Reproductive Health

Social and Behavioral Science Research (SBSR)

1999

Improving the management of STIs among MCH/FP clients at the Nakuru Municipal Council health clinics

Julie Solo

Baker Ndugga Maggwa

James Kariba Wabaru

Bedan Kiare Kariuki

Gregory Maitha

Improving the Management of STIs among MCH/FP clients at the Nakuru Municipal Council Health Clinics

Julie Solo
Ndugga Maggwa
Population Council

James Kariba Wabaru
Nakuru Municipal Council

Dr Bedan Kiare Kariuki
Provincial General Hospital, Nakuru

Gregory Maitha
Department of Medical Microbiology
University of Nairobi

The Population Council

The Population Council seeks to help improve the well-being and reproductive health of current and future generations around the world and to help achieve a humane, equitable, and sustainable balance between people and resources. The Council analyzes population issues and trends; conducts biomedical research to develop new contraceptives; works with public and private agencies to improve the quality and outreach of family planning and reproductive health services; helps governments to influence demographic behavior; communicates the results of research in the population field to appropriate audiences; and helps build research capacities in developing countries. The Council, a nonprofit, nongovernmental research organization established in 1952, has a multinational Board of Trustees; its New York headquarters supports a global network of regional and country offices.

Africa OR/TA Project II

The overall objectives of the Africa OR/TA Project 11 are to broaden understanding of how to improve family planning services in Sub-Saharan Africa, and to apply operations research and technical assistance to improve services by:

• Increasing access to a full range of family planning services and methods;

• Developing service delivery strategies that are client-oriented and acceptable to various population groups;

• Improve the operations of programs to make them more efficient and financially sustainable;

• Improving the quality of services;

• Strengthening the capabilities of family planning program managers to use operations research to diagnose and solve delivery problems.

TABLE OF CONTENTS

PAGE

ACKNOWLEGEMENTS

ABBREVIATIONS

ANC	Antenatal Care
FP	Family Planning
HIV	Human Immune Deficiency Virus
AIDS	Acquired Immune Deficiency Syndrome
MCH	Maternal Child Health
STI	Sexually Transmitted Infection
RTI	Reproductive Tract Infection
PPV	Positive Predictive Value
PV	Predictive Value
LCR	Ligase Chain Reaction
IEC	Information, Educaitonand Counselling
WHO	World Health Organization
UNAIDS	Joint United Nations Program on AIDS
ICPD	Interaction Conference on Population and Development
PID	Pelvic Inflammatory Desease
REDSO/ESA	Regional Economic Development Services Office for East and Southern Africa
USAID	United States Agency for International Development
HVS	High Visual Swal
HDS	Demographic and Health Survery
MOH	Ministry of Health

Introduction

In an effort to address the global crisis of HIV/AIDS and to reduce the spread of other sexually transmitted infections (STIs), maternal and child health/ family planning programs have attempted to integrate the management of STIs into their services. This integration was endorsed at the 1994 International Conference on Population and Development in Cairo. However, programs have encountered a number of difficulties as they try to effectively manage STIs in an MCH/FP setting. In particular, the effective detection and treatment of STIs has proved very difficult among MCH/FP populations.

Study Design

This current study was developed to help improve integration efforts and to contribute to a reduction in the prevalence and spread of STIs among women receiving FP/MCH services from the Nakuru Municipal Council health clinics in Kenya. The project specifically looked at the validity of the current syndromic management approach and explored various ways to improve its approach through the incorporation of risk assessment. This was done through collecting three types of information from all new antenatal (ANC) and both new and revisit family planning (FP) clients who were recruited into the study.

•findings from the medical examination including symptoms and clinical signs;

•risk factor information obtained by providers through the use of a checklist;

•laboratory results from specimens collected during the examination. Laboratory tests were conducted for five reproductive tract infections (RTIs): gonorrhea, chlamydia, trichomoniasis, bacterial vaginosis and candidiasis.

Summary of Key Findings

Characteristics of ANC and FP clients

•A total of 906 family planning clients and 815 antenatal clients were approached and consented to participate in the study

•Antenatal clients were younger, more likely to be single and had fewer living children compared with the family planning clients

*Prevalence of RTIs and associated symptoms and signs*

- **RTIs are very common in this population**, with 59 and 50 percent of ANC and FP clients, respectively, having at least one infection.

- **Multiple infections were common among both family planning and antenatal clients.** Among clients who had laboratory evidence of any RTI, 23.5% and 39.4% of family planning and antenatal clients, respectively, had multiple infections.

- **The majority of women with an RTI are asymptomatic**; only 29% and 23% of ANC and FP clients, respectively, with an infection had at least one symptom.

- **A large proportion of infections is not sexually transmitted.** Sexually transmitted infections were present in 29.8% family planning and 36.4% antenatal clients with laboratory evidence of an RTI compared with 84.4% and 85.1% who had non sexually transmitted infection, respectively

- **Bacterial vaginosis** considered to be a non-sexually transmitted infection has been found to be associated with pelvic inflammatory disease and increased risk for HIV infection. This infection was found in 28.0% and 26.6% of family planning and antenatal clients, respectively, in this study.

- **Signs suggestive of RTIs were found in a larger proportion of clients (40% ANC and 37% family planning).** However, a significant proportion of women who reported abnormal vaginal discharge symptoms did not have clinical evidence of such a discharge. These data suggest a discrepancy between reported symptoms and clinical observations.

- **Reported symptoms in partners are uncommon**; only five percent of both ANC and FP clients answered yes to the presence of at least one of the nine symptoms asked about in their partners.

- **Risk factors for STIs and HIV/AIDS are not common among women attending MCH/FP clinics.** Also the vast majority of these women do not consider themselves at increased risk of getting STIs. Only 17.1% and 9.2% of family planning and antenatal clients considered themselves at increased risk of getting infected with an STI.

Effectiveness of syndromic management

- ***Although a significant proportion of women reported symptoms and/ or had signs suggestive of RTIs, few were diagnosed and treated through syndromic management.*** Of the women recruited into the study, only 14.8 and 4.6% of ANC and FP clients, respectively, were diagnosed to have any STI syndrome compared with 40% and 37% who had at least one sign suggestive of an infection.

- **The vaginal discharge syndrome only identifies a small proportion of the women with RTIs in this population**; the sensitivity for vaginitis was only 16 and five percent for ANC and FP clients, respectively, while it was only 10 percent for ANC clients and six percent for FP clients for cervicitis.

