clients on methods for prevention of both pregnancy and STD transmission when needed. So far, FP clients in Indonesia have not been receiving such information. The decision to expand FP programs to include STD/HIV prevention or treatment services in accordance with the ERHC package, involves studying client needs, assessing program capacity and potential resources, estimating costs and also determining the availability and acceptability of alternative STD services.

Sustainable integration of FP and STD services also requires that providers of the two types of services support the integration initiative. There may be resistance due to the possibility that FP activities may be weakened and human resources may be spread thin. Training of FP providers in the basics of STDs and counseling techniques may not automatically bring changes in attitude or practice, especially if they feel overburdened with new responsibilities or lengthy procedures. This resistance must be acknowledged and addressed by discussion of the common service goals and potential for significant and much needed improvement in the lives of Indonesian women.

I.C. Project Summary

In the interests of working towards integrating STD/RTI services into FP services in Indonesia, as outlined in the MOH's *'Essential Reproductive Health Care Package'*, the Population Council attempted to run a pilot-test in a real primary health care environment. The study aimed at identifying and attempting to address barriers to the integration of STD services into FP services in two selected pilot FP clinics. The intervention involved initial and on-going training of five Health Care Providers (HCPs) and a follow-up twelve week observation of their attitude and behavior changes in the delivery of RTI/STD services to 312 consenting client participants.

II. Description of Subproject

II.A. Background

This study is part of the Indonesian Ministry of Health HIV/AIDS prevention project (HAPP) coordinated by Family Health International/AIDSCAP in collaboration with U.S. Centers for Disease Control (CDC) and the Government of Indonesia. The overall goal for year 1 of the HAPP project was to facilitate the development and implementation of national policies supportive of HIV/AIDS control and surveillance. This study, by the Population Council Jakarta, as a subcontracted executive agency has conducted a study focusing on integrating clinical services for reproductive tract infection and sexually transmitted disease (RTI/STD) into two different family planning (FP) clinics, one at the primary health center and one at a public hospital. As the entry point to primary health care for the majority of women seeking reproductive health services. The FP setting was seen as the ideal place to prevent and control RTI/STDs.

The two study sites in the **target area** of North Jakarta include (1) the out-patient FP clinic of the Koja District Public Hospital (*Rumah Sakit Umum Daerah Koja* or RSUD Koja), and (2) the Primary Health Center (PHC or *Puskesmas*) at Sub-District (*kecamatan*) Cilincing. Koja (11.3 Km²) and Cilincing (42.6 Km²) are two of the seven sub-districts in North Jakarta. These two sites are in Jakarta's harbor area on the Java sea which is the main port for the commercial shipping and fishing industries of a metropolitan area of more than 12 million people. Like most major urban ports, the surrounding neighborhoods are primarily low income. The predominant occupations in both Koja and Cilincing are sailors, laborers, ship loaders, fishermen and vendors. In this densely populated area, the average level of education is middle school level, with only 15% of residents finishing high school and 3% going on to higher education (North Jakarta Health Office, 1995). The average number of family members per household is 13.8 in Koja, and 6.7 in Cilincing (North Jakarta Health Office, App. Table 2). Only 44% of Koja households have piped water, and even fewer in Cilincing 25% (*ibid*, App. Table 9 A). The highest rates of STDs are generally found in urban men and women in their most sexually active years, ages 15 to 35 (Over and Piot, 1996).

There were two separate **target groups** in this study. The primary target group was the health care providers (HCPs) in the two FP clinics who provided the clinical services. The secondary target group was women who presented as their clients for FP services. They were selected because the majority of FP/MCH health care clients are of reproductive age and sexually active. Coincidentally, most of these women are married, and monogamous sexual behavior for married women is the cultural norm. This target group was also deliberately chosen as women who were not necessarily perceived

as being at high risk for STD infection. The target group and the area in North Jakarta make an optimum environment to study the integration RTI/STD services into the existing venue of FP clinics for reproductive health care.

According to data from the 1990 census, the total population of the North Jakarta district was almost 1.6 million, with 341,786 people living in the sub-district of Koja, and 262,677 people living in Cilincing. The estimated total number of women of reproductive age between 15 and 44 years was 97,458 in Koja and 74,900 in Cilincing (North Jakarta Health Office, 1995:Table IA). According to the annual report for 1995 from the North Jakarta Health Office, the total couples of reproductive age (*PUS*) seeking family planning clinical services in Koja was 24,068 and in Cilincing 24,364 people (ibid, Table 21A). Koja Hospital received 21 clients per week, and Cilincing Health Center 19 clients per week, during the observation. A breakdown of the types of contraception given to these clients reveal that very few of these sexually active women use a method that is a barrier to the acquisition of STDs (see Table 1).

Table 1: Contraceptive Choices in the Two Subdistricts

Contraceptive Method	Koja	Cilincing
Injectable Hormones	36 %	42%
Pills	34%	33%
Intrauterine Device (IUD)	21%	14%
Sterilization	5%	5%
Norplant	2%	4%
Condoms	2%	2%

Source : North Jakarta Health Office. *Health Profile for the District of North Jakarta. 1995:*
App. Table 21A

The surveillance of reported STDs by the local District Health Office for the studied area only includes diagnoses of *Neisseria gonorrhoeae* and syphilis. As a baseline of reported STDs, Table 2 presents annual cases of STDs recorded by all the Puskesmas and Hospitals in North Jakarta. However, clearly, this represents an inadequate recognition of actual disease and incidence rates.

Table 2: Rates of Reported STDs by Cases and Total Percentage of Clinic Visits Diagnosed in Out-Patient Health Care Facilities in 1995 in North Jakarta.

Out-Patient Clinic at:	STD Diagnoses	# of Cases	% of Total Visits
District Health Center	gonorrhea	63/417,819	0.015
	syphilis	20/417,819	0.005
District Hospitals	gonorrhea	299/16,322	1.83
	syphilis	15/16,322	0.092

Source : North Jakarta Health Office. *Health Profile for the District of North Jakarta*. 1995: Table 10A and 10B

A recent RTI/STD prevalence study among a similar target group of women, conducted during 1994-1995 in four *Puskesmas* in urban Jakarta and rural west Java, performed a total of 1,136 laboratory examinations using wet mount microscopy and Gram stains to detect bacterial vaginosis, candidiasis, trichomoniasis, gonorrhea, and Non-specific genital infections (leukocytosis). Based on the results of this study, the authors cite a combined RTI/STD prevalence rate of 40-45% (Pratomo, Kodim, et al., 1995: 66-67). Since microscopy is a subjective analysis infections for gonorrhea and chlamydia, the actual STD prevalence rates may differ from the findings of this study.

In an attempt to gather additional data illuminating the local consequences of untreated RTI/STDs, such as ectopic pregnancies and tubal infertility, secondary data from the infertility clinic of Harapan Kita private hospital was requested. The percentage of infertility due to tubal factors was 38.5% for 725 women who sought in-vitro fertility (IVF) treatment between 1991 and 1995. Diagnoses were based on hydrosalpingography and laparoscopy procedures.

Additional data was also gathered from the WHO Laboratory for Matched Reagent Program in Immunoendocrinology of the Faculty of Medicine, University of Indonesia (*Makmal Terpadu Immunoendokrinologi, FKUI*). These data recorded serological markers for past infections with a variety of pathogens that could be related to auto-immune induced spontaneous abortions (SABs). The prevalence rate of serological markers for Herpes Simplex Virus (HSV) was 68.9% among 3,475 serological samples and for Chlamydia, 67.7% among 3,821 specimens, all from women who sought care for SABs between 1994-1996.

Primary data collection at the pre-intervention stage covered the following four areas:

1. Study site facility (logistic) observations
2. HCP knowledge, attitudes and acceptance of integrated RTI/STDs into FP services
3. The level of recorded RTI/STD from FP services in a six month retrospective medical record review
4. Observations of the content of actual HCP and client clinical interactions.

In summary, the findings from the above four areas of inquiry revealed that the two selected sites were adequate to support RTI/STD program integration, and, at the same time revealed specific HCP clinical and record keeping practices that overlook the possibility of RTI/STD in FP clients. These identified deficiencies served to guide and direct the development of standardized protocols and training curricula for use as the study intervention. Results of overall needs assessment directed attention to problematic health practices that had not been anticipated, such as infection control and the client education process, and this led to *future adjustments in the original work plan*.

II.B Scope of Work

II.B.1 Objectives

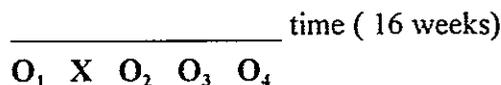
The overall goal of this study was to strengthen the skills of FP providers in appropriate and feasible methods of RTI/STD clinical practices that would lead to an effective identification and treatment of women who were infected with certain RTI/STDs in the family planning clinic setting at the PHC and hospital levels. During the needs assessment phase, the study design evolved to include the following specific objectives:

1. To determine the prevalence of specific RTI/STDs: candidiasis, bacterial vaginosis, trichomoniasis, gonococcal cervicitis, chlamydia cervicitis, and syphilis, among women presenting for routine FP services in two FP clinics in North Jakarta who gave informed consent to participate in this study;
2. To study possible associations between the presence of infection and the women's socio-demographic characteristics, and sexual and obstetric/ gynecological history;
3. To study the practice of infection control in daily family planning services;

4. To assess the clinical and laboratory skills of doctors and midwives in the diagnosis of RTI/STDs in female clients levels;
5. To assess the compliance of doctors' and midwives' RTI/STD prescriptive recommendations with the national STD treatment guidelines;
6. To assess the interpersonal communication skills of doctors and midwives for effective RTI/STD risk assessment and client counseling;
7. To study the quality of the existing RTI/STDs recording and reporting system.

II.B.2 Study Design

A quasi-experimental design using a single pre-intervention observation and repeated measurement of post-intervention observations in 12 weeks was employed.



- O₁** was the pre-intervention observation of the study measures, which were conducted between December 1996 - January 1997;
- X** was the intervention consisting of various workshops for FP HCPs on:
- a) diagnostic clinical and laboratory skills;
 - b) RTI/STD treatment regimens;
 - c) interpersonal communication skills;
 - d) recording and reporting; and
 - e) infection control practices.
- O₂₋₄** were repeated post-intervention observations for twelve weeks between February 17 and May 9, 1997.

II.B.3 Eligibility Criteria of Study Participants

All clients who attended the FP clinic in either Koja Hospital or Puskesmas Cilincing during the twelve week period of study were advised that a study to improve the detection and treatment of RTI/STDs was seeking interested volunteers. The FP staff, doctors at Koja hospital and midwives at the Puskesmas Cilincing, presented an introductory discussion of contraceptive options and their link to RTI/STDs. Those clients choosing to participate received standardized information for informed consent

clients choosing to participate received standardized information for informed consent and then were briefly interviewed by the HCP to determine their eligibility. All consenting FP clients were considered eligible to participate unless:

- they were menstruating at the time of the exam (in which case they were invited to return to the clinic two weeks later for evaluation) ;
- they had taken antibiotics in the past 14 days.

It was anticipated that a population of both symptomatic and asymptomatic clients would be gained by including all presenting FP clients as potential participants. There was no extra compensation for the clients to participate.

II.B.4 Diagnostic Model

The syndromic STD case management algorithms from the World Health Organization (WHO) require an evaluation that is dependent on the primary symptom of vaginal discharge to start the diagnostic process (WHO, 1993). Previous investigations using a hierarchical syndromic algorithm to evaluate RTI's in asymptomatic populations have not found such algorithms to be highly sensitive specific for the detection of RTI's, and in particular, the cervical infections of gonorrhea and chlamydia (Vuylsteke, 1993; Behets, 1995; Thomas, 1996). Therefore, all participants were evaluated by risk assessment, physical examination and laboratory testing.

II.B.5 Physical Examination and Specimen Collection

The physical examination included 17 separate steps and the collection of five separate lab specimens, all of which were sequentially recorded on the clinical evaluation form (**Appendix A**). The examination of the abdomen and skin included visual inspection for rashes that might be related to secondary syphilis infections. The abdomen and inguinal area were palpated for organomegally and lymphadenopathy, respectively.

Examination of the vulva and vagina noted the presence or absence of inflammation (erythema), ulceration or abnormal lesions of the vulvovaginal mucosa. Recording a written description of abnormal findings was encouraged. The following three lab-diagnostic tests were conducted on vaginal discharge:

- (1) Gram stain for the presence of an elevation (above 30) of polymorphonuclear leukocytes (PMNs), suggestive of inflammation, hyphae and/or pseudo hyphae (candidiasis), and clue cells (bacterial vaginosis);
- (2) Wet mount microscopy with normal saline for the detection of motile trichomonads;
- (3) A positive amine odor when combined with 10% potassium hydroxide (KOH).

After removing cervical discharge with a cotton swab, the cervix was visually inspected for signs of ectopy, erythema, mucopus and friability. Another three lab-diagnostic procedures were applied to the endocervical specimen :

- (1) inoculating a modified Thayer-Martin medium plate with immediate placement in a candle extinction jar prior to transport to the referral lab where each plate was then incubated at 37 degrees Celsius for 24 to 48 hours;
- (2) heat fixed Gram stain for the detection of gram negative intracellular diplococci (GNID);
- (3) chlamydia ELISA screen, by using a sterile dacron swab in the endocervix for a minimum of 10 seconds and rotating the swab in the endocervix three times before placing in a chlamydial transport medium.

Isolates for *N. gonorrhoeae* were identified by the referral laboratory on the basis of typical colonial morphology and oxidase reaction. *C. trachomatis* was tested from endocervical specimens by enzyme-linked immunoassay or ELISA (IDEIA[®] from DAKO Diagnostic Ltd, UK).