- **The vaginal discharge syndrome performs better when used to manage vaginal infections compared with cervical infections.** Figure 1 below shows the positive predictive value (PPV) of vaginal discharge for cervicitis and vaginitis—that is, of the women diagnosed with vaginal discharge, what proportion actually had an infection. As this shows, it performs badly for cervicitis, but is better for vaginitis; roughly two-thirds of clients diagnosed with vaginal discharge did have vaginitis.

Figure 1: Effectiveness of vaginal discharge syndrome in predicting reproductive tract infection
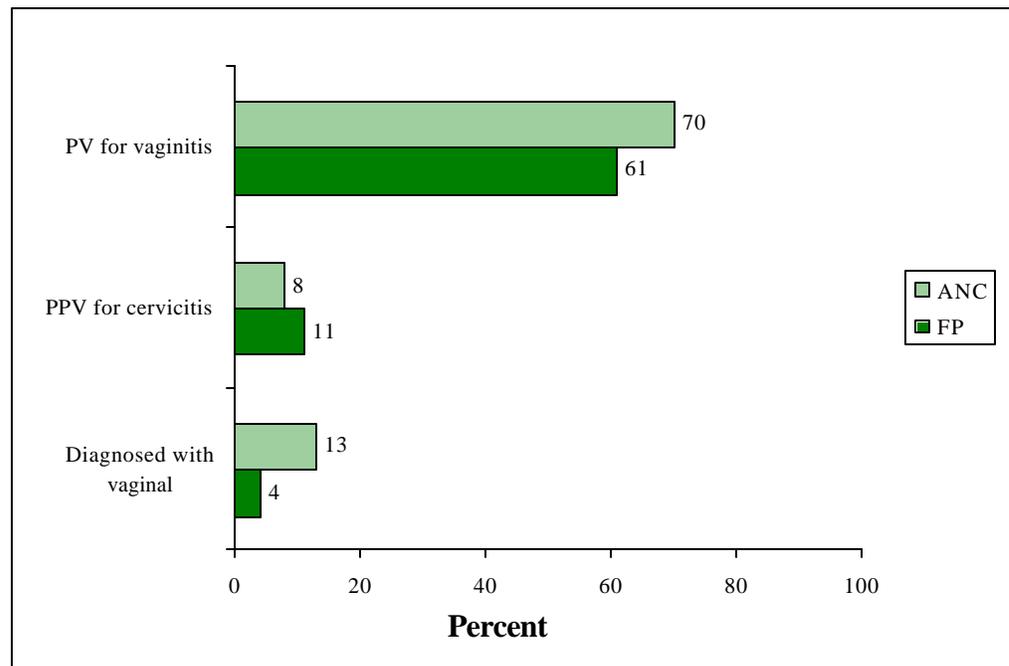
- **Adding risk assessment information to the current symptom-based algorithms does not significantly improve on their ability to identify and manage cervicitis**. Using logistic regression, the best models fitted from the risk assessment information had poor sensitivity 5% and 7% for family planning and antenatal clients, respectively. However, the models had better specificity and positive predictive values compared with algorithms that depended only on clinical information.

- **A significant proportion of clients did not return for their test result or scheduled follow-up visit**. For example, of the clients for whom a syndromic diagnosis was made, 57% and 51% of family planning and antenatal clients, respectively, returned for their follow-up appointments. Therefore it was difficult to assess the effectiveness of syndromic approach in achieving clinical cure in clients for whom a syndromic diagnosis was made and treatment started.

- ***Providers found the checklist to be a useful tool to use with clients****.* Although initially it was somewhat difficult, with time, most providers found it relatively easy to implement. The checklist enabled them to spend more time with the clients, collect more detailed information and to provide counseling to clients in a systematic manner.

- ***Providers were generally comfortable with clinical procedures,*** though some were only partly comfortable with pelvic exams since they had not been typically performing them.

- ***Clients were happy to be receiving thorough examinations****, mostly because they wanted to know their health status: as one client said,* **"this is a blessing because of these exams. So many women will benefit and this should continue."**

- ***Both clients and providers were generally comfortable with the risk assessment questions****; in the words of one client,* **"the questions asked are good—they make one think."**

Recommendations

Most of the findings for this study support the guidelines put forth in a recent document from USAID, *Integration of Family Planning/MCH with HIV/STD Prevention, Programmatic Technical Guidance: Priority of Primary Prevention with a Focus on High Transmitters* (December 1998). The document summarizes a number of weaknesses of integrated programs, including an overemphasis on the clinical management of STDs, the ineffectiveness of the syndromic algorithm for vaginal discharge, and inadequate support for primary prevention of sexual transmission of HIV and other STDs, especially for condom promotion and behavior change intervention.

"While we continue to debate syndromic management, we can focus on IEC, condom promotion, counseling and raising awareness about STIs."

- ***Focus on prevention****: given the problems associated with using the syndromic approach to identify and manage RTIs among women attending MCH/FP clinics identified in this study, we should emphasize taking a public health approach where we emphasize preventive approaches that have been shown to be cost-effective compared with treatment.

- ***Improve on STI/HIV IEC:*** the large discrepancy between reported symptoms and signs found during clinical examination might be a reflection of poor clients' knowledge of the symptoms associated with these infections. Therefore there is a need to improve skills of providers and to encourage them to undertake systemic STI/HIV IEC for clients in order to improve on clients' knowledge of STI/HIV related symptoms and signs.

- **_Emphasis on clinical examinations:_** Data from the study showed major discrepancies between reported symptoms suggestive of RTIs and clinical findings. Clinical examinations identified more women with RTI related signs compared with reported symptoms. In addition, clinic staff were comfortable conducting the examinations and the clients appreciated being examined. Therefore, staff need to be encouraged and enabled to undertake clinical examinations for antenatal and family planning clients routinely.

- **_Encourage the use of integrated and standardized checklists in the provision of family planning, antenatal care and STI/HIV services._** Data from the study showed that the checklist enabled more clients with symptoms and signs suggestive of STIs to be identified and the vast majority of clients received STI/HIV counseling.

- **_Review our partner notification strategies and improve community understanding that not all infections are sexually transmitted given that most of the infections among women attending MCH/FP clinics are not sexually transmitted_**; _as one provider explained_, "we need to have a language to explain the infection… most RTIs are not STIs. The moment we label it an STI, we break up the family rather than unite the family."

- **_Review treatment guidelines to emphasize effective treatment of vaginal infections, which have a high prevalence among this population;_** though there has been a strong focus on cervical infections, recent evidence indicates the importance of treating bacterial vaginosis and trichomoniasis both of which are much more common than gonorrhea and/or chlamydia and have a high potential for serious health impacts.