All consenting participants also had a 5 ml sample of blood (aseptically) drawn for syphilis serology using the non-treponema RPR as a screen. In the event that an RPR tested positive, the same sample of blood would have been re-tested for confirmation by TPHA. The Gram stains, cultures, and ELISAs and serology samples were transported daily at noon to the referral laboratory at a medical teaching hospital, Rumah Sakit Cipto Mangunkusumo (*RSCM*). This referral lab is in the Department of Dermatovenerology, which is the primary STD clinical training program in Jakarta. The department head also acted as a member of the advisory committee for this study. He also chairs the National STD working group who recently published the first National Treatment Guidelines for RTI/STDs (Daili et al, 1996). The referral laboratory at *RSCM* hospital re-screened the Gram stains for verification of initial microscopy diagnoses, and also performed the reading and reporting of culture, ELISA and serology results.

To complete the physical examination, a bimanual examination was performed to assess for cervical motion tenderness (CMT), and to rule out uterine enlargement or adnexal mass. The results of all clinical examination findings were documented on the study's standardized **clinical evaluation form** (see example in **Appendix A**).

II.B.6 Sample Size

Five HCPs participated in this study as our primary target group for intervention. These five participated in all phases, from the pre-intervention needs assessment interviews, to the intervention trainings and follow-up evaluative observation of client interactions by research assistants. These five HCPs consisted of three out of the four doctors in the FP clinic at Koja Hospital, plus two of the three midwives at the FP clinic at Cilincing PHC. The midwives were both female, but of the three doctors, two were male. The other doctor and midwife also participated in the training, but not the other study components. This is also true of the one doctor at Cilincing PHC (the head of *Puskesmas*), three doctors at Koja Hospital (two clinical pathologist and one ObGyn, head of ObGyn unit), and two lab technicians at each site. Therefore, 19 people received training, but only five were targeted for full participation; two midwives at Cilincing, and three doctors at Koja.

The secondary target group were the FP client. A total of 312 women were participated in the study between February 17 and May 9, 1997; 144 women at Koja Hospital, and 168 women at *Puskesmas* Cilincing (see section **III. D. Findings and Results** for exclusions, etc).

II.B.7 Data Collection Methods and Patient Management Policy

Every health care interaction between provider and client was observed by a trained research assistant using a coded observation checklist (see **Appendix G**). The checklist involved noting the presence or absence of the following HCP behaviors:

- exhibited positive communication skills
- obtained a standardized gynecological and sexual history
- maintained infection control practices
- performed a standardized physical examination
- provided diagnostic laboratory specimens
- provided client education and follow-up for client and partner(s) if an RTI/STD was diagnosed
- wrote a correct prescription for infections that were clinically diagnosed IAW National STD Guidelines

Analysis of laboratory specimens used a separate documentation tool. Clinical assessments were compared with on-site laboratory diagnoses of Gram stains and partial wet mounts. Subsequently, on-site Gram stain laboratory reports were re-evaluated by the RSCM reference laboratory to confirm the diagnosis of the on-site laboratory staff. This same report served to report the results of testing for gonorrhea, chlamydia and syphilis, which were performed at the referral laboratory.

The clinical evaluation, which included history, exam and lab findings as well as the HCPs teaching and client recommendations, along with the observations of the HCP/client interaction were all recorded and checked for completeness on a daily basis by the project officer before the data was entered into the computer. Standard double entry procedures and consistency checks were used to ensure that the data set was clean prior to analysis. Client records used new assigned ID code numbers, so that individual identifiers were minimized in the data files.

II.B.8 Data Processing and Analysis

The data used here are taken from observations of 1) client provider interactions; 2) client background, including behavior, medical histories, and examination; and 3) results of laboratory tests. The software used to enter these data allowed for both numeric and character responses. It also included automatic checking for invalid and inconsistent responses. The data was organized in such a way that each client has a complete set of the three types of data mentioned above.

Preliminary analyses included univariate descriptive statistics to obtain a simple data description of all variables under study. This established how the cases were distributed across the various categories of each variable, the number of missing values per variable, and the shapes of the distributions of key variables.

Bivariate analyses using two variables for sub group comparisons were used for a descriptive presentation of some preliminary findings. They were also used for the preliminary analysis of the association between dependent variables (STD disease status -with or without gonorrhea, syphilis, and chlamydia) and selected disease markers as independent variables. Cross tabulations described the distribution of key variables of interest, such as disease status across various client's backgrounds behavioral characteristics, medical histories and results of physical examinations. An unadjusted odds ratio was calculated to assess the individual or gross effect of selected markers on the dependent variables.

A two way contingency table was employed to test the validity of some disease markers for predicting an STD infection. In this case, the results of *RSCM's* laboratory works were used as the standard.

II.B.9 Major Activities

A multitude of activities took place to accomplish the various objectives of this study. This project was not a singular intervention to study disease prevalence, but also a broader plan to study the feasibility of sustainably incorporating RTI/STD clinical services into the existing family planning services. The actual implementation of these activities closely followed the plan established in the original HAPP FHI/AIDSCAP **Logframe of Activities** (see **Appendix B**). The sequence of project activities started with pre-intervention data collection and needs assessment. These pre-intervention baseline findings contributed to the development of clinical protocols and HCP training curricula, followed by the clinical observation of each client and HCP interaction. During the study there was on-going coaching and refinement of HCP skills, as observations and program monitoring revealed the need for additional and continuous strengthening of HCP skills.

II.B.10 Key Collaborators

The key collaborators and members of the advisory committee were recruited early on in the preparatory stage as experts who also initially served as facilitators for training activities (intervention). These collaborators were selected for their positions of leadership, not only for training skills and also for their ability to supervise the HCPs and laboratory personnel who would be trained to perform clinical care. This cadre of leaders were also able to serve as mascots for ensuring that HCPs and laboratory staff would attend and participate fully in training activities. The list of policy makers/program managers selected at the central level is as follows:

- Head, Subdirectorate of ObGyn - Family Health, Ministry of Health (MOH)
- Section Head, Subdirectorate of STDs and Yaws - Centers for Disease Control (CDC), MOH
- Chairman, The Indonesian ObGyn Association (POGI) - Jakarta Chapter
- Chairman, The Indonesian STD Working Group & Department. of Dermatovenerology, Faculty of Medicine, University of Indonesia.
- Member, The Indonesian STD Study Group
- Head, Subdirectorate Surveillance, Directorate Epidemiology at PHC - CDC, MOH
- Head, Subdirectorate of Mental Preventive Health - Family Health, MOH

III. Subproject Implementation

III.A Management

With the exception of the position of the Project Officer during the first quarter, all staff positions were filled in the beginning of the project and continued through the entire period of study. The final project staff included:

Project Manager	:	Dr. Meiwita B. Iskandar, Ph.D
OR Fellow	:	Subadra Indrawati, MPH
Project Officer	:	Dr. Siti Nurul Qomariyah
Data Analyst	:	Djoko Hartono, PhD
Health Consultant	:	Cathy Vickers, RN BSN CNP
Research Assistant	:	Lila Amaliah, SKM *
		Zakianis, SKM
		Eti Sulaeha, SKM
		Milla Herdayati, SKM

The selection of advisory board members reflected diplomatic negotiations for the operational integration of two traditionally distinct programs (FP and STD management) to establish the desired outcome of a more comprehensive reproductive health care delivery system. To support this goal, leaders from divergent programs were approached. Many of them have been used to working in strictly vertical and well defined MCH programs. The concepts of teamwork and collaboration, although unfamiliar to some, were critical element of the board functions. As a consequence, there were times when an individual member had very strong opinions about the composition of the advisory committee, or the group of trainers. This collaboration required many compromises in implementing the final protocols and delivery of actual training programs.

A strong consensus among project staff, advisory board members, and clinic site HCPs was that women with treatable infections detected during the course of the study should be provided with medications for themselves and their partner(s). Due to the budgetary prohibition of medication purchases, it was necessary to seek funding from an additional source for the procurement of these medications. A proposal for funds to purchase medications was submitted to the American Women's Association (AWA) of Jakarta. This organization awarded a grant of 5 million Rupiah to the Population Council for the acquisition of RTI/STD treatments. An additional donation procured through the Indonesian ObGyn Association (POGI) Jakarta chapter consisted of 75 single dose anti-fungal treatments for non-pregnant women.

*SKM is Public Health Graduate

III.B. Accomplishments

A series of operations research (OR) products and findings emerged from the activities and may be of future help for efforts to improve reproductive health for women in Indonesia. An unanticipated accomplishment was that the MOH Directorate of Family Health recognized this study as a "*model development project*". This led to the invitation of the program manager to present the results of the field work to the Ministry of Health on April 5, 1997 in a seminar devoted to recommendations for the future integration of STD program planning into PHC at the national scale. This national meeting was attended by MOH representatives from multiple provinces. Of greatest interest to the MOH advisory board members was the fact that the protocols for STD case management were comprehensive, yet concise and manageable for the FP clinicians. The program manager was informed by the Head of the Subdirectorate of ObGyn-Family Health at this April 5th presentation, that the MOH intended to incorporate some parts of the Population Council's protocols into future MOH planning guidelines to integrate RTI/STD clinical services into broader FP/MCH programs in Indonesia (see **Appendix C** for a report of this MOH meeting). An MOH pilot test is going to be implemented in two health centers in Bali, under AusAID funding.

III.B.1 Pre-Intervention Needs Assessments: Health Facility Observations

Observation at the two clinical sites, Koja Hospital and Puskesmas Cilincing, revealed an adequate existing infrastructure for the provision of RTI/STD detection services without the need for significant additional equipment. Observations also revealed the need for enhanced written instructions, particularly in the protocols of infection control and education and counseling.

The most significant difference in clinic resources between the hospital and the PHC was the absence of an autoclave for sterilization of speculums at Puskesmas Cilincing. The method of disinfection used in this facility was to wash with water, then dry them, and place them in a container with formalin tablets. This toxic and potentially dangerous practice was immediately addressed with a recommendation to use safer disinfectants. This procedural problem was addressed in the second training program which placed a greater emphasis on infection control procedures. Supplies for hand washing and instrument disinfection were purchased and distributed as needed. The Puskesmas staff did not use disposable gloves for pelvic examination, therefore, disposable gloves were also purchased for the health center.

Koja District Hospital is presently a class "C" hospital, but expects to be promoted a class "B" facility this fiscal year. Koja hospital is a 202-bed hospital covering 18,000 square meters of land. Within the hospital, there are 13 specialty clinics, run by 55 doctors, 4 dentists, 10 midwives, 142 nurses and 14 nurse-midwives. The PHC at Cilincing is a coordinating subdistrict (*kecamatan*) health center (*Puskesmas*), with 9 subsidiary village (*kelurahan*) health centers. The four story building covers 1,500 square meters and was established in 1994. Cilincing employs a physician as medical director and 3 midwives for MCH/FP clinical services. Besides FP/MCH, the *Puskesmas* offers multiple medical services including inpatient deliveries, general medical, dental and optometry services.

III.B.2 Pre-Intervention Needs Assessment: Health Care Provider (HCP) Knowledge Attitudes and Practices (KAP)

Five in-depth interviews were conducted prior to the training intervention to obtain a baseline assessment of HCP experience, knowledge, and acceptance about the provision of RTI/STD services within the FP clinic. Three doctors were interviewed at Koja hospital and two midwives were interviewed at *Puskesmas* Cilincing, using a verbally administered structured questionnaire. Doctors were interviewed by the project officer (a physician), and midwives were interviewed by the research assistants. All of the interviewers attempted to employ a non-threatening manner. They conveyed a sense of informality in their verbal interviews to limit the appearance of scrutiny. Interviews were conducted after the clients had all been seen for the morning clinics. Unfortunately, both of these study sites are also used for another RTI/STD study sponsored by HAPP. This created a crowd of researchers obtaining baseline data through observations and interviews of clinical staff in the same time period. Consequently there was frustration among the clinical staff about repetitive questions from different interviewers. Fortunately for this study, our research assistants were the first to access the *Puskemas* and were able to interview fresh staff.

The length of employment for doctors in the hospital ranged from 10 to 23 years, with an average of 15 years of employment in the FP clinic. The two midwives had a much shorter duration of employment in their clinics, ranging from one month to two years. None of the five HCPs were able to give an estimate of the average number of FP clients seen in one month.

All of the five HCPs reported that they had not diagnosed a single STD in the last six months. Two of the doctors had referred an FP client to the STD clinic in the past six months. One described the number of clients referred to the STD unit as "just a few". The other referring physician reported referring three clients to the STD clinic in the last six months.

The comparatively new midwives were unable to estimate or rank the most common RTI/STDs encountered in their clinical practices. All three of the doctors chose candidiasis and trichomoniasis as frequently encountered infections, with two choosing bacterial vaginosis and gonorrhea as the next most common infections seen in the FP clinic.

Two distinctly different perceptions of the main barriers to RTI/STD identification emerged from the midwives in contrast to the doctors. The midwives felt that FP clients were uneducated about signs of infection as well as being embarrassed to provide an accurate sexual history. Both midwives also felt that the lack of laboratory diagnostic procedures was a barrier to disease recognition. The three doctors did not attribute lack of disease identification to inherent qualities of the clients. One physician, despite a self-reported track record of not diagnosing any RTI/STDs in the last six months, believed that there were no existing barriers to disease recognition. This doctor believed that a disease recognition system producing an accurate rate of infection already existed in the clinic. A second doctor believed that there was not enough time in the busy daily schedule of FP services to include the additional work involved in STD detection. One reason cited was the difficulty in locating clients for follow-up since culture or serological results were not available until after the clients had left the clinic. Another perception of barriers to disease identification was that most FP clients could not afford to pay for additional laboratory diagnostic tests for diagnosis of RTI/STDs. The third physician felt that relatively rare use of laboratory tests was sufficient to support routine clinical recognition of RTI/STDs.

No significant deficits in actual facilities were discovered in either site for the performance of pelvic examinations. However, the existence of microscopes, incubators, reagents, and cultures did not translate to a perception of access among the staff.

For a hypothetical female client complaining of genital discharge, no consistent pattern of ordering or performing wet mount microscopy to determine the causative organism for the vaginitis was evident from interviews. Only 1 of 5 HCPs acknowledged wet mount microscopy as a rapid diagnostic practice available and appropriate such a clinical presentation. This HCP felt that the determining factor in whether or not this simple, inexpensive laboratory test was performed, was the economic status of the client.