- **_Continue using syndromic management in Nakuru to manage clients presenting with symptoms in spite of its problems, until there is something better_**; _the following comments reflect this opinion from participants in Nakuru:_ "What alternative is there?"; "For some time we may have to do without labs as there are no funds to support them"; " meanwhile, we need to do something for those clients with symptoms."

The Joint United Nations Program on HIV/AIDS (UNAIDS) and the World Health Organization (WHO) estimate that the number of people living with HIV has grown to 33.4 million at the end of 1998, while almost 14 million people have already died from HIV.[1] In 1995, the WHO estimated that there were 333 million cases of sexually transmitted infections (STIs), or roughly one million infections occurring every day,[2] making STIs one of the most common causes of illness in the world. Sub-Saharan Africa is particularly affected by both of these problems. It is estimated that over two-thirds of the people now living with HIV in the world live in sub-Saharan Africa, 83 percent of the world's AIDS deaths have been in this region, and this region accounts for 65 of the 333 million global STI cases (20 percent). Yet only one-tenth of the world's population lives in sub-Saharan African countries.

Figure 2:

Global Annual Incidence of STIs
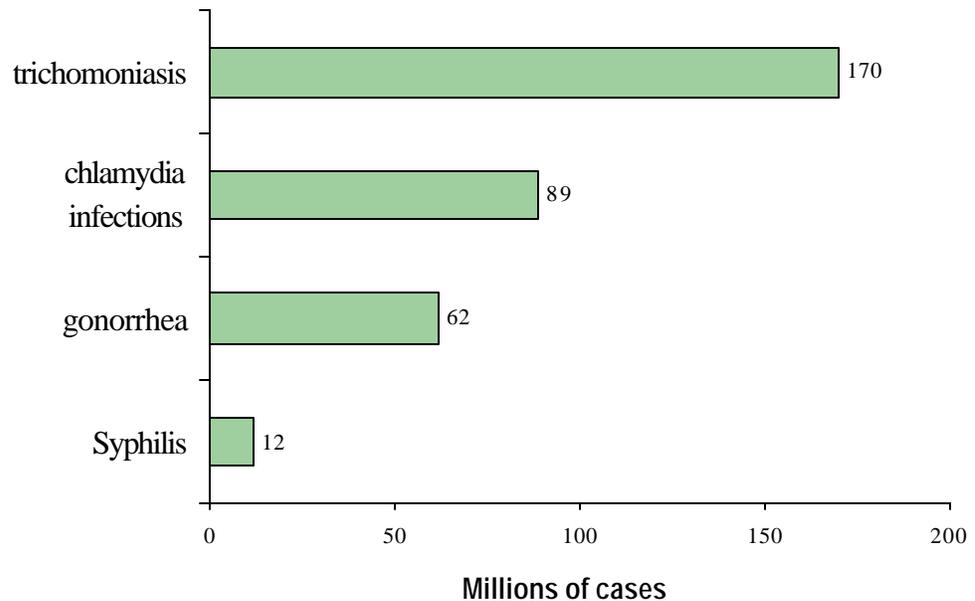
Kenya is one of the countries that are faced with high rates of HIV infection. The most recent data for Kenya indicate an adult HIV prevalence of 9 percent. While there have been over 80,000 reported AIDS cases as of June 1997, it is estimated that there are over 240,000 actual AIDS cases and roughly 1,400,000 additional HIV infections. The highest prevalence found in sentinel surveillance sites is in Kisumu, with a rate of 34.9% in 1997.[3]

One contributing factor to the high rates of HIV infection in sub-Saharan Africa is the high prevalence of other STIs. Infection with some STIs has been shown to increase the likelihood of contracting HIV through sexual contact. Studies have indicated a four times greater risk of becoming HIV-infected in the presence of a genital ulcer such as caused by syphilis and/or chancroid and a significant though lesser increased risk in the presence of STIs such as gonorrhea, chlamydial infection and trichomoniasis. Efforts to improve the diagnosis and treatment of STIs have shown promise in addressing rates of HIV infection. A recent study in Mwanza, Tanzania showed that improved STI treatment reduced HIV incidence by 42% in a rural population over a two-year period.[4]

One way to improve efforts to prevent the spread of STIs and HIV that has been proposed is to incorporate STI services into existing maternal and child health and family planning (MCH/FP) services. This would reach women who typically do not receive such services. More important, it would potentially minimize the stigma associated with attending clinics that specifically treat STIs and to meet women's broader reproductive health needs. Following the International Conference on Population and Development (ICPD) in Cairo in 1994, there was strong endorsement for a shift from family planning services to broader reproductive health services. The ICPD Program of Action identified a number of actions (see box below) to achieve the goal of preventing and reducing the spread of STDs, as well as providing treatment for STDs and their complications.[5]

ICPD PROGRAM OF ACTION:

Preventing the spread of sexually transmitted diseases and HIV

All reproductive health programs should increase their efforts to prevent, detect and treat sexually transmitted diseases and other reproductive tract infections, especially at the primary health-care level.

All health care providers, including all family planning providers, should be given specialized training in the prevention, detection of and counseling on sexually transmitted diseases, including HIV/AIDS, especially infections in women and youth.

Information, education and counseling on responsible sexual behavior and effective prevention of sexually transmitted diseases and HIV should become integral components of all reproductive and sexual health services.

All reproductive health care services should promote, supply and distribute high-quality condoms to reduce the spread of HIV/AIDS and sexually transmitted diseases.

As programs try to implement the Cairo agenda, there is a great deal of interest and effort in the area of integrating STI services into MCH/FP settings. However, there are many issues to be resolved in terms of identifying effective ways to manage STIs within this setting. The obvious benefits must be weighed against the restrictions of reality and limited resources to come up with models of integrated services that are both effective and practical within different contexts.

What is integration?

Integration (n): a combination and coordination of separate and diverse elements or units into a more complete or harmonious whole.

(Webster's 3rd New International Dictionary, 1986)

Integration can take many forms, including incorporating different approaches for prevention, detection and treatment of STIs into MCH/FP programs. There has been significant attention on improving case management of STIs through the adoption of syndromic management as an important aspect of integration. This technique relies on placing a client within a certain syndrome based on signs and symptoms and then the provider follows a flow chart to determine treatment for the primary causes of this syndrome. The main syndromes include vaginal discharge, lower abdominal pain, genital ulcer disease and urethral discharge in men.

The syndromic approach addresses the problem of how to provide services in resource poor settings where laboratory facilities do not exist and/or are not feasible. It has been shown to work well for male urethral discharge and for genital ulcers in men and women, but the algorithm for vaginal discharge generally performs poorly for diagnosing cervicitis (either gonorrhea or chlamydia). Although the syndromic approach has been promoted recently for use in a variety of settings, this approach was developed for use with higher prevalence populations (i.e., in STD clinics) and the efforts at validating this approach in a lower prevalence setting, such as an MCH/FP clinic, have shown disappointing results.

Critics of syndromic management point out that it can lead to the treatment of many false positives, i.e. women who do not really have an STI are diagnosed and treated as having one. Not only does this increase cost to the program in terms of using drugs, but also it also potentially exposes the woman to the stigma and social repercussions associated with having an STI. Also, because so many women are asymptomatic, syndromic management will miss many of the true cases of STIs.

There has been a great deal of attention on the algorithm for vaginal discharge, which has been the most problematic. One of the problems lies in its inability to differentiate between vaginitis and cervicitis since the two conditions are caused by different organisms requiring different treatments. The former, often caused by trichomoniasis, candidiasis or bacterial vaginosis, is much more common, while the latter, typically a result of gonorrhea or chlamydia, has more severe health effects, including PID and infertility. In Kenya, where it is

estimated that roughly 80-90% of women with vaginal discharge are infected with candidiasis, trichomoniasis and/or bacterial vaginosis,[6] the approach has been to treat women with vaginal discharge for vaginitis and then tell them to return after one week if symptoms persist so that they can be treated for cervicitis. It is unknown how well this approach has worked; that is, do women return for follow-up treatment if they need it.

One way to adjust this approach is to incorporate risk assessment— that is, asking questions in a systematic manner about a person's social, economic, demographic, behavioral and clinical background and developing a risk score from this— to differentiate between RTIs that are sexually transmitted from those that are not. The WHO flow charts propose this, whereby if a woman complains of vaginal discharge, the provider then ascertains whether she has complaints of lower abdominal pain or has a symptomatic partner or is positive for specific risk factors. If she answers yes to any of these, she is treated for cervicitis, while if the answer is no to all of them, she is treated for vaginitis.

Risk assessment can also potentially address the problem of missing women who are asymptomatic, as they never enter into the flow charts for syndromic management. Essentially, there are three different possibilities amongst MCH/FP clients who have an STI:

•*women coming for MCH/FP services who also complain of symptoms suggestive of an STI;*

•*women who do not complain of symptoms, but have clinical signs of an STI that are identified through examination;*

•*Women who have neither signs nor symptoms. The first group can be identified through syndromic management; the second group requires a pelvic exam so that a provider can look for signs such as cervical mucous or friability; in the absence of cheap, accurate, portable and fast tests, the third group is the most problematic to reach, though risk assessment has been proposed as a way to help identify asymptomatic cases.*

An analysis of several integrated programs in the East and Southern Africa region found that risk assessment was not regularly carried out. Some of the main reasons identified for why providers were not routinely asking these questions were the following:

•*clear instructions were not given during training;*

•*providers were not given written guidelines or checklists to assist them in carrying out risk assessment;*

•*client record forms were not revised to accommodate this new information; and*

•*Providers said that they did not have enough time due to large client loads.[7]*

But is risk assessment an improvement on the syndromic approach in an MCH/FP setting? In a recent survey of STD risk assessment used among low-risk populations in east/central Africa prepared by Family Health International (FHI), the authors conclude the following:

"At first blush, risk assessment appears to be a relatively easy way to integrate STD management into family planning and MCH practice. Yet current evidence demonstrates its lack of effectiveness for at least cervicitis screening in low-prevalence populations. Unless risk assessments can be made more accurate, they will remain promising but ineffective in low-prevalence settings, such as family planning and antenatal clinic attendees."[8]

Based on the constraints that face health services and the significant public health impact of STIs in sub-Saharan Africa, as in much of the world, it is essential that there be further work to improve integration efforts.

Methodology and Objectives

In order to learn more about the process of integration in East and Southern Africa, the Population Council's Africa OR/TA Project II, in collaboration with Pathfinder International, REDSO/ESA, Africa Bureau of USAID, Data for Decision Making Project at Harvard and the Centers for Disease Control (CDC) in Atlanta, has developed a methodology for conducting case studies of programs and projects that have adopted an integrated approach to provide STI, HIV/AIDS and MCH/FP services. The methodology involves four activities: review of available data and reports, in-depth interviews with a management team, a modified Situation Analysis and guided group discussions. This methodology has been used to carry out four case studies in Kenya[9], Uganda[10] and Botswana.[11] The findings from these case studies were also synthesized into one comprehensive report.[12]

The Nakuru Municipality and the STI/HIV/AIDS Project

The Nakuru Municipality is located 160 kilometers northwest of Nairobi along the Trans-Africa highway and the Kenya/Uganda Railway, both of which link the Mombasa seaport and several East and Central African countries. This increases the risk of its residents for STIs and HIV/AIDS. Data from the National Surveillance show that the prevalence of HIV infection increased from 9.9% in 1990 to 27.2% in 1995. Data of other STIs are not readily available but reports from the Municipal Council Health Department show that STIs account for a large proportion of the outpatient clinic visits in all their five clinics.

To respond to these concerns, the Municipal Council has been participating in a collaborative project with the Nairobi City Council and the Universities of Nairobi and Manitoba funded jointly by the Government of Kenya and Canadian International Development Agency (CIDA) since 1990. The long-term goal of this project is to reduce the incidence of STIs and HIV/AIDS through strengthening the management of STIs and HIV/AIDS at the health facilities and establishing sustainable community based STI/AIDS control activities.

At the clinic level, the project facilitated training of staff in the use of the syndromic approach to detect and manage STIs. It also established a reference laboratory at one of the clinics for use in diagnosing STIs in clients who were not responding to drugs prescribed using the syndromic approach and for testing antenatal clients for syphilis infection. The project also provided drugs for treating STIs and condoms. At the community level, the project supports a peer education program for commercial sex workers and carries out IEC activities for in-school youth and factory employees within the municipality.

The study reported here consisted of two components. First, a case study was conducted to assess the current state of integrated services in Nakuru. Based on the findings and some of the major issues identified, an OR study was then developed to test ways to improve integration efforts in Nakuru and to learn regional lessons from this work.

a)   **Case study.** The Nakuru Municipal Council had been involved in an STI Project for a number of years (see previous box). It was identified as one of the projects for a case study.