Doctors, in particular, embraced the conviction that their experience, and superior education superseded the need to include an etiological investigation of pathogens that caused vulvovaginitis. Actual patient interactions with these same doctors revealed that they never recognized more than one pathogen from an approach that only included listening to the client's description of the discharge, or less frequently, an investigation of the history and a visual examination of the vaginal environment.

In a related, but not directly measured indicator of reproductive health in this study, the HCPs were asked under what clinical circumstances they would order a Pap smear. A comparison of their responses follows:

- Midwife #1 - Client is 35 years old
Client complains of abnormal discharge;
Spotting;
Contraceptive use longer than 5 years.
- Midwife #2 - Never (no experience)
- Doctor #1 - Abnormal discharge;
Abnormal cervix;
Age 35-40 years.
- Doctor #2 - Vaginal discharge;
Cervical erosion;
Age 35 years, obtain once a year;
Age 40 years, obtain twice a year.
- Doctor #3 - Rarely uses the speculum, only when asked to by client.

The above pattern of using a Pap smear for clinical presentations of vaginal discharge, indicates a misunderstanding of the purpose of cytological screening and would also increase the probability of false positive cytological results from inflammatory atypia.

The frequency of recommending that a cervical culture be obtained for the detection of gonorrhea was very low. Only one doctor recommended obtaining a culture if a client presented with vaginal discharge and also admitted any risk behavior in the history taking. This same doctor used these two indicators for recommending that serology be obtained for the detection of syphilis. Another doctor reported never using serology for syphilis in Koja hospital, but in other facilities he would do so if there was evidence of genital ulcers. The third doctor honestly admitted a lapse of memory on how to diagnose syphilis. Both of the midwives reported never recommending a test for syphilis. All 5 HCPs were unanimous in never having recommended that a client be tested for HIV infection.

An analysis of medication prescription practices for candidiasis, gonorrhea, and chlamydia yielded vague responses reflecting a lack of knowledge among family planning HCPs. HCPs were asked to describe the drug of choice and the recommended dosage, frequency and duration of use for each regimen. The majority of the responses only included a name of the drug and not a precise measure for how much, when, and how long it should be taken for. The drugs mentioned were often not appropriate for the suspected organism.

Only 2 of the 3 doctors were able to refer to a specific antifungal medicine by name. One of these doctors also included a traditional regimen of "sirih" leaf water for some of the clients with candidiasis. One of the midwives was unable to site a drug for the treatment of a yeast infection. The other midwife used a dual regimen of Metronidazole, which is not effective for eliminating candidiasis, along with a local cream "Albothyl", which is a condensation of metacresol sulfonic acid and methanal. In its undiluted state, Albothyl is a caustic agent that can debride wounds.

When the drug selections did have therapeutic efficacy for a targeted organism (such as Thiamphenicol for gonorrhea), there lacked knowledge of a standardized dosage and administration schedule. In reference to the practice of automatically providing additional treatment for chlamydia when a diagnosis of gonorrhea is made, none of the HCPs reported this to be a standard practice. One doctor consistently relied on the "economic status" of a client as a determinant for whether or not a prescription was offered. One of the midwives was unaware of the correct regimen for gonorrhea, and the other midwife mentioned the outdated and ineffective regimen of Ampicillin.

A frequent and resonating theme mentioned by both doctors and midwives was the difficulty of educating clients about reproductive tract infection, especially sexually transmitted infections. An investigation of the HCPs perceptions on the utility of educational resources such as flip charts, brochures, posters, etc. did not reveal a consensus on the utility of materials. The midwives who perceived their client's level of awareness as an important diagnostic determinant, were more inclined to think that all resources could be helpful for educating clients. Only one of the three doctors felt that brochures and pamphlets would be helpful. Two doctors specifically felt that written information was not helpful, and felt that direct communication was the best method of client education with regard to STD prevention. Although these two HCPs valued direct communication, they both felt that client education was a difficult and time consuming clinical practice.

HCPs were asked if they provided condoms with instructions to clients who were diagnosed with STDs. Two of the doctors responded that they never did this. One doctor responded that "occasionally" condoms were given. One midwife did not provide condoms, the other reported that she always provided condoms if the husband had a history of dysuria. A general feeling expressed by all HCPs was that it was unrealistic to expect an "ordinary housewife" to convince her spouse to use condoms. Both midwives also agreed that condoms promote immoral sexual behavior. Only one of the HCPs reported being "comfortable" discussing STDs with clients. All the other providers admitted that it was very difficult to be open about RTIs with their FP clients. One of the doctors felt that condoms were not efficacious in STD prevention, because they were uncomfortable and interfered with men's sexual pleasure. Two other doctors felt that good quality condoms were helpful if used correctly. Another doctor expressed a strong belief that "condoms don't prevent STDs as effectively as abstinence".

This same physician who felt condoms were not effective against STDs expressed many other opinions about STD management. He was candid about his habit of never telling a female FP client that she had an STD because it would make her feel uncomfortable and cause problems with her spouse. He also felt very confident making an etiological diagnosis based only on a history and visual exam. He felt that any pruritic vaginal discharge was a fungal infection, and any milky discharge with a bad odor and dysuria was *Trichomonas vaginalis*. He agreed that trichomoniasis was sexually transmitted, and would prescribe Metronidazole for both the client and her spouse. He would tell the women to give her husband the pills with the explanation that they would increase his sexual potency and performance. This same physician articulated the perception that RTI/STD case management was not connected to FP clinical care.

With the general level of discomfort among HCPs in discussing STDs with their clients, it was not surprising to learn that these same providers were not well informed about which STDs required concurrent treatment of the sexual partner. Both midwives in the Puskesmas reported that they did not know which infections should also include partner treatment. Since their job experience did not include the detection of STDs, they did not hesitate to say that they did not know.

Each HCP was specifically asked which of the 10 infections (candidiasis, trichomoniasis, bacterial vaginosis, gonorrhea, chlamydia, chancroid, syphilis, HSV, HPV and HIV) require partner treatment. One of the doctors responded that all clients with any signs of infection should have their partner evaluated at a clinic. Another doctor only identified trichomoniasis as an infection requiring partner treatment. The third doctor correctly identified trichomoniasis and gonorrhea as infections requiring partner treatment along with an incorrect identification of candidiasis and bacterial vaginosis in the same category.

III.B.3 Standardized Clinical Evaluation

Based on the results of pre-intervention assessment, the development of a comprehensive, but pragmatic clinical evaluation procedures was necessary to standardize the intervention. This also served as a template for HCPs to absorb minimal quality of care behaviors integral to the performance of a pelvic examination for the detection of RTI/STDs. However it was necessary to minimize changes in HCP practice, limiting changes to those that are essential for both RTI/STD case management and contraceptive care. According to the World Health Organization guidelines (WHO, 1994:2), comprehensive STD case management should include:

- correct diagnosis
- effective treatment
- education on risk reduction and treatment
- promotion and provision of condoms
- clinical follow-up where appropriate.

These five components of STD case management were included in the standardized clinical evaluation. Two comparable clinical evaluations were studied during the course of this instrument development. The final clinical evaluation was a one page format that included essential RTI/STD evaluation elements (see Appendix A), although a four page evaluation was drafted. This four page draft provided more socio-demographic data and a thorough contraceptive history investigation. It was decided to use the abbreviated one page tool for HCP acceptability.

Unlike common RTI/STD prevalence studies where the history and risk assessment is obtained by field research staff, this study attempted to sharpen the skills of the HCP in obtaining an accurate history. Thus, in order to limit the demands on the busy HCP, who was also often culturally and professionally predisposed to avoiding candid sexual histories, an abridged sexual history form was used.

This study employed a non-hierarchical inventory of risk factors, clinical symptoms and signs, accompanied by serology and vaginal and endocervical specimen collection. This diagnostic investigation was etiological and not syndromic. It allowed for the determination of prevalence rates since all consenting clients were universally screened. It further allowed for comparison of sensitivity, specificity and positive predictive values among the various assessments that all clients were screened with (i.e., clinical assessment versus lab tests).

III.B.4 Clinical Practice Protocols

Nine separate clinical protocols were developed to merge RTI/STD case management into the context of the family planning clinic setting (see **Appendix D**). These protocols served as the framework for training activities to help the HCPs develop the ability to introduce the subject of RTI/STDs to the FP client, and then proceed with examination, diagnosis, treatment and interventions. These protocols address the following contents areas:

<u>Protocol</u>	<u>Title</u>
I	Contraceptive Education
II	Diseases of Women's Reproductive Organs
III	Taking an Effective Reproductive Health History
IV	Providing a Reproductive Health Physical Exam
V	Laboratory Tests
VI	Diagnosis and Case Management
VII	RTI/STD Treatment Guidelines
VIII	Client Education and Counseling
IX	Infection Control

III.B.5 Training Programs

Training family planning HCPs to expand their awareness and normal clinical routine to include a vigilant consideration of RTI/STDs in every single client demanded large scale professional consciousness-raising.

This demand could not be met by a single training event, but rather required close project monitoring and post-training supervisory trouble-shooting activities.

HCPs were induced to participate in training activities by multiple incentives, including:

- attendance of department head and institution management at major training activities;
- attendance of outside professional "mascots" which were also project advisory board members at training programs;
- financial reimbursement for "missed opportunity costs" due to attendance;
- the chance to improve professional expertise by gaining applied knowledge for enhancing private practice.

The following summary of the training process shows the scope and diversity of training efforts. The pre-intervention collection of baseline data on HCPs knowledge, attitudes and practices (KAP) revealed a strong aversion among the specialists/physicians to the concept of *training* and the amount of time it would require. This aversion was not expressed by the midwives. To accommodate the perception that *training* was not needed by "expert/experienced HCPs", and should not last as long as originally proposed, a new semantical and temporal approach was pursued. Instead of offering *training* on the clinical aspects of RTI/STD case management, a "**Round-Table Discussion**" was conducted as the initial training activity. Instead of the original five day presentation, the curriculum was presented in multiple half-day doses. The published time schedule of a total of four hours per day, transformed in reality to a six-hour day of "**discussion**" to include all the learning objectives targeted in the original plan (see **Table 3**) and **Appendix E : Workshop Reports**, includes a greater description of these training activities.

Table 3: Training Activities Summary, January-April 1997

Date	Workshop Topics	Length	Trainers	Site	Personnel Trained
Jan 24-25	Round Table Discussion	2 days	Combined Advisory Board	Koja Hospital Conference Room	Combined FP staff from Koja Hospital & Cilincing PHC (Doctors, midwives, & lab)
Jan 28-29	Clinical specimen collection & lab analysis	2 half days	RSCM STD clinic staff, led by Dr. Sjaiful F. Daili, DSKK	Cilincing PHC	Cilincing PHC midwives & lab
Jan 31	Lab testing procedures	half day	RSCM STD clinic staff	Cilincing PHC	Cilincing PHC lab
Feb 5	Refreshing HCP clinical skills on counseling and infection control	half day	Dr. F. Sumampouw, DAJ, MPH & Dr. Djajadilaga, DSOG	Koja Hospital dormitory classroom	Combined from Doctors, midwives Koja & Cilincing
Feb 5	Clinical specimen collection & preparation	half day	RSCM STD clinic staff	Koja Hospital FP clinic	Koja Hospital medical staff
Feb 7	Lab testing procedures	half day	RSCM STD lab staff	Koja Hospital lab	Koja Hospital lab staff
March 21	RTI/STD case management update	quarter day	Dr. Iskandar & C. Vickers	Cilincing PHC	Cilincing PHC midwives and lab staff
March 25	RTI/STD disease management update	quarter day	Dr. Iskandar & C. Vickers	Koja Hospital	Koja Hospital medical & lab staff
April 21	Communication & infection control skills	quarter day	Dr. F. Sumampouw, DAJ, MPH & Senior Midwife Coos Leiwakabessy	Cilincing PHC	Cilincing PHC midwives, lab & nursing staff

RSCM = referral laboratory at Cipto Mangunkusumo Hospital

5 1/2 days
 The initial "Round-Table Discussion" conducted in two parts on Friday, January 24th and Saturday, January 25th at Koja Hospital initiated the series of training activities. This was the longest and most formal training program of the project. The hospital contributed a large conference room with audiovisual equipment, tables, chairs, and microphones. It also provided valuable feedback from the HCP participants about their reactions to the protocols and the expectations of the research. This process of collaboration and feedback was important to instill a sense of ownership among HCP and the project Advisory Board.

Providing small-dose training sessions over a long period meant that trainers and investigators periodically visited the sites and could observe problems and successes with the implementation of the new protocols. This allowed for remedial instruction in subsequent training, as well as refinement of the protocols prior to data collection on clients. The process of utilizing members of the advisory board as trainers allowed for supervisory visits as envisioned in the original work plan. However, rather than doing a checklist style of supervision, the supervisor used the RAs records on HCP/client interaction to guide discussions. The checklist inventory was given to each HCP as a tool to assess their own progress in integrating the written protocols and formal instruction with actual client care (see **Appendix F** for the itemized HCP skills inventory that was utilized throughout the supervisory visits).

An evaluation of the impact of the training activities on actual HCP behavior change was designed through the daily observations of each HCP/client interaction (see **Appendix G**). An additional gauge of the impact of the training is the comparison of pre-training rates of RTI/STD disease recognition (determined through the retrospective six month medical record review), and the rates of confirmed positive findings obtained during the course of the study. The results of these analyses are discussed in section **III.D. Findings and Results**.

III.B.6 Advisory Board

The creation of the advisory board as described earlier in section **III.A (Management)**, was simultaneously an accomplishment and a constraint. It was anticipated in the design of this study that the feasibility of integrating additional work and services into an already well-established and busy FP program would require broad support from leaders in influential positions. It was also a carefully considered choice to utilize persons with leadership and solid clinical expertise in the practice of reproductive health in Indonesia as training instructors. As a result, these advisory board members brought credibility and expertise in family medicine, obstetrics & gynecology, public health, mental health and dermatovenereology to the training program. This diverse constituency of successful practitioners set a new standard and simultaneously lent a “reality-check” to the tone of the training sessions.