Figure 3:

HIV Prevalence in Nakuru, Kenya
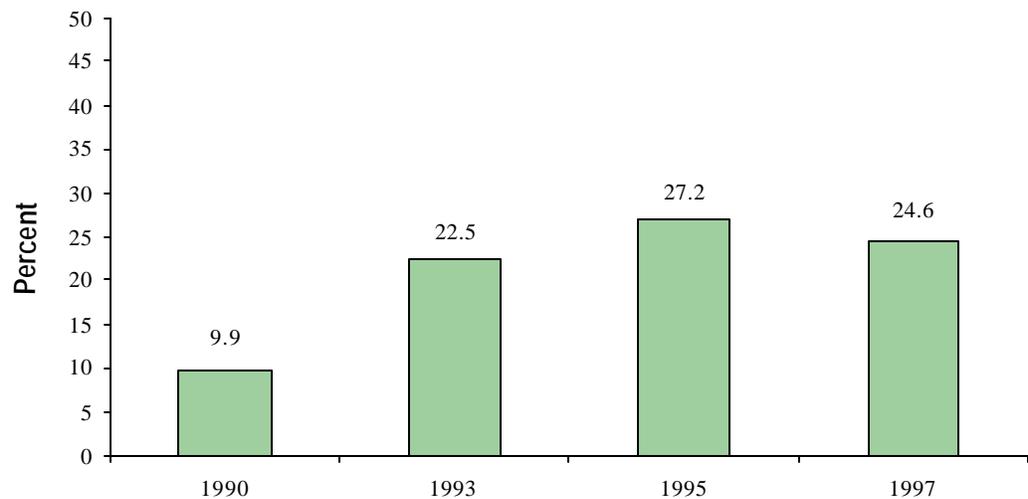
The case study was carried out in 1995, after five years of project implementation and focussed on examining the clinic level aspects of the project. The major findings included the following:[13]

•*Staff do not undertake STI/HIV risk assessment, clinical evaluation and counseling for most of the clients attending the clinics for MCH/FP services. Even though staff sometimes ask risk-related questions, such as number of sex partners, this is done rarely and is not done in a systematic manner to manage clients.*

•*Staff were required to use diagnostic algorithms developed for use primarily in STI clinics without any adaptations, yet their sensitivity, specificity and positive predictive values have not been well studied in MCH/FP clinics and other populations where the prevalence of STIs is low.*

•*Staff did not have appropriate checklists for use when undertaking STI risk assessment, case detection and counseling. In addition the client record forms had not been modified to cater for the new information collected during STI and HIV/ AIDS risk assessment and case detection procedures.*

•*Most of the facilities lacked some of the basic equipment and supplies required to provide good quality MCH/FP and STI/HIV/AIDS services.*

*•At the time of the case study **no cost analysis/effectiveness studies had been undertaken that would help in the development of sustainability strategies** given that the project was heavily donor supported.*

Steps were taken to address some of the issues raised in the case study, including the provision of necessary equipment, the development of a checklist, conducting a counseling course for staff, planning for the incorporation of risk assessment and the development of an OR study.

b)   **OR study to improve the management of STIs**. Based on the findings of the case study, an OR study was developed to contribute to a reduction in the prevalence and spread of STIs among women receiving family planning and maternal and child health services from the Nakuru Municipal Council health clinics. The study had the following objectives:

    1.   to determine the validity of the current syndromic approach being used for the management of vaginal discharge in MCH/ FP services

    2.   To compare the effectiveness of the current syndromic approach with a modified approach including risk assessment

    3.   to predict the effectiveness of using risk assessment as a tool in STI case detection

    4.   to provide estimates of the prevalence of selected STIs among an MCH/FP population

Family planning and new antenatal clients were recruited into the study from the five NMC clinics. The study involved obtaining the following three types of information from each woman who was enrolled in the study:

•Findings from the medical examination including symptoms and clinical signs;

•Risk factor information obtained by providers through the use of a checklist; and

•Laboratory results from specimens collected during the examination.

The data collection was guided by the use of a checklist. This checklist was developed initially in Botswana as part of its integration program, and was then modified and adapted for the Nakuru situation by a team of clinicians and researchers in Nakuru. The checklist was also used for a similar OR study in Zimbabwe, again with modifications for the local context. The use of a similar data collection instrument in different settings will allow for later comparative analyses.

Field Work and Data Collection

 Fieldwork began on March 16, 1998 and continued for four months, ending on July 17, 1998. Prior to beginning fieldwork, there was a five-day training for the providers who would be involved in the study. A total of 18 nurses

were identified by the Nakuru Municipal Council to be trained, at an average of 3 or 4 from each clinic. The nurses were divided into two groups and each attended training for two days, followed by one day where the entire group was brought together.

During training, two trainers from Nakuru provided an overview of the signs and symptoms of various STIs and syndromic management. Providers had already been trained in syndromic management, but this training was conducted as a refresher course. In addition, the providers were trained to use the checklist for data collection. The checklist was modified during the training with input from the providers to meet clinic needs.

Five researchers were also trained to assist in the data collection. A researcher was based at each clinic to manage logistics and to help the providers in completion of the checklist and transfer of information from the checklists onto the client cards. Researchers were given a three-day training to familiarize themselves with the study, the clinics and the clinic staff.

A study coordinator who was based at one of the clinics coordinated all fieldwork activities. He was responsible for the overall logistics for data collection, including the following: providing all necessary supplies to the clinics; collecting and handling transport of specimens to Nairobi each day; collecting checklists from each clinic; receiving and processing the laboratory results from Nairobi to allow for notification of clients of their results; and managing all problems that occurred during the conduct of the field work.

The nurses recruited new antenatal clients and both new and revisit family planning clients into the study. Because of the low numbers of new clients, it was necessary to also recruit revisit FP clients to obtain a large enough sample size to assess effectiveness. First, the nurses informed clients about the study and its purpose and then read an informed consent statement. If verbal consent was obtained, then the client was recruited into the study. Clients were assured that their refusal to participate in the study would have no impact on them or the services that they received. The nurse then completed the checklist including the collection of specimens for laboratory tests.

During the course of the fieldwork, a number of meetings were held with providers. This enabled the group to share experiences, learn from each other and make any necessary modifications based on problems encountered during the fieldwork. Some of the problems encountered were:

• **Lack of water or other supplies, such as disinfectant, gloves or cotton wool.** *Without supplies necessary for proper infection prevention, services could not be offered. This happened at all of the clinics at various points during the study.*

• **Staff strikes**. *At a number of points during the study, the providers went on strike over various issues with the Nakuru Municipal Council. This led to disruptions in services and therefore in data collection and was one of the factors in lengthening slightly the period of data collection.*

• **Staff morale.** *Some providers felt that the additional work that they needed to undertake for data collection, i.e. completion of the checklists, was too much given the*

time they had available. Some also felt that they were not being properly compensated given this extra work.