A frequently expressed concern by more than one member of the HCP trainee group during the first workshop was the inherent difficulty in discussing the need for partner treatment for STDs. The advisory board of instructors possessed the professional authority and experience to acknowledge the difficulty while emphasizing the primacy of not neglecting realistic partner treatment plans for every client diagnosed with an STD.

III.B.7 RTI/STD Treatment Formulary

Three sources were used to compare and contrast RTI/STD treatment guidelines; (1) the national guidelines, as recently published by the MOH for the Republic of Indonesia (RI), (2) the 1993 STD Treatment Guidelines as published by the Centers for Disease Control in Atlanta Georgia (MMWR, 1993), and (3) the guidelines recommended by the World Health Organization (WHO, 1994). The final treatment guidelines used by this project were the guidelines from the MOH for the RI (Daili, et al., 1996) (see **Appendix H** for a summary of the contrasted regimens from the MOH, CDC, and WHO). Pharmaceutical supplies were purchased and pre-packaged for individual distribution as indicated either by the *initial clinical diagnosis* or the *final laboratory diagnosis*. **Table 4** displays the final RTI/STD formulary used in this project.

Table 4: RTI/STD Treatments

Drug	Infection	Dose/per person	Pregnancy
Metronidazole	Trichomoniasis * & Bacterial Vaginosis	2 grams- oral single dose- (tablets)	Contraindicated in 1st Trimester
Clotrimazole (Canesten SD®)	Candidiasis	500 mg. per day single dose (vaginal suppositories)	Not a contraindication
Fluconazole (Diflucan®)	Candidiasis	150 mg oral single dose (tablet) contraindicated in liver disease	Contraindicated in pregnancy & lactation
Ciprofloxacin	Gonorrhea*	500 mg oral single dose (tablets)	Contraindicated in pregnancy use Spectinomycin
Spectinomycin (Trobicin®)	Gonorrhea* for pregnant women	2 grams IM single dose (Injection-divide dose in half for each buttock must use 2 needles & syringes)	Not a contraindication
Doxycycline (Vibramycin®)	Chlamydia*	100 mg oral twice a day, for 7 days (tablets)	Contraindicated in pregnancy Use Erythromycin
Erythromycin	Chlamydia* for pregnant women, and Chancroid*	500 mg.- oral four times a day, for 7 days (tablets)	Not a contraindication
Benzathine penicillin G	Syphilis* (Must do follow-up exams & titered serologies to test Rx 3 & 6 months after Rx)	2.4 million Units IM, single dose if confirmed primary case, or 3 weekly doses if duration is longer than 2 years, or of undetermined duration. (Injection)	Not a contraindication

* These RTI/STDs MUST include treatment for the client & her partner(s). A specific note was given to HCPs stating the following warnings: "If you do not provide a treatment for the partner(s), your client will become reinfected. Remember to always check the medical history for a possibility of allergies, pregnancy, or other medical conditions before choosing a treatment".

III.B.8 Treatment Cost Implications

A market survey of current prices for individual treatments for each treatment regimen was conducted. This was not a full cost analysis, but just a quick survey to determine the actual cost of one complete treatment for all of the recommended RTI/STD regimens included in the National Treatment Guidelines from Indonesia. The results of this market survey are included in **Appendix I**.

III.B.9 IEC Development

Although the original proposal did not include the development of IEC materials, the need to use a quick "Ice Breaking" visual symbol to introduce the topic of RTI/STDs to clients, became apparent. A local laboratory technician, who is also an artist sketched two cartoons. The content was culturally recognizable to Indonesian people. He transferred his knowledge of microbiology to blend with well-known colloquialisms to represent individual STDs. This cartoon also served as a teaching aids to describe possible symptom a women might experience if she were infected. The cartoons were laminated into a one page tool for the HCP to introduce this study to clients. The cartoons are shown in **Appendix J**.

III.C Constraints

The role of the **advisory board** of subject matter experts expanded from advisor to a more intimate involvement as protocol editors and workshop instructors mascots. This increased programmatic involvement contributed to an increase of opinions on how to implement RTI/STD into FP services. This team of strong professionals included members from different professional disciplines, and some members were strongly opposed to giving equal status as instructors and advisors to other members. Fortunately, the majority of advisors shared a dedication to the overall goal of the project and were flexible enough to accommodate less flexible members. As described in a paper from Family Health International (Hardee & Yount, 1995) on the subject of integrating previously separate services: *"Fear of takeover and loss of status or career prospects create barriers to effective collaboration"* (see also Laing, 1981).

The **different medical disciplines** to be integrated (STDs and family planning) have a different view and set of priorities when looking at the same client, even when they examine the same organ system. The dermatovenereologist may be keenly interested in the cervix, and neglect the rest of the uterus in performing a pelvic exam, because it has diminished diagnostic yield for the detection of STDs. The family planning specialist on the other hand, performs a bimanual examination routinely, but may neglect a speculum for visual assessment of the cervix.

The revised plan of performing universal screening for all six selected RTIs on all consenting clients created an additional ethical requirement of submitting the proposal to the Institutional Review Board (IRB) of the Population Council. This required the inclusion of a formal informed consent procedure. HCPs in the study sites felt that this was a barrier to gaining maximum client participation in the study. It did create another demand on the part of the field staff to do more recording and reporting. A copy of the individualized consent form, which was also used to determine a plan for follow-up care is included in **Appendix K**.

A philosophical constraint was evident among HCPs about the relative importance of some of the individualized tasks that accompanied the research process and the detection of RTI/STDs.

It was apparent that the technological update to using a speculum to perform a bimanual examination and obtaining specimens for microscopy, culture and serological analysis were easily accepted by all HCPs. The doctors were very willing to participate in the scientific evaluation process by performing physical tasks, even though they had not been a part of their prior routine. It was not anticipated that the greatest HCP resistance would be in the area of provider/client communication. Specifically, the doctors did not perceive performing client education as a scientific or medical task.

While the doctors and midwives were very willing to learn and perform the high-tech evaluative practices, they were also eager to delegate the tasks of obtaining informed consent, and the standardized thirteen question history to the neutral research assistants (RAs). Recording and reporting the results of the clinical evaluation were also perceived as undesirable tasks which these HCPs were eager to delegate to the RAs or other staff. This resistance shows a devaluation of some clinical evaluation components. A medical model emerged with two distinct sets of practices which HCPs were either willing or unwilling to perform depending on the perceived clinical technology associated with them. This can be summarized as follows:

		HCP Willingness to Perform	
		High	Low
Clinical Technology Perceived	High	<ul style="list-style-type: none"> • Physical examinations • Lab specimen collect • Prescription of medicine 	—
	Low	—	<ul style="list-style-type: none"> • Interpersonal communication • History taking • Client education • Reporting and recording

Clearly the HCPs placed a greater value on the high-tech evaluative practices. The challenge of trying to work with this constraint prompted two workshops in which the less valued areas of practice were discussed. A connection between not performing them and a client's likely reinfection (i.e., a reversal of all their high-tech work of examining, testing and treating) was attempted.

A cultural concern not to cause any loss of face to a client by honestly disclosing a diagnosis of STD, and the need for partner treatment, far outweighed any logistical constraints of finances, facilities and supplies. There seemed to be a professional blindness to the necessity of treating a sexual partner in order to prevent a reinfection of the index client.

The most illustrative example of this phenomena occurred during one of the on site clinical training sessions. At the Puskesmas one client who was having her first pelvic exam, and coincidentally was also four months pregnant, was discovered to have mucopurulent cervicitis with a Gram stain showing more than 30 polymorphonuclear leukocytes (PMNs) per high power field. The STD specialist physician who was training the midwives to correctly obtain vaginal and cervical specimens told this woman she had an infection that required treatment. The doctor prescribed 500 milligrams (mg) of Erythromycin four times a day for seven days.

The doctor was able to stress the importance of completing the prescription for the health of the client and her unborn baby. However, the potential need for treatment of the spouse/sexual partner was not mentioned. When interviewed by the research staff about not mentioning treatment for both partners, the reply was: *"it is very difficult for us (Indonesians) to talk about partner treatment"*.

Later, the doctor express a high index of suspicion that the cause of this pregnant woman's mucopurulent cervicitis was infection with chlamydia trachomatis. This suspicion motivated the recommendation of the prescription of Erythromycin. Most experienced STD specialists would agree that a diagnosis of an STD would be premature at this stage, even though a purely syndromic model of care would justify such a diagnosis and treatment plan. However, at a minimum, an ethical need to inform the pregnant client of actions she can take to prevent herself from possible reinfection via sexual intercourse with a potentially infected partner, prior to receiving the final laboratory results, seemed called for. The dissonance between client treatment based on a syndromic diagnosis and a final etiological diagnosis will be discussed later in section **III.D. Findings and Results.**

Even for infections with positive STD lab tests, there was a distinct trend to provide a prescription for the index client, while not disclosing the need for concurrent partners therapy. This reluctance was not only evidenced by HCPs neglecting of document to a treatment plan on the clinical evaluation flow sheet, but was frequently in evidence during the HCP/client observations audited by the research assistants.

A logistical constraint prevented getting the laboratory reports back to the clinic and client in a timely manner, slowing the rate at which a final diagnosis could be reached. The Koja hospital laboratory would hold the Gram stains until they had accrued a sufficient "batch" to do group staining and reading. This resulted in Gram stain reports taking an average of 2-4 hours after the completion of the clinical evaluation. Since saline wet mount microscopy did not require staining and did require a quicker interpretation, the only RTI that was ever reported in the hospital prior to the client departing the site was *Trichomonas vaginalis*. Wet mount microscopy reports were returned in ten minutes in the hospital. Although the Puskesmas did not hold Gram stains for batching, they had a larger number of clients at each clinic, and could not turn around a laboratory report before the client left the clinic.

A further constraint in receiving timely laboratory reports was also encountered from the referral laboratory. During the 12 weeks of observation there were insufficient chlamydia test kits and gonorrhea culture plates to provide testing for each study participant. Another constraint at the referral lab was the excessive demands on the laboratory technician to read all the Gram stains and endocervical tests for gonorrhea and chlamydia. The head of the STD department required the technician to submit slides to him for concurrence in the case of a positive judgement of infection. Thus, whenever the department head was unavailable or out of town, final reports were delayed until his return. This practice resulted in a turn around time of one to four weeks for final laboratory reports. The referral laboratory also pooled chlamydia tests until they had batches of five specimens which added to the delay in some cases.

In the process of specimen collection, another problem observed was the high frequency of improper swab placement and insufficient absorption time, especially in week 1-4. Specifically for gonorrhea, cross-streaking the swab over the surface of the agar in 3 directions might have been done poorly in the first weeks.

III.D Findings and Results

Of the 478 clients who presented to one of the two FP clinics in the 12 weeks, 89% (425) were willing to become study participants. Figure 1 shows the reasons for the exclusion of a further 113 clients and figure 2 shows the reasons why 53 of the original clients chose not to participate. The final study sample was 312.

Figure 1. Exclusion of Study Participants

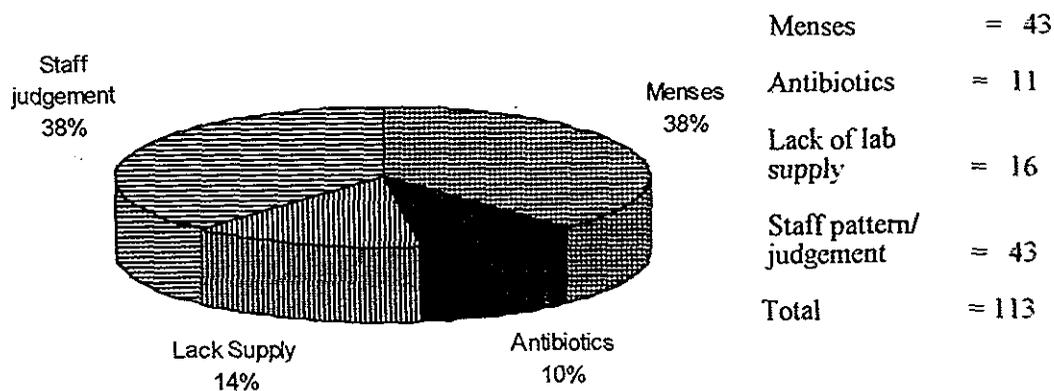
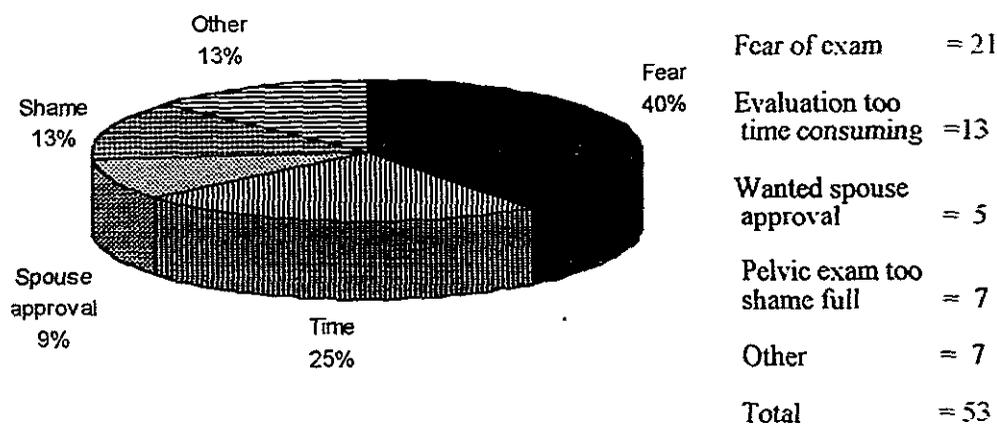


Figure 2. Clients Reasons for Refusing Participation in the Study



By the fourth week of the study period, the RAs observed that additional new FP clients were presenting to the clinic specifically to obtain the RTI evaluation. They had heard of the "free" study from their female friends who had already been evaluated, and expressed a desire to also be examined. Certainly, the provision of "free" medicine had the effect of drawing more study participants, possibly introducing self-selection bias into the study.