•**Logistical problems.** *Because of the complicated logistics involved in sending specimens for testing in Nairobi, there were often delays in sending results to Nakuru.*

Laboratory Procedures

Laboratory tests were conducted at the Department of Medical Microbiology at the University of Nairobi. The Department prepared kits with the items necessary for specimen collection and transport. A kit was made up of a ziploc bag and included in-pouch kits (for testing for trichomoniasis), urine bottles, swabs and slides. Each kit, as well as each item in the kit, was labeled with a sticker with a unique study number. In addition, several additional stickers with the same study numbers were in each kit in order to label the checklist so that it could be matched with the lab results. Each clinic was allotted a different set of numbers. Another item required for specimen collection was the transport medium for candida. Because this needed to be refrigerated, the Department sent batches of the prepared media at regular intervals to the study coordinator. On a daily basis, each clinic was provided with ice packs for their cooler to keep the urine samples cool before they were put into a larger cooler for transport to Nairobi. At the end of each day, specimens were collected by the study coordinator and brought to one clinic where they were picked up by a courier service for transport to Nairobi.

The following table indicates the reproductive tract infections that were tested for, the specimens that were collected and the tests performed.

RTI	Specimen	Test
Gonorrhea	Urine	Ligase Chain Reaction (LCR)
Chlamydia	Urine	LCR
Trichomoniasis	High vaginal swab (HVS)	in-pouch media
Candidiasis	HVS	gram stain
Bacterial vaginosis	HVS	gram stain

1. *Bacterial vaginosis*: smears were made in the clinics in Nakuru and were transported to the laboratories in Nairobi where they were subjected to gram's staining technique. Clue cells, gardnarella vaginosis and bacteroides or morbilancus were looked for.

2. *Candidiasis*: was identified by demonstration of candida organisms grown on saubouranuds dextrose agar medium. The characteristic colonies of the organism were then subjected to gram's stain technique, where gram positive budding yeast was used to decide on the presence of candida infection.

3. *Trichomoniasis*: high vaginal swabs were inoculated in the In-Pouch Media described by BIOMED Diagnostics, Inc., San Jose, CA standards

for the culture of *T. vaginalis*. The cultures were examined under the microscope after incubation at 37°C for between 48-72 hours. Recov ery of viable of T. *vaginalis* organisms was considered as evidence of infection.

4.   *Gonorrhea*: *Neisseria gonorrhea* was detected using the Ligase Chain Reaction (LCR) amplification technology in the LCX probe system. - a method designed by Abbot Laboratories, IL, USA. The assay is used in direct qualitative detection of a specific nucleic acid sequence in the Opa gene of *Neisseria gonorrhea* in urine specimens from symptomatic and asymptomatic subjects.

5.   *Chlamydia: Chlamydia trachomatis* was detected using the Ligase Chain Reaction (LCR) amplification technology in the LCX probe system. - a method designed by Abbot Laboratories, IL, USA. The assay is used in direct qualitative detection of plasmid DNA of *C. trachomatis* in urine specimens as an aid in the diagnosis of *C. trachomatis* infection.

Data Entry and Analysis

Data entry was carried out using the EpiInfo 6.02 software with matching-screen formats to the questionnaires. The double entry procedure was used for validation of the data entry. The following dependent variables were created

•*cervicitis: was the occurrence of gonorrhea or chlamydia or both.*

•*vaginitis: the occurrence of trichomoniasis, candida, and bacterial vaginosis alone or in any combination.*

•*STI: the presence of gonorrhea or chlamydia or trichomoniasis in any combination.*

•*non STI: the presence of candida or bacterial vaginosis or both.*

•*any infection: the presence of any of the above four dependent variables—cervicitis, vaginitis, STI and non-STI.*

The dependent variables were transformed to nominal categories 0=negative and 1=positive. Using SPSS Version 8.0 software, univariate analysis using the two by two tables was done for all the independent variables included in the history, clinical examination and risk assessment. The independent variables were assessed for significance of association with the dependent variables using crude ODDS RATIOs (OR) and P-values. The sensitivity, specificity and positive predictive value were computed for those independent variables that were significantly associated (at the 95% confidence interval) with the dependant variables.

Adjusted OR and p-values resulting from a logistic regression were estimated including the 95% confidence intervals. The independent variables were included in the logistic regression model if they were observed to have an association with the dependent variables at the 10% level of significance in the univariate analysis. Qualifying independent variables were subjected to a stepwise

multiple logistic procedure using the backwards selection procedure. The model that explained the most variability in the dependent variable and also had the best sensitivity, specificity and positive predictive value was selected.

To determine the relative importance of each of the variables in each model, we calculated the standardized coefficients for each variable. The absolute value of the standardized coefficient was considered to represent the relative importance of each variable in relation to the other variables in the model.

Characteristics of Sample

The socio-demographic characteristics of the samples of ANC and FP clients differed somewhat (Table 1). For example, on average the FP clients were about three and a half years older than the ANC clients and had one more living child. The majority of both ANC and FP clients were married (84.2 and 86.4 percent, respectively), though a larger proportion of ANC clients were single (10.7 percent vs. 6.5 percent of FP clients). Years of education were similar for both groups (nine years) as was the number of desired children (roughly 3, on average).

Table 1:

Socio-demographic characteristics of clients

Characteristic	FP clients (n=906)	Antenatal clients (n=815)
Age	mean = 27.6	mean = 24.1
	median = 26.5	median = 23
<20	6	21
20-24	29	38
25-29	32	25
30 +	33	16
Marital status		
Married (monogamous)	77.6	73.8
Married (polygamous)	8.8	10.4
Single (never married)	6.5	10.7
Cohabiting	1.3	3.9
Divorced/separated	.5	.9
Widowed	.8	.2
Education (years)	mean = 9.1	mean = 8.8
	median = 8	median = 8
Religion		
Christian	70	67.5
Catholic	25	23
Muslim	1.2	3.4
Other	3.9	6
# of pregnancies	mean = 2.8 median = 2	mean = 2.3 median = 2
# of living children	mean = 2.5 median = 2	mean = 1.1 median = 1
# of desired children	mean = 3.4 median = 3	mean = 3.1 median = 3

Data on table 2 shows the prevalence of the various RTIs, as well as different combinations of infections, based on laboratory testing. Some of this information is highlighted in figure 4 as well. A strikingly large proportion of

clients had at least one infection of the five for which laboratory tests were performed: 59 percent of ANC clients and about half (49.8 percent) of FP clients. Likewise, a substantial number of women had an STI (chlamydia and/or gonorrhea and/or trichomoniasis): 21.1 and 14.2 percent of ANC and FP clients, respectively. This is quite striking in a population that is usually referred to as "low risk" or "low prevalence".