The majority of women (99.7%) were married and only one widowed/divorced. None of the participants were single (never married). The most common contraceptive method employed by the FP clients in both clinic study site in North Jakarta was hormonal injection. **Table 5** illustrates the breakdown of contraceptive methods reported by study participants.

Table 5: Contraceptive Method Use Reported by Clients, 1997

Contraceptive Method	Koja Hospital N=144		Puskesmas Cilincing N=168		Combined Clinics N=312	
	n	(%)	n	(%)	n	(%)
Injectable Hormones	62	(43.0)	53	(31.5)	115	(36.9)
Intrauterine Device (IUD)	47	(32.6)	34	(20.2)	81	(26.0)
Pills	20	(13.9)	52	(31.0)	72	(23.0)
Sterilization	9	(6.3)	0	(0.0)	9	(2.9)
Norplant	3	(2.1)	2	(1.2)	5	(1.6)
Condoms	3	(2.1)	5	(3.0)	8	(2.6)
Other	0	(0.0)	1	(0.6)	1	(0.3)
Not using contraceptive	0	(0.0)	20	(11.9)	20	(6.4)
Not reported	0	(0.0)	1	(0.6)	1	(0.3)

To simplify the history taking procedure and to direct the HCP to consider history variables that are strongly associated with a risk for STD infection, the client's age was coded as being either younger than 25, or 25 and over (see **Table 7**). For 312 participants, the actual ages ranged between 19 and 52 years, with a mean age of 32.6 (36 missing values).

III.D.1 Prevalence Rates of RTI/STDs and Associated Factors

The prevalence level of the six tested RTIs is shown in Table 6. A total of 86 separate RTIs diagnoses in 77 individual clients were confirmed by the referral laboratory. Nine clients tested positive for more than one RTI. Although a total of 312 women were examined, the full range of specimens was not obtained for some clients, either due to a lack of test supplies furnished by the referral laboratory, or due to the client's refusal to submit a blood sample. Following are the actual counts of each specimen type: 301 for chlamydia, 309 for gonorrhea cultures and 302 serology samples for the Rapid Plasma Reagin (RPR) test. *Chlamydia trachomatis* was the most prevalent RTI found in 10.3% of the tested participants. Only one client tested positive for *N. Gonorrhoeae*, and none of 302 RPR tests were positive for syphilis.

Following is a full list of lab tests performed:

	<u>Koja</u>	<u>Cilincing</u>	<u>Combined</u>
Gram stains	144	168	312
Wet Mounts	144	167	311
Chlamydia tests	143	158	301
Gonorrhea cultures	143	166	309
RPR	139	163	302

Table 6: Prevalences of Confirmed RTIs in the Two FP Clinics, North Jakarta

Reproductive Tract Infections	Koja Hospital N=144*		Puskesmas Cilincing N=168*		Combined Clinics N=312*	
	n	(%)*	n	(%)*	n	(%)*
Candidiasis	11	(7.6)	10	(5.9)	21	(6.7)
Bacterial Vaginosis	8	(5.5)	8	(4.8)	16	(5.1)
Trichomoniasis	13	(9.0)	4	(2.4)	17	(5.4)
Gonorrhea	1	(0.7)	0	(0.0)	1	(0.3)
Chlamydia	18	(12.6)	13	(8.3)	31	(10.3)
Syphilis	0	(0.0)	0	(0.0)	0	(0.0)

* There were 86 RTI/STDs diagnosed in 77 clients. Multiple infections were confirmed in 9 clients. Percentages were calculated on the actual number of tests performed for each infection, at the reference laboratory, RSCM.

The following diagnostic criteria were used to confirm these RTIs:

1. **Bacterial Vaginosis:** Confirmed presence of clue cells visible in the Gram stain. pH was not measured. Amine odor was recorded but not directive of a diagnosis.
2. **Candidiasis:** Confirmed presence of hyphae and or budding yeast visible in the Gram stain.
3. **Trichomoniasis:** Evidence of motile trichomonads seen by clinic site laboratory staff on normal saline wet mount.
4. **Chlamydia:** Confirmed by positive antigen response with ELISA commercial kit.
5. **Gonorrhea:** Confirmed presence of gram negative intracellular diplococci visualized with Gram stain, and positive growth of colonies on culture.
6. **Syphilis:** By use of RPR test, with TPHA re-test for positive findings.

In addition to the three socio-demographic characteristic of marital status, contraceptive use and age, eleven potential risk factors for RTI/STD were also recorded for each study participant during history taking. Table 7 presents the frequency of positives for each risk factor, including age less than 25 as an additional risk factor (15% of the sample). Since 99.7% of the women were currently married and since contraceptive use is not a risk factor per se, these two characteristic are not included in Table 7.

Table 7: Frequency of Positive Risk Findings Obtained During the History Taking

Positive Risk Findings	Koja Hospital N=144		Puskesmas Cilincing N=168		Combined Clinics N=312	
	n	(%)	n	(%)	n	(%)
1. Age younger than 25 years	22	(15.3)	26	(15.5)	48	(15.4)
2. Past history of STD ever	0	(0.0)	5	(3.0)	5	(1.6)
3. More than 1 sex partner in past 3 months	0	(0.0)	2	(1.2)	2	(0.6)
4. Sexual intercourse without condoms	136	(94.9)	153	(91.1)	289	(92.6)
5. Unusual vaginal discharge (bad odor/color)	78	(54.2)	106	(63.1)	184	(59.0)
6. Pain with urination	25	(17.4)	26	(15.5)	51	(16.3)
7. Lower abdominal pain	59	(41.0)	69	(41.1)	128	(41.0)
8. Bleeding after intercourse	14	(9.7)	16	(9.5)	30	(9.6)
9. Genital sores or lumps	14	(9.7)	13	(7.7)	27	(8.6)
10. Sex partner with unusual discharge from penis	4	(2.8)	2	(1.2)	6	(1.9)
11. Sex partner with sores or lumps on penis	2	(1.4)	2	(1.2)	4	(1.3)
12. Sex partner not monogamous	6	(4.2)	2	(1.2)	8	(2.6)

Note: All refer to the past three months before the interview, except #1 and #2

It was noticed that clients had great deficits of information about common STD symptoms. There was a high level of uncertainty among study participants about the implication of penis discharge, lesions and monogamy, for their partners' potential STD status. However, during this study, FP clients did not receive any systematic educational intervention. It was hoped that HCPs would be prompted by the training to follow the flow chart and provide some counseling and education if indicated. However, as discussed earlier, this interaction was undervalued and generally neglected by the HCPs. There remains a great unmet need for information among this target population (FP clients).

Turning to the physical examination, the HCPs were asked to record the presence or absence of 17 separated symptoms and signs. Table 8 presents these findings.

Table 8: Positive Physical Examination Findings in Two FP Clinics, North Jakarta

Positive Physical Examination Findings	Koja Hospital N=144		Puskesmas Cilincing N=168		Combined Clinics N=312	
	n	(%)	n	(%)	n	(%)
1. Skin rashes (includes trunk, palms, soles of feet)	1	(0.7)	0	(0.0)	1	(0.3)
2. Abdominal masses, organomegally, tenderness	1	(0.7)	1	(0.6)	2	(0.6)
3. Inguinal lymphadenopathy	2	(1.4)	0	(0.0)	2	(0.6)
4. External vulvar erythema/ inflammation	11	(7.6)	2	(1.2)	13	(4.2)
5. Urethral discharge	0	(0.0)	0	(0.0)	0	(0.0)
6. External genital ulcers	0	(0.0)	0	(0.0)	0	(0.0)
7. External genital lesions (wart, etc)	0	(0.0)	4	(2.4)	4	(1.3)
8. Vaginal inflammation (speculum)	20	(13.9)	36	(21.4)	56	(17.9)
9. Abnormal vaginal discharge (speculum)	14	(9.7)	90	(53.6)	104	(33.3)
10. Vaginal lesion/ulcers (speculum)	1	(0.7)	5	(3.0)	6	(1.9)
11. Cervical ectopy (speculum)	1	(0.7)	0	(0.0)	1	(0.3)
12. Cervical erythema/inflammation (speculum)	46	(31.9)	55	(32.7)	101	(32.4)
13. Cervical mucopus (speculum)	63	(43.8)	54	(32.1)	117	(37.5)
14. Cervical friability (speculum)	11	(7.6)	8	(4.8)	19	(6.15)
15. Cervical motion tenderness	8	(5.6)	2	(1.2)	10	(3.2)
16. Abnormal uterine size &/or shape	2	(1.4)	1	(0.65)	3	(1.0)
17. Adnexal mass	0	(0.0)	0	(0.0)	0	(0.0)

Note : Data were collected between February 17 and May 9, 1997

Approximately one third of women had signs of abnormal discharge, cervical erythema and cervical mucopus, however, the proportion with abnormal discharge was far higher at the hospital. Four women had genital lesions/warts and six had vaginal lesions/ulcers but none had external genital ulcers.

III.D.2 Parameters Related to Confirmed RTIs

The associations between confirmed RTI diagnoses and client risk factors, symptoms and clinical signs (as measured by Odds Ratio and p-value) are, shown in Table 9. The only statistically significant (borderline, $p=0.09$) association was for cervical mucopus. However, the value of this statistic is limited by the small numbers of women experiencing this symptom.

Table 9: Combined Demographic and Physical Characteristic of FP Clients with and without Confirmed RTIs

Characteristic	Infected n=77 (%)		Uninfected n=235 (%)		OR	P
Age						
<25 y	9	(11.7)	39	(16.6)	0.66	0.29
>25 y	68	(88.3)	196	(83.4)	1	
Marital Status						
Never married	-	-	-	-	-	-
Married	77	(100.0)	234	(99.6)	59.30	0.76
Widowed/divorced	-	-	1	(0.4)	1	-
History (all refer to past 3 month)						
Past history of STD	2	(2.6)	3	(1.3)	2.05	0.43
>1 sex partner	2	(2.6)	0	(0.0)	0.33	0.6
Sexual intercourse without condoms	72	(93.5)	217	(92.7)	1.13	0.82
Unusual vaginal discharge (bad odor/color)	46	(59.7)	138	(58.7)	1.03	0.9
Pain with urination	14	(18.2)	37	(15.8)	1.18	0.63
Lower abdominal pain	33	(42.9)	95	(40.4)	1.11	0.71
Bleeding after intercourse	11	(14.3)	19	(8.2)	1.88	0.12
Genital sores or lumps	9	(11.8)	18	(7.9)	1.61	0.27
Sex partner with unusual discharge from penis	1	(1.4)	5	(2.4)	0.59	0.64
Sex partner with sores or lumps on penis	1	(1.4)	3	(1.3)	1.02	0.98
Sex partner not monogamous	2	(2.8)	6	(2.7)	1.03	0.97
Exam						
Skin rashes	0	(0.0)	1	(0.9)	0.01	0.81
Abdominal masses, enlargement, tenderness	0	(0.0)	2	(1.8)	0.01	0.73
Inguinal lymphadenopathy	0	(0.0)	2	(1.8)	0.01	0.73
External genital inflammation	4	(8.5)	9	(8.1)	1.05	0.93
Urethral discharge	0	(0.0)	0	(0.0)	n/a	n/a
External genital ulcers	0	(0.0)	0	(0.0)	n/a	n/a
External genital lesions	1	(2.2)	3	(2.6)	0.83	0.87
Vaginal inflammation (speculum)	13	(19.4)	43	(23.3)	0.79	0.52
Abnormal vaginal discharge (speculum)	26	(38.2)	78	(42.4)	0.85	0.57
Vaginal lesions/ulcers (speculum)	5	(7.4)	1	(0.5)	14.36	0.02*
Cervical ectopy (speculum)	0	(0.0)	1	(0.5)	0.02	0.76
Cervical erythema/inflammation (speculum)	28	(36.8)	73	(32.2)	1.22	0.47
Cervical mucopus (speculum)	35	(46.1)	82	(35.3)	1.56	0.09*
Cervical friability (speculum)	7	(10.1)	12	(5.9)	1.79	0.24
Cervical motion tenderness	2	(10.5)	8	(11.8)	0.88	0.88
Abnormal uterine size &/or shape	1	(14.3)	2	(13.3)	1.08	0.95
Adnexal mass	0	(0.0)	0	(0.0)	n/a	n/a

Note : n/a = measures of association were not calculated (not applicable) if there were zero values or very low numbers.

OR = Odds Ratio

III.D.3 Validation of Diagnostic Approaches for RTIs

Although, of course, no laboratory test is infallible in determining the presence of each and every RTI, for the purposes of data analysis, the final laboratory results were used as an indicator of actual presence or absence of an RTI. This study provided the opportunity to compare initial clinical (or syndromic) diagnoses, made at the time of the clinical evaluation, with the results of the final confirmatory laboratory reports, of etiologic diagnosis. The results in Table 10 show a 42.6% of concurrence. The disparity represents both over- and under- diagnosing at both clinic sites. The doctors in the FP clinic at Koja Hospital achieved a higher rate of correct initial diagnoses (47.5%) than the midwives at *Puskesmas* Cilincing (36.5%). However in practice it should be noted that the final laboratory results were not used to override the independent judgment of the HCP if there was strong clinical evidence (multiple signs and risk factors) of infection after the history and examination had been completed. Table 10 illustrates the trends observed over the 12 weeks in the prevalence of infection and the level of concurrence between initial and final diagnoses in each FP clinic. This shows that while confirmed prevalence remained steady overall at about 25%, the concurrence rates improved at the hospital but not at the *Puskesmas*.

TABLE 10: Trends and Overall Rates of 1. Prevalence of Any RTI/STD Diagnosis, and 2. Concurrence Between Initial Clinical Diagnoses and Final Laboratory Diagnoses

Actual STD Status	1 st quarter (weeks 1-3)	2nd quarter (weeks 4-6)	3rd quarter (weeks 7-9)	4th quarter (weeks 10-12)	TOTAL
1. Prevalence of any RTI/STD:					
Koja Hospital	11/38 (8.9%)	11/34 (32.4%)	14/38 (36.8%)	9/34 (26.5%)	45/144 (31.3%)
Cilincing PHC	7/33 (21.2%)	6/37 (16.2%)	9/46 (19.6%)	10/52 (19.2%)	32/168 (19.0%)
Combined Sites	18/71 (25.4%)	17/71 (3.9%)	23/8 (27.4%)	19/86 (22.1%)	77/312 (24.7%)
2. Concurrence between clinical & Lab Diagnoses:*					
Koja Hospital	10/36 (27.7%)	15/34 (44.1%)	13/38 (34.2%)	20/33 (60.6%)	58/141 (41.1%)
Cilincing PHC	7/10 (70.0%)	5/7 (71.4%)	15/47 (31.0%)	13/51 (29.4%)	40/115 (34.8%)
Combined Sites	17/46 (36.9%)	20/4 (48.8%)	28/85 (32.9%)	33/84 (39.3%)	98/256 (38.3%)

* 56 out of the 312 women (17.9%) did not receive any clinical diagnosis (3 at Koja Hospital and 53 at Puskesmas Cilincing), therefore concurrence can only be assessed in 256 of the cases.

Notes:

Actual Prevalence of RTI/STD was determined by any RTI/STD diagnoses made at the referral laboratory at RSCM between February 17 and May 9, 1997 (i.e. positive for bacterial vaginosis, candidiasis, trichomoniasis, gonorrhoea and/or chlamydia)

Clinical Diagnoses in general, were based only on history risk assessment and physical examinations.

Concurrence includes (1) matches between positive clinical RTI/STD diagnoses and positive final RTI/STD diagnoses (note: only if the diagnosis was correct, eg. an initial diagnosis of bacterial vaginosis for a final diagnosis of candidiasis was not considered correct, but an initial diagnosis of cervicitis and a final of chlamydia was considered correct); and (2) matches between two negative diagnoses (note: initial recorded diagnoses which had no relation to potential RTI/STD, such as ammenhorrea or a problem with an IUD, were also considered negative diagnoses for our purposes here.)

As previously described, universal etiologic testing for six treatable RTIs was attempted on each client, which allowed the opportunity to compare the initial clinical diagnosis (or *syndromic* diagnosis) with the final laboratory confirmed diagnosis (or *etiologic* diagnosis).

Further analyzing the concurrence and discordance of syndromic and etiologic diagnoses, Table 11 charts the false and correct negatives and positives, using the *etiologic* diagnoses as the “true” diagnoses.

Table 11: Comparative Analysis of Syndromic with Etiologic Diagnoses

Accuracy of initial clinical (syndromic) diagnoses compared with final confirmed laboratory (etiologic) diagnoses	Koja Hospital N=141		Puskesmas Cilincing N=115		Combined Clinics N=256	
	n	(%)	n	(%)	n	(%)
Correct positive diagnoses	14	(9.9)	5	(4.3)	19	(7.4)
False negative diagnoses	54	(38.3)	59	(51.3)	113	(44.1)
Correct negative diagnoses	44	(31.2)	35	(30.4)	79	(30.9)
False positive diagnoses	29	(20.6)	16	(14.0)	45	(17.6)

*Note:

56 out of the 312 women (17.9%) did not receive any clinical diagnosis (3 at Koja Hospital and 53 at Puskesmas Cilincing), therefore concurrence can only be assessed in 256 of the cases.

Correct positive = syndromic and etiologic diagnosed agreed - both were positive

False negative = syndromic diagnosis was negative but the correct (etiologic) diagnosis was positive

Correct negative = syndromic and etiologic diagnosis agreed - both were negative

False positive = syndromic diagnosis was positive but the correct (etiologic) diagnosis was negative

A total of 19 clients from both clinic sites (14 from Koja and 5 from Cilincing), had correct initial positive diagnoses. A total of 79 clients from both clinic sites had correct “Normal” (negative) diagnoses. This combined diagnostic accuracy rate yielded a total of 98 clients (38.3%) who were correctly diagnosed at the time of the initial clinical evaluation.

A higher number of clients received false syndromic diagnoses (113+45=158) than received correct syndromic diagnoses (19+79=98). The most likely diagnosis was a false negative (44.1%).

During the first quarter of the study, there was a high degree of reluctance by the midwives to render a clinical diagnosis without laboratory confirmation. The midwives had a much higher rate of making no initial diagnosis (53/168 or 31.5% of cases) compared to their physician counterparts at the hospital clinic (3/144 or 2.1% of cases). Compared to the doctors, the midwives also had a lower rate of achieving a correct clinical diagnosis (41.1% vs 34.8%) when it was attempted. Overall, 56 women (17.9%) did not receive an initial diagnosis.

After this trend of non-diagnosis by the midwives was observed during the first two weeks, various training and coaching activities ensued to encourage the midwives to make an initial clinical diagnosis. As a group, the midwives started the study with less diagnostic experience. This lack of experience, along with all HCPs struggle to make an accurate initial diagnosis, motivated the development of an RTI/STD Case Management Manual (see Appendix L). This training manual utilized the exact case management protocol (see Protocol VI, Appendix D) previously distributed during the initial "Round Table Discussion" but each RTI protocol was accompanied with photographs to provide a visual example for future reference. The photographs were reproduced from slides previously used during an additional training on "RTI/STD case management" held March 21st for the staff of Puskesmas and 25 March for hospital staff.

Same day accurate clinical diagnosis could be facilitated by prompt and accurate microscopy results. Comparisons of the sensitivity and specificity of on-site lab results with final diagnoses are presented in Table 12 and 13, for bacterial vaginosis and candidiasis, respectively.

Table 12. Sensitivity and Specificity of Clinic Site Gram Stains in Detecting Bacterial Vaginosis

On-site Lab Tests	Confirmation Lab Results		Total
	+	-	
+	9	29	38
-	7	267	274
Total	16	296	312

The prevalence of Bacterial vaginosis in this population : $16/312 = 5.13\%$

Reliability of local clinical labs for detecting Bacterial vaginosis :

Sensitivity : $9/16 = 56.2\%$

Specificity : $267/296 = 90.2\%$

Positive Predictive Value (PPV): $9/38 = 23.7\%$

Negative Predictive Value (NPV): $267/274 = 97.5\%$

Table 13. Sensitivity and Specificity of Clinic Site Gram Stain in Detecting Candidiasis

On-site Lab Tests	Confirmation Lab Results		Total
	+	-	
+	9	15	24
-	12	276	288
Total	21	291	312

The prevalence of candidiasis in this population : $21/312 = 6.7\%$

Reliability of local clinical labs for detecting candidiasis :

Sensitivity : $9/21 = 42.8\%$

Specificity : $276/291 = 94.8\%$

PPV : $9/24 = 37.5\%$

NPV : $276/288 = 95.8\%$

Sensitivity and specificity were calculated comparing the clinic site gram stain microscopy results with the results from the same gram stain read by referral laboratory at *RSCM*. Comparison could not be performed for wet mounts to screen trichomonads, since these had to be performed on site only (before the trichomonads died). Also the comparison was not made for chlamydia or gonorrhea, as these were only tested for at the referral lab. We can see that sensitivity and positive predictive values of these initial on-site diagnoses were limited for both bacterial vaginosis and candidiasis.

A customary practice of the referral laboratory, independent of this study, was to include "Non-Specific Genital Infection" (or NSGI) as a laboratory diagnosis, based on leukocytosis as indicated by more than 30 polymorphonuclear leucocytes (PMNs) per HPF, both on vaginal and cervical Gram stains. Previous RTI/STD screening conducted by some of the national working group have used an elevation of PMNs as a prevalence marker in RTI/STD studies without performing cervical cultures for *N. gonorrhoeae* or specific testing for *C. trachomatis* (Pratomo, Nasrin, et. al., 1995). However, a study in Zaire stated that the presence of leukocytosis >10 PMN/hpf was not a good predictor of actual STD diagnosis (Vuylsteke, Laga, Alary, et.al., 1993). Following the universal literature on RTI/STDs, the presence of cervical leukocytosis was not assigned a diagnostic significance in this study. The presence of increased PMNs on the cervix was also not interpreted as diagnostic of an RTI or STD in this study, since universal screening for both gonorrhea and chlamydia was performed. Since the data on elevated PMNs are available, however, they are presented in Table 14 in comparison with the lab diagnoses. In brief, Table 14 shows that 36.2% (113) of clients were identified as having cervical leukocytosis, but 70.8% of them (80/113) had negative final lab results.

Table 14: Cervical Leukocytosis and Final Laboratory Findings for RTI/STDs

Gram stains indicating cervical leukocytosis: cervical PMNs >30/hpf:	Koja Hospital		Puskesmas Cilincing		Combined Clinics	
	n/N	%	n/N	%	n/N	%
Elevated PMNs among all clients	48/144	(33.3)	65/168	(38.7)	113/312	(36.2)
Positive lab test for Chlamydia among clients with elevated PMNs*/**	11/48	(22.9)	8/65	(12.3)	19/113	(16.8)
Positive lab test for any RTI/STD among clients with elevated PMNs***	11/48	(22.9)	6/65	(9.2)	17/113	(15.0)
Positive lab test for Chlamydia among clients with normal PMNs	7/96	(7.3)	5/103	(4.8)	12/199	(6.0)
Positive lab test for any RTI/STD among clients with normal PMNs	16/96	(16.7)	13/103	(12.6)	29/199	(14.6)

PMN = Polymorphonuclear Leucocytes

hpf = high power field

* 11 clients did not have chlamydia tests performed.

** 1 client was positive for both gonorrhea and chlamydia

*** i.e., bacterial vaginosis, trichomoniasis and/or candidiasis (1 client had more than 1 RTI).

The performance of the amine odor (“whiff”) test was originally recommended at the beginning of the study when wet mount microscopy was the only microscope test included in the routine. With the adoption of a combined Gram stain wet mount microscopy procedure, as recommended by the advisory board member who was the chief of the referral laboratory at Cipto Mangunkusumo Hospital, the method of performing and evaluating the whiff test was transferred from the HCPs to the Ras. At the Koja hospital, 57 (45.2%) of 144 “whiff” tests were judged as positive, but only eight clients had confirmed clue cells on their Gram stains. Six of these eight clients had positive “whiff” tests. Factors that contributed to this low sensitivity and specificity included the manner that the test was performed and the inexperience of both the HCPs and RAs in integrating this subjective test into the performance of routine specimen collection.

Inaccurate clinical diagnoses can lead to inappropriate prescription. The impetus to promote a same day accurate diagnosis came from the fact that many RTI/STDs will never be treated if treatment depends on the client returning to the clinic to receive the laboratory results. Follow-up efforts to reach clients who typically do not have telephones or street addresses are a costly and unrealistic option for delivery of treatment. As described in Table 15, the medications that were prescribed as a result of this study’s encouragement to make same day clinical diagnoses included a broad range of treatment. Some drugs were given in accordance with the national treatment

guidelines and others were inappropriate and reflected long standing habits of drug selection by the provider. While it is a possibility that some of these clients with "negative" laboratory results may have benefitted from some of the treatments, it indicated a pattern of "over treatment". We can see that over the course of the study, this over-treatment declined at the hospital but not at the *Puskesmas*.

Table 15: Number of Prescriptions Written at Initial Clinical Evaluations for Clients with Final Negative Laboratory Diagnoses

Prescriptions	Koja Hospital			Puskesmas Cilincing			Combined Clinics		
	Week 1-4	Week 5-8	Week 9-12	Week 1-4	Week 5-8	Week 9-12	Week 1-4	Week 5-8	Week 9-12
Metronidazole	11	2	8	0	13	10	11	15	18
Doxycycline	9	5	6	0	0	0	9	5	6
Thiamphenicol	5	4	1	0	0	0	5	4	1
Albaryl	0	0	1	25	29	16	25	29	17
Vitamins	2	2	1	0	0	0	2	2	1
Antifungals*	0	3	2	0	1	11	0	4	13
Ciprofloxacin	4	0	0	0	1	0	4	1	0
Amoxicillin	2	1	0	0	0	0	2	1	0
Tetracycline	0	2	0	3	0	0	3	2	0
Total Prescriptions	33	19	19	28	44	37	61	63	56
Total Clients with Negative Diagnosis	38	29	32	39	50	47	77	79	79
% Receiving unnecessary prescription	86.8	65.5	59.4	71.8	88.0	78.7	79.2	79.7	70.9

*Antifungals include Diflucan, Canesten vaginal suppositories and Miconazole cream.

The fact that the study pre-packaged and provided approved treatments, no doubt, raised the level of compliance and accuracy when selecting an approved medication. However, this did not eliminate incorrect choices completely, such as selecting Metronidazole to treat candidiasis.

The history of using Thiamphenicol for both Gonorrhea and Chlamydia was accompanied by a strong belief by some of the doctors that it worked well for cervical bacterial infections. Some physicians expressed concerns that a single dose therapy such as Ciprofloxacin could not cure a gonorrhea infection in women. Another long standing prescribing habit in Indonesia that is reinforced by the public health system is prescribing antibiotics for a three day regimen. Thus, suggested changes in the length of time a drug is given to either a shorter single dose or a seven day regimen, was not immediately acceptable to HCPs.

III.D.4 Observations of HCP/Client Interactions

Every one of the 312 clinical evaluations was observed by a trained RA, who immediately recorded her observations on a coded observation form (see **Appendix G**). At first the HCPs were skeptical and guarded about being observed. The RAs were young, female college graduates from the field of public health. They had all been trained to be neutral and non-threatening. They had also been very involved in the writing of the protocols and study instruments. In addition they had received much RTI/STD training during the pre-intervention portion of the study. They all intrinsically possess characteristics that make them appealing team members such as youth, enthusiasm and warm good natures. The final style of the relationship between the HCP and the RAs was similar to that of a benevolent "boss" to a friendly junior "assistant". The HCPs were aware of the knowledge and experience each of the RAs possessed.