Table 2:

Prevalence of RTIs among study population

RTI or combinations of RTIs	FP clients (n=906)	ANC clients (n=815)
Gonorrhea	2.6	3.7
Chlamydia	5.7	7.1
Trichomoniasis	8.0	14.4
Candidiasis	16.7	33.9
Bacterial Vaginosis	33.4	29.5
Any RTI *(any of the above five infections)*	49.8	59
Any STI *(gonorrhea and/or chlamydia and/or trichomoniasis)*	14.2	21.1
Cervicitis *(gonorrhea and/or chlamydia)*	7.5	9.4
Vaginitis *(trichomoniasis and/or candidiasis and/or BV)*	46.8	55.5

It is notable that the prevalence of most RTIs is higher among antenatal clients as compared with family planning clients. This might partially be accounted for by the fact that ANC clients were younger and a slightly higher proportion were single, both factors that are commonly cited as increasing risk for an STI. In addition the higher prevalence of candidiasis, which accounts for much of the difference, is to be expected among pregnant women. This is because during pregnancy there is an increase in estrogen levels, poor sugar metabolism and changes in the vaginal PH, all of which favor the growth of candida.

Figure 4: *Prevalence of various combinations of RTIs*

Much attention has been placed on cervical infections because of the serious health outcomes that can occur when these infections are not treated, such as PID and infertility. In our study population, cervical infections have a relatively low prevalence as compared with vaginal infections. Recently, however, there has been evidence indicating that vaginal infections should be given more attention, as noted in the following:

> *"The importance of early detection and treatment of these vaginal infections has been progressively underscored by the implication of bacterial vaginosis as a risk factor for PID; of BV and trichomoniasis as causes of preventable preterm delivery; and of BV and trichomoniasis as possible risk factors for acquisition of HIV infection."*[14]

With roughly one-third of both FP and ANC clients testing positive for BV, it is clearly important in light of the potential serious health impacts that this be addressed more effectively.

A number of women had multiple infections; 23 percent of ANC clients and 13 percent of FP clients had 2 or more infections. If we only look at gonorrhea, chlamydia, trichomoniasis and bacterial vaginosis, leaving out candidiasis, the breakdown for number of infections looks similar for both ANC and FP clients (Table 3). This shows that some of the difference between the prevalence of infections among ANC and FP clients is due to candidiasis, which, as noted above, is generally more common among pregnant women. This breakdown also shows that 16 percent of ANC and nine percent of FP clients had only candidiasis; of the five infections, for which lab tests were conducted, this is probably the one with the least serious health consequences.

Table 3:

Proportion of ANC and FP clients with multiple infections

# of infections	For all 5 infections		For 4 infections (without candidiasis)	
	ANC	FP	ANC	FP
Zero	41	50	57	59
One	36	37	33	34
Two	19	11	8	6
Three or More	4	2	1	1

Figure 5 shows the ever use of the most common contraceptive methods by both FP and ANC clients. Just over one-quarter (27 percent) of the FP clients recruited into the study were new clients, 12 percent were classified as restarting, while the remainder were coming for revisit or resupply. Comparing family planning clients and only those antenatal clients who had ever used modern family planning methods prior to the index pregnancy (271, 33%) shows that antenatal clients were more likely to have used the combined pill compared with family planning clients. However, family planning clients were more likely to have used the injectable. This observation may represent a change in the pattern of contraceptive use over time since family planning clients represent current users while antenatal clients represent past use. Similarly in the 1998 Kenya Demographic and Health Survey, injectables (12 percent) have now overtaken the pill (9 percent) as the most widely used modern method of contraception.[15]

Figure 5:

Ever use of various contraceptive methods by FP and ANC clients
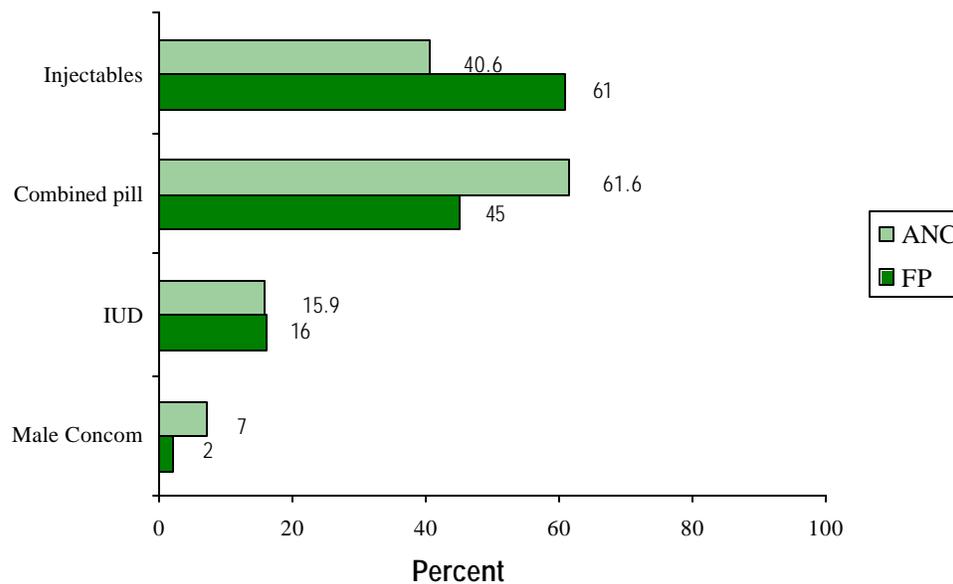
Few women from either group (2% and 7% for family planning and antenatal clients, respectively) had ever used a male condom. The figures for family planning clients are low compared to the figure in the 1998 DHS, where 9.4 percent of women stated that they had ever used the condom. It should be noted that our figure of two percent for the family planning clients is possibly an undercount for various reasons, including the fact that sometimes a woman does not report her partner's method and that sometimes people perceive of the condom as a means of protecting against disease rather than pregnancy. Nonetheless, these low figures are particularly troubling given the high rates of both HIV and STIs.