During the initial "Round-Table Discussion" training intervention in January, the HCPs expressed reluctance towards filling out the clinical evaluation flow sheet (**Appendix A**). To promote cooperation, the project manager agreed to let the RAs function as data recorders for the HCPs. At the hospital, this assistance was limited to the risk assessment/history portion. The doctors filled out the physical exam finding themselves. At the health center, partly due to higher case load, the RAs also completed the physical exam portion, filling in to the findings as assessed by the midwives. However, in the last month of the study, when the physician medical director, and a visiting supervisory midwife started performing evaluations at the health center, the midwives were more likely to fill this out themselves. The progression of the RAs role as neutral observer to helpful assistant was influenced by the performance of the HCPs. For some HCPs with weaker clinical skills, especially among midwives at the health center, the roles were often reversed, placing the RAs in the position of mentors to HCPs who often sought their advice on, "what do you think this is?" or, "where should this go?" It should also be mentioned that during the course of the study, at both the hospital and the health center, trainee midwives were sometimes brought in to complete the history portion, instead of the RAs.

Even with the supportive help and watchful eye of the RAs at each HCP/client interaction, the HCP's were not compliant in performing or completing the final teaching/counseling component of the RTI/STD evaluation procedure. This has been previously addressed as a very undervalued component of client care. Table 16 describes the frequency with which targeted HCP behaviors were observed. The check list of behaviors is based on the clinical protocols. The desired behavior were repeatedly reinforced in each training in a variety of presentations, both written and oral. The minimal desired behaviors were finally written in the self assessment checklist, as previously discussed (**Appendix F**) which was given to each HCP as a guide to what was expected of them. The observation tool covers optimum history taking, client teaching, partner intervention and infection control practices, and directly mirrors the clinical evaluation tasks. Of interest is the frequency with which the HCPs would direct the RAs to record a negative result on the evaluation form for a task that was not performed, such as a bimanual examination. In cases where HCPs completed the physical exam section themselves, HCP/client interaction observation records can serve as a testimony to what was actually completed, and what was recorded as being completed.

Table 16: Observed Frequency of HCP/Client Interaction Behaviors

Behavior Observed	Koja Hospital		Puskesmas Cilincing		Combined Clinics	
	N=144		N=168		N=312	
	n	(%)	n	(%)	n	(%)
1. Introduction						
Smiles and greets client respectfully	5	(3.5)	104	(61.9)	109	(34.9)
Asks client's reason for coming to clinic	144	(100.0)*	101	(60.1)	245	(78.5)
2. Review of Current Status/Condition						
Current contraceptive method	144	(100.0)	167	(99.4)	311	(99.7)
Last menstrual period	143	(99.3)	164	(97.6)	307	(98.4)
Current medications	124	(86.1)	137	(81.5)	261	(83.7)
Allergies to medicine and latex	139	(96.5)	160	(95.2)	299	(95.8)
OB history and potential of current pregnancy	140	(97.2)	151	(89.9)	291	(93.3)
3. Introductory Education						
Reviews RTI/STDs that effect women's health	0	(0)	1	(0.6)	1	(0.3)
Reviews 7 birth control method & makes a connection to STD protection	0	(0)	1	(0.6)	1	(0.3)
4. Review of Reproductive Health History Items						
Previous history of STD	144	(100.0)	161	(95.8)	305	(97.8)
More than 1 sex partner in past 3 months [@]	144	(100.0)	166	(98.8)	310	(99.4)
Sexual intercourse without condoms	144	(100.0)	167	(99.4)	311	(99.7)
Unusual vaginal discharge	144	(100.0)	167	(99.4)	311	(99.7)
Pain with urination	144	(100.0)	167	(99.4)	311	(99.7)
Lower abdominal pain	143	(99.3)	167	(99.4)	310	(99.4)
Bleeding after intercourse	144	(100.0)	167	(99.4)	311	(99.7)
Genital sores or lumps	143	(99.3)	167	(99.4)	310	(99.4)
Sex partner with unusual discharge from penis	142	(98.6)	166	(98.8)	308	(98.7)
Sex partner with sores or lumps on penis	143	(99.3)	165	(98.2)	308	(98.7)
Sex partner not monogamous	143	(99.3)	164	(97.6)	307	(98.4)
5. Infection Control						
Washes hands before exam	11	(7.6)	47	(28.0)	58	(18.6)
Uses visibly clean instruments	144	(100.0)	166	(98.8)	310	(99.4)
Puts on new/ disinfected glove before pelvic exam	143	(99.3)	103	(61.3)	246	(78.8)
If rectal exam done, changes glove prior to rectal	0	(0.0)	0	(0.0)	0	(0.0)
Washes hands after removing glove	25	(17.4)	44	(26.2)	69	(22.1)
6. Physical Exam Steps Performed						
Abdomen/skin	144	(100.0)	15	(8.9)	159	(51.0)
Inguinal palpation	144	(100.0)	16	(9.5)	160	(51.3)
Visual external genitalia	144	(100.0)	112	(66.7)	256	(82.1)
Speculum exam	144	(100.0)	166	(98.8)	310	(99.4)
Bimanual exam	18	(12.5)	70	(41.7)	88	(28.2)

* With assistance from hospital midwives who screen clients and always asked

@ All in this section refer to recall period of the past three months, except the first item

Table 16: Continued

Behavior Observed	Koja Hospital		Puskesmas Cilincing		Combined Clinics	
	Yes n	(%)	Yes n	(%)	Yes n	(%)
7. Counseling						
Explains the diagnosis to client	7	(6.8)	1	(1.1)	8	(4.1)
If diagnosed RTI positive, explains the disease transmission to client	11	(25.6)	0	(0.0)	11	(14.9)
If diagnosed STD positive, makes verbal plan for partner treatment & evaluation	8	(24.2)	0	(0.0)	8	(9.5)
8. Instruction for future STD prevention						
Discusses abstinence	9	(21.4)	1	(11.1)	10	(19.6)
Discusses monogamy	0	(0.0)	0	(0.0)	0	(0.0)
Discusses Condoms	2	(4.8)	0	(0.0)	2	(4.0)
Offers condoms	1	(2.4)	0	(0.0)	1	(2.0)
Provides instructions for condom use	0	(0.0)	0	(0.0)	0	(0.0)
9. Advice on treatment						
Name of medication	37	(40.6)	39	(61.9)	76	(49.4)
How often to take the drug	49	(54.4)	32	(51.6)	81	(53.3)
Length of drug use	39	(42.8)	29	(47.5)	68	(44.7)
Take entire prescription	23	(25.6)	0	(0.0)	23	(18.4)
Potential side effects (alcohol & pregnancy)	2	(2.2)	24	(39.3)	26	(17.2)
Assesses client's understanding of instructions	1	(1.1)	4	(11.7)	5	(4.1)
10. HCP demonstrates positive communication skills						
Open and friendly	63	(94.0)	167	(100.0)	230	(98.3)
Uses understandable terminology	2	(40.0)	143	(99.3)	145	(97.3)
Conveys interest in the client	2	(50.0)	165	(100.0)	167	(98.8)
Listens carefully	4	(100.0)	79	(98.8)	83	(98.8)
Is open to the client's questions	4	(80.0)	58	(96.7)	62	(95.3)

Note : In this continuation of Table 16, unlike the first portion, denominators vary widely for various reason, such as exclusions based on diagnosis, HCP/Client interactions that did not happen or were not observed, and some inconsistencies in the methods of recording observations among RAs.

The HCPs first task of making a good impression and establishing a rapport with the FP client at the beginning of the clinical evaluation was observed by any demonstration of smiling and greeting the client respectfully. The midwives, were able to achieve this goal more often than their physician counterparts (61.9% vs. 3.5% respectively). Although the doctors were rated as achieving a 100% threshold of screening the client's reason for visiting the clinic, this task was delegated to and performed by the nursing staff who automatically documented the chief complaint or reason for visit, in an intake before the client actually sees the doctor (Table 16, section 1). Five separate inquiries about the current status of contraception, menstruation, medications, allergies, and potential pregnancy were similarly achieved by both groups of HCPs at a level of 80-100% (Table 16, section 2).

Both groups of HCPs ignored the protocols of providing preliminary health education on the existence of RTIs and their connection to selected contraceptive methods (see Table 16, section 3). This step should have preceded the performance of an STD risk assessment, not just to educate the client, but to also allow the client more time to adjust to the concept of a frank discussion of STDs, as well as increasing the opportunity for the HCP to demonstrate his or her particular merits as a professional deserving of the client's trust, before the invasiveness of a sexual STD risk assessment is performed. This step occurred with only one client (by a midwife).

The entire eleven question sexual history was performed 95-100% of the time in both clinics. However, as described above, the history was actually obtained almost exclusively by the RA's and sometimes by trainee midwives, but not by the primary HCP. Doctors in the hospital would review affirmative history responses with the patient for greater diagnostic clarification.

Five distinct infection control behaviors were itemized with only four behaviors ever being observed since no rectal exam were actually performed during the study. Rates of hand washing before (18.6%) and after (22.1%) performing a pelvic examination were quite low, though higher for the midwives (Cilincing) than the doctors (Koja). Out of the 312 observed examinations, visibly clean instruments were used in all but 2 (0.6%) of the exams. Midwives at the Puskesmas were less consistent than the doctors at Koja in using new or disinfected gloves prior to each pelvic examination (61.3% vs 99.3%). Prior to the study, the *Puskesmas* regularly re-used gloves after disinfecting them. The project purchased disposable examination gloves for this clinic. In the opinion of the observing RA's, one of the midwives felt reluctant to throw away "perfectly good" gloves and would re-cycle them by simply washing her hands prior to examining the next client.

The pelvic examination most often included a speculum examination (99.4%). Other components of the physical exam were performed much less regularly especially the bimanual exam (28.2%) (see Table 16, section 6).

As discussed early, regarding the low value placed on counseling and communication, Table 16 shows that rates of performing these behaviors were much lower than for physical exam procedures. In only 14.9% of RTI positive cases was the disease transmission explained to the client, and in only 4% of cases were condoms discussed. Only one client was offered condoms (2%) and no client received instruction on condom use.

With regard to discussion of medication Table 16, section 9 overall about 50% of the time, HCPs mentioned the name of the drug and described the regimen. Only 18.4% of the time was it emphasized that the entire prescription must be taken (never mentioned at the Puskesmas), and doctors more often neglected to warn of side-effects (2.2% vs. 39.3% among midwives at Cilincing). HCP's almost never bothered to assess the clients' understanding of the instructions (4.1%). The final section of Table 16 presents especially subjective evaluations by the RAs of the HCP's positive manner and openness. Overall, the results were very high (all, item over 95% positive), with lower rates among doctors (at Kojja) than midwives (at Cilincing) (see Table 16, section 10).

However, overall for this observation evaluation tool, the highly subjective nature of many of the items, along with the fact that the RA's for each site were never switched and the tool was not tested for interater reliability, limits the reliability and value of these data.

Proportions of RTI/STD Positive Clients and Partners Treated

The anticipated problem of failing to treat many RTI cases due to requiring clients to return to the clinic for result of the final laboratory results, was an expected effect of the decision to perform universal etiologic RTI diagnosis. All those who did return received appropriate treatment. No inappropriate (wrong medication) treatment was given. This is because it was decided to prepackage and label all medications for the study and also, in all cases it was the research assistants who selected the packages of medication based on the confirmatory diagnosis. Thus, we can not assess HCP compliance with treatment guidelines (objective 5). An analysis of return clients visits and appropriate treatments is presented in Table 17 and 18.

Table 17: Status of Client Treatment for Non-Sexually Transmitted RTIs

RTIs confirmed in both clinic sites that are non-sexually transmitted:	Appropriate client treatment		Client not treated*	
	n	(%)	n	(%)
Candidiasis (n=21)	16	(76.2)	5	(23.8)
Bacterial Vaginosis (n=16)	11	(68.8)	5	(31.2)
Total (n=37)	27	(73.0)	10	(27.0)

* Client had not returned to clinic for final lab results and treatment as of two weeks after study completion on 5/9/97.

Table 18: Status of Client and Partner Treatment for RTIs Sexually Transmitted(STDs)

RTIs confirmed in both clinic sites that are sexually transmitted:	Appropriate client treatment (PI6)**		Client not treated*		Appropriate partner treatment (PI7)**		Partner not treated*	
	n	(%)	n	%	n	%	n	%
Trichomoniasis (n=17)	12	(70.6)	5	(29.4)	9	(53.0)	8	(47.0)
Gonorrhea (n=1)	1	(100.0)	0	(0.0)	0	(0.0)	1	(100.0)
Chlamydia (n=31)	23	(74.2)	8	(25.8)	18	(58.1)	13	(41.9)
Total (n=49)	36	(73.5)	13	(26.5)	27	(55.1)	22	(44.9)

* Client had not returned to clinic for final lab results and treatment as of two weeks after study completion on 5/9/97.

** These were calculated according to WHO formulas PI6 and PI7, as shown. Since only two clients received advice on condoms, PI7 was devised to reflect partner treatment alone.

$PI6 = \frac{\text{No. of women with STD assessed and treated in an appropriate way}}{\text{No. of women with STD confirmed by referral lab}} \times 100\%$
$PI7 = \frac{\text{No. of women with STD who received basic advise on condoms and partner treatment}}{\text{No. of women with STD confirmed by referral lab}} \times 100\%$
<i>source: WHO/GPA/TCO/SEF/94.1-section 2, p.1</i>

For non-sexually transmitted RTI's, Table 17 shows that approximately one quarter (26.5%) went untreated due to the client's failure to return as of two weeks after the study ended. The rate was approximately the same for STDs 73.5% (36/49 women) received appropriate treatment. However the rate of partner treatment was much lower; just over half of partners of women with STD's received treatment (55.1% or 27 partners). This leaves 9 treated women (36-27) exposed to the possibility of reinfection from her partner. Rates were approximately equal for treatment of chlamydia and trichomoniasis. The single case of gonorrhea was treated but the partner was not.

Broken down by clinic site, at Koja Hospital the doctors provided appropriate treatment for 84.4% of cases but the midwives did so only 52.9% of the time. This means simply that the Cilincing clients more often failed to return and perhaps the midwives were less firm in their explanation of the need for a follow-up visit.