Symptoms

Providers asked women about a number of symptoms that could indicate the presence of an STI during the medical history-taking portion of their exam. The results of this are shown in table 4. The provider asked each woman whether she currently had each of the symptoms.

Table 4:

Presence of symptoms in woman, as reported in medical history taking

Symptom	Family Planning clients	Antenatal clients
lower abdominal pain	5.5	7.9
yellow discharge	1.9	3.5
blood stained discharge	1.4	0.9
foul smelling discharge	3.3	6.3
Increased amount of discharge	4.7	12.6
post coital bleeding	1.8	1.0
pain during sexual intercourse	3.2	6.0
pain on passing urine	2.3	5.1
genital ulcers/ sores	1.4	1.6
painful swellings in the groin	0.8	0.5
warts in the genital area	0.1	0.5
bleeding between periods/ spotting	2.0	1.4
dysmenorrhea	12.9	N/A

Most of the symptoms were more common among ANC clients, however all the prevalence figures were fairly low, especially in comparison with the prevalence of the RTIs based on laboratory testing. Overall, 25 percent of ANC clients and 23 percent of FP clients had at least one symptom (of a list of 12 or 13 symptoms, respectively— ANC clients were not asked about dysmenorrhea since they were pregnant). Of women with an RTI based on lab diagnosis, only 29 percent and 23 percent of ANC and FP clients, respectively, had at least one symptom. This is strong evidence of the high proportion of infected women who are asymptomatic.

In addition, women were asked about the presence of various symptoms that might be indicative of an STI in their partners. Very few women indicated that their partners had any of the symptoms that were asked about (Table 5). Overall, for both FP and ANC clients, just five percent answered yes to the presence of at least one of the nine symptoms asked about in their partner. Between seven and eleven percent of antenatal clients and from 11 to 15 percent of family planning clients answered *"don't know"* when asked about partners' symptoms. Though the proportion answering *"don't know"* is fairly low, we have no way in this study to assess the accuracy of women's reporting of their partners' symptoms.

Table 5:

Presence of symptoms in woman's partner, as reported in risk assessment

Symptom	Family Planning clients	Antenatal clients
•lower abdominal pain	.9	.5
•purulent urethral discharge	1.2	.7
•pain on passing urine	.9	.4
•wound/ sores in the genital area	.7	.5
•swellings in the groin	.4	.1
•wounds/ sores in the mouth	.2	.1
•skin rash	.4	.7
•treatment for STIs	2.1	1.6
•antibiotic treatment	3.4	3.4

Clinical Signs

Overall, 40 percent of ANC clients and 37 percent of FP clients had at least one clinical sign (of 16 possible clinical signs). Of women who had a RTI, based on laboratory diagnosis, only 43 percent and 37 percent of ANC and FP clients, respectively, had at least one clinical sign. Again, this points to the high proportion of women with an RTI who show no clinical signs during examination. There is a higher proportion of ANC women with signs of vaginal or cervical discharge (Table 6). For example, 8.1 percent of ANC clients as compared with 1.7 percent of FP clients had white/ curdy discharge. The differences in prevalence of vaginal discharge between family planning clients and antenatal clients is most probably due to the hormonal, biochemical and metabolic changes that occur during pregnancy described earlier.

Table 6:

Presence of signs of infection, as noted by providers during pelvic examination

Clinical sign	Family Planning clients	Antenatal clients
Inspection (vulva/ buttocks/ groin)		
•rashes/ vesicles	00.4	001
•ulcers/ wounds/ sores	00.4	00.7
•warts	00.2	00.2
•swellings in the groin	00.1	00.2
•clear discharge	17.9	14.3
•white/ curdy discharge	01.7	08.1
•greenish discharge	000	00.1
•yellow discharge	00.9	03.7
Speculum examination		
•warts on vagina wall	0.1	00.6
•curdy discharge in vagina	1.6	06.8
•cervical warts/ polyps	0.3	00.5
•discharge from cervical Os	4.4	14.3
•cervical erosion/ ulcers	1.0	02.3
Digital examination		
•cervical excitation	15.7	10.8
•tenderness in adnexia	00.1	01.3
•ovarian masses	000	00.1

Risk Factor Information

As part of the checklist, providers asked a number of questions regarding potential risk factors. This included issues such as whether the woman or her partner's employment involved staying away from home, whether she or her partner drink alcohol, perception of risk, and various questions on sexual behavior (see appendix 1 and 2). Data on table 7 show the prevalence of these risk factors among FP and ANC clients.

Table 7:

Presence of risk factors in family planning and antenatal clients.

Risk Factor	Family Planning clients	Antenatal clients
woman's employment involves staying away from home	6.7	5.3
woman has stayed away from home for more than a month in the past three months	6.5	6.5
woman has stayed away from home in the past four weeks	7.1	9.8
spouse's/ regular partner's employment involves staying away from home	22	19.9
spouse has stayed away from home for more than a month in the past three months	13.8	11.2
spouse has stayed away from home in the past four weeks	16.6	19.5
spouse drinks alcohol at least once a week	41	30.9
woman drinks alcohol at least once a week	5.7	2.1
woman thinks that her partner has sex with other women	14.1	8.5
woman thinks she is at increased risk of getting an STD	17.1	9.2
woman thinks she is at increased risk of getting HIV infection	14.2	7
woman thinks she might currently have an STD	2.3	1.7
woman has been treated or sought treatment for an STD in the past 12 months	5.7	4.7
woman has had more than one sexual partner in the past three months	2.6	1.7
woman has had more than one sexual partner in the past four weeks	2.6	1
partner used a male condom that last time she had sexual intercourse	7.2	3.6
woman used intravaginal preparations for the purpose of drying or constricting the vagina for sexual intercourse in the past three months	1.1	.7

Many of the factors, such as drinking frequency, perception of risk of STI or HIV infection, treatment for STIs or multiple partners, are more common among FP clients as compared with ANC clients, yet this group showed a lower prevalence of all RTIs (except for BV, which was roughly equivalent). Overall, 59.1 percent of FP clients and 66.7 percent of ANC clients answered yes to at least one risk factor.

A number of women (17.1 and 9.2 percent of FP and ANC clients, respectively) said that they felt that they were at increased risk of getting an STI. It is interesting to note the reasons women gave for this feeling. One of the most common reasons cited was that the men in their lives put them at risk. The following quotes highlight this sentiment:

> "You can never trust a man 100%"
> "He doesn't zero graze