III.D.5. Existing RTI/STD Reporting and Recording Practices

A six month retrospective medical review showed that it is an essentially non-existent practice to categorize gynecological problem with disease specific diagnosis. In review of chronological register of out-patient visits to combined MCH/FP clinics in the Koja Hospital, there were no recorded reports of trichomoniasis, bacterial vaginosis, candidiasis, gonorrhea, chlamydia, or syphilis between July 1st and December 31st, 1996. There were descriptive syndromic assessment that could very well be sentinels of RTI/STDs. There were 114 diagnoses of vaginitis, 102 of discharge and 67 of adnexitis, 14 of cervicitis, 1 of cervical cancer and 2 of genital lumps.

The actual medical records, for each client who was diagnosed with one of the above diagnoses, were reviewed to see if the individual medical recording had a consistent or more precise diagnosis. The records were also reviewed to monitor diagnostic and treatment modalities. In none of the actual records reviewed were there discovered any more etiologically precise labels. A majority (125) of the prescription written in these medical records were illegible and the hospital did not have a computer based formulary to double check actual prescribing practices. In no cases was there any indication that the individual clients were educated on their diagnosis or given instructions for future disease prevention, or for partner treatment.

The six month retrospective medical review of Puskesmas Cilincing did not have a chronological daily clinic visit registration report as Koja Hospital. The medical reports were completed by the HCP, who in turn transferred data to a monthly report for disease. This report only includes the client's age and disease, and no client identifiers that would allow for the retrieval of an individual medical report to survey diagnostic, treatment and education interventions. The only RTI/STDs included in the report are gonorrhea and syphilis. For the entire six month period between 1 July 1996 and 31 December 1996, there were only 3 reported cases of gonorrhea and zero cases of syphilis.

IV. Conclusion and Recommendations

A deliberate choice to limit the number of variables used to perform risk assessment was made to promote a feasible standard of history taking for HCPs who were also being asked to perform more client care in their busy practices. The sociodemographic picture of the family planning clients studied in both clinics is strikingly homogenous. The marital status of clients was 97.3% married, and the age of the majority of studied women (264 or 85%) was 25 or over. The most popular contraceptive methods are injectable hormones (36.9%), IUDs (26.0%) , and pills (23.0%).

The risk assessment history revealed that past histories of STDs (1.6%) and recent multiple partner exposure (0.6%), were rarely reported. Almost all women (97.4%) reported the perception that their partner was monogamous. Despite a low rate of condom use as a contraceptive method (2.6%), a slightly higher percentage (7.4%) of women used condoms during sexual intercourse in addition to other contraceptive methods.

Five inquiries were made regarding the woman's self-reported symptomatology in three months prior to the exam. **Fifty nine percent of women reported having abnormal vaginal discharge** (bad odor, itching or discolored), 41% complained of lower abdominal pain, 9.6% had experienced post-coital bleeding in the past three months, 8.6% reported genital sores or lumps in the past three months, and 6.3% reported pain with urination. The woman's perception of her partner's manifestation of RTI symptoms was very low at 1.9% for discharge from the penis and 1.3% for sores or lumps on the penis.

From the clinical evaluations of the 312 clients , the HCPs reported that 37.5% had cervical mucopus, 33.3% abnormal vaginal discharge, and 32.4% cervical erythema. Due to the long turn around time for all laboratory reports, except the saline wet mount exam for trichomonads, performed on site, most clients left the FP clinic with an unconfirmed clinical diagnosis and were advised to return to the clinic in approximately two weeks for the final laboratory diagnosis and treatment. In view of the likelihood that some women would not return for follow-up visits, HCPs were encouraged to attempt to provide a correct initial clinical diagnosis and treatment (including treatment for partners) prior to the woman leaving the clinic. This concentration on providing early and correct clinical diagnoses and treatment plans was also made in accordance with national and international STD case management recommendations to interrupt the chain of infection by providing treatment for treatable infections at the earliest possible point with the ultimate goal of reducing STD associated mortality and morbidity (Daili et al., 1996 and WHO, 1994).

Overall, this target group of low-income housewives was a relatively low-risk group for STDs. However, they self-reported a high rate of genital symptomology, especially abnormal discharge (59%). HCPs detected signs of infection by speculum examination in roughly one third of the evaluated clients. Final laboratory evaluations confirmed a total prevalence rate of 24.7% for any RTI/STD among the 312 evaluated clients. Chlamydia was the most common infection (10.3%). The prevalence of the sexually transmitted infections (trichomoniasis, chlamydia and gonorrhea) exceeded the rate of non-sexually transmitted RTIs (candidiasis and bacterial vaginosis) among the participants (16% vs. 11.8%, respectively). Clearly, this "low-risk" group has a need for RTI/STD services that remains unmet.

The initial (*syndromic*) clinical diagnoses based on the history and physical examination; were compared to the final (*etiologic*) laboratory results. None of the twelve variables collected during the history, or the seventeen physical examination components, were sensitive or specific enough to accurately predict the presence of these 86 etiologically confirmed infections. The combined rate of correct initial clinical diagnoses (either negative or positive) for both doctors and midwives was 38.3%.

The result of such a large percentage of inaccurate clinical diagnoses contributed to inappropriate treatment and missed treatment opportunities. The wrong clinical diagnosis allows treatable infections to persist and in turn be passed on to other sexual partners. Furthermore, the cost of incorrect diagnosis for women who are not appropriately treated, in terms of consequences to their health and well being, is in itself a compelling reason to direct continued efforts to effectively identify, treat and counsel women with treatable RTIs. As described by Over and Piot (1996), health care intervention can achieve benefits in two distinct ways. The simplest intervention is one that cures or prevents the infection of some people once. The second type of intervention is a sustained one that alters either the sexual behavior of the population or the disease specific transmission and duration parameters. These two interventions of **appropriate treatment and risk reduction education** are two functions that are within the scope of services that can be feasibly provided by both FP clinics in this study. An improvement in delivering these services to each client should be made.

This study revealed that education for STD risk reduction is a consistently neglected component of FP client care, even after initial and follow-up HCP training. The discussion and offering of condoms should be included in every treatment plan for clients with a confirmed STD as well as for clients who do not use a barrier method during sexual intercourse and are not certain if they are in an infection-free, sexually monogamous relationship. This intervention for clients is analogous to training HCPs in universal precautions, such as wearing gloves before performing pelvic examinations. This promotion of education and condoms only occurred in two of the observed

HCP/client interactions during the twelve week observation period. FP clients with the greatest need for intervention are certainly those clients who are found to have a confirmed STD. By definition, these infected clients are members of a core group for STD transmission, including HIV.

Following are recommendations addressing the various areas of study:

1. Improve risk assessment and counseling

If HCPs are too busy to perform the task of risk assessment and counseling, and are willing to delegate them to a designated interviewer, resources should be secured to provide appropriate staff for programs that want to include RTI/STD case management. Even though risk assessment is not highly specific for the discovery of RTI/STD's, it is critical for making an initial clinical judgement about suspected gonorrhoea and chlamydia, which at this time are only reliably diagnosed by etiologically specific testing. Making a risk assessment requires sensitive questioning of the client. By delegating the risk assessment to non-medical personnel, the HCP subjects the client to scrutiny by more people, which may limit the collection of complete information if the client feels threatened by this. If the sequence of an evaluation starts with a history performed by non-medical personnel, followed by physical assessment and specimen collection from the medical personnel, and concludes with education/counseling from non-medical personnel, care for the client is fragmented. A more logical point to delegate the labor from "busy" doctor/midwives to trained disease intervention specialists, is for the final education/counseling portion of a clinical evaluation.

For history taking, basic communication skills need to be repeatedly reinforced for all personnel who obtain histories, including how to open-ended questions and how to probe for relevant responses. For example, the high rate of claimed abdominal pain (41%) should discriminate between normal (menstrual) and potentially pathogenic etiologies. Collection of a risk assessment also involves time management issues, and willingness of an HCP to investigate intimate aspects of a client's private life. In order to make the HCP more client oriented, additional strengthening of HCP communication skills in performing risk assessments should be a focus in continued studies in Jakarta.

2. Improve Partner Treatment

The rate of providing partner-treatment for clients with confirmed STDs must increase from the 55% attained in this study/intervention. Following is a recommended hierarchy of health care intervention priorities for partner treatment aimed at breaking the chain of transmission for treatable STDs:

- a. educating & supporting each index client in choosing the best method of partner(s) notification and treatment;
- b. providing the partner with medication for a treatable STD;
- c. physically examining the partner to confirm infection and evaluate for other infections that may coexist;
- d. Providing the partner with STD education and counseling for future risk reduction.

Confirming a concurrent partner infection is not always reliable or possible, so examination of the partner should never be a prerequisite for providing treatments. Education and counseling for risk reduction are important services to offer interested partners of clients, but they too should not be used as a prerequisite for treatment

Additional strategies to provide follow-up outreach to clients and partners who do not receive concurrent treatment for confirmed STDs should be explored. Previous work in Haiti included a verbal plan with the index client to have a health outreach worker contact partners if they did not present for treatment (Desmormeaux, 1996). Requirements to make the partner present to the clinic to obtain treatment should be waived in favor of supplying the index client with dual partner treatment and instructions for safe use.

3. Laboratory Testing

In general it makes sense not to universally screen for infections that have minimal or no incidence in the studied population. In order to select RTIs for universal screening, baseline data on incidence or prevalence of various infections must be available. In this case, the prevalence rates of 0% for syphilis and 0.3% for gonorrhea, that were found, do not justify universal testing of all clients in family planning clinics, in this community for these two STDs.

Another important recommendation also aimed at cost effectiveness is, "Do not perform tests that have poor predictive value of actual RTIs". Cervical leukocytosis (increased PMNs) was not found to be associated with increased rates of chlamydial infections. Since chlamydia was the RTI with the highest prevalence (10.3%), it should continue to be screened for to increase the understanding of this infection that had never been previously recognized in the target population. Screening for chlamydial infections should adhere to the protocol established in the national guidelines (CDC and Prevention, 1993). HCPs should be provided with follow-up reports of the results of their work demonstrating a higher prevalence of chlamydial infections than any of the other tested RTIs. However, the laboratory test for chlamydia is prohibitively expensive and facilities do not exist yet in the laboratories of primary health centers. Experts from

the national STD working group suggested to use "increase of PMNs over 30" as a proxy indicator for providing treatment of chlamydia. In the international literature, the test for increased PMNs was not recognized as a valid predictor of chlamydia. Therefore, it is necessary to investigate further the association between an increase of PMNs and chlamydia infection.

Similarly the "whiff test" performed by mixing KOH with vaginal discharge, should be discontinued. If this is performed at all, it should be performed according to the study protocols on a glass slide with an immediate "whiff", not on the speculum. Since exact data are not available for the sensitivity and specificity of this test (Wentworth, 1991), and the results in this study had a low sensitivity and specificity when compared to the microscopic clue cell test, it would be reasonable to eliminate this step in the clinical evaluation for future studies.

Replace Gram stains with wet mount microscopy for more rapid evidence of the presence or absence of candidiasis, bacterial vaginosis and trichomoniasis. The results of the wet mount should be available before the client leaves the clinic. This may involve the procurement of a microscope if unavailable, and a trained staff person to read the slides. The preliminary results of wet mount microscopy can be used by the HCP to interpret the common (32.4%) yet inconclusive finding of cervical erythema, which can be related to a fungal and protozoal infection as well as a bacterial infection. At a minimum, with "wet mount", more clients should be able to leave the clinic with a correct diagnosis for the cause of vaginitis.

Finally the outmoded practice of applying any disinfectant to the vulva or vagina before inserting a speculum should be discontinued. It is an unnecessary procedure for a pelvic exam and may interfere with the ability to detect infections from wet mounts and also compromise endocervical samples.

4. HCP training and behavior change.

As expected, HCP behavior change did not take place after a single training event. An example of the prolonged and repeated efforts required to change HCP practices was observed by one of the research assistant during the first three weeks the study. Experienced physicians would ask her where and how specimens for lab testing should be obtained. Such a request may represent not only a knowledge deficit, but also the need for reassurance that they were complying with the protocols of the study. Considering that these experienced physicians had received two 1- hour classes focusing on this topic during the initial "Round Table Discussion" session, a third competency based training for specimen collection on pelvic models, followed by on-site supervised practice with volunteer clients, their need for repeated coaching during the first three

weeks of the study demonstrates the need for a massive infusion of training before a change in practice can be realized.

Compared to the physicians the midwives were much less confident about making a clinical diagnosis. This is understandable, considering their more limited experience and education. Indonesian nursing curriculums, as elsewhere, embrace the theory of "*nursing diagnoses*", which preclude etiological diagnostic conclusions. This fact, along with the struggle (evident among some physicians also) to make an initial diagnosis motivated the development of an RTI/STD Case Management Manual (see **Appendix L**). This training manual utilized the exact case management protocols (Protocol VI, Appendix D) previously distributed during the initial "Round Table Discussion", but each RTI specific protocol was accompanied by photographs to provide a visual example for future reference. All training should have a firm foundation in the basic clinical protocols and visual references were found to be very useful.

Training did not seem to "trickle-down" to other HCPs on staff. The hospital physicians work with nurses and midwives who perform intakes, referring the FP clients to the appropriate HCP. During a busy clinic, one of the trained physicians attempted to delegate the clinical evaluation to an untrained midwife who declined to perform it with the statement, "I don't have the training, I don't know how to do it".

It is recommended that training must be:

- Based on a **foundation** (written protocol);
- Presented in a **variety of formats**, i.e. didactic, written, visual, case study;
- **On-going**, until an acceptable level of behavioral change is demonstrated;
- Not only competency based instruction and practice on models, but also **at the clinic site** with each HCP/client interaction accompanied by **mentoring/coaching** from a person with experience in applying the protocols.
- **Repeated practice in recording the written results** of an evaluation on a standardized form to reinforce the components of an appropriate evaluation;
- In the context of strong expectations and support from **respected leaders** in the institution and field of study to facilitate acceptance and cooperation.

5. **Additional recommendations**

In closing, to implement the appropriate integrated reproductive health care package, inter-sectoral cooperation between the top strategic planning levels and the primary health care operational levels needs to be improved. In the near future, health programs must address more attention to maternal morbidity, in addition to maternal mortality issues.

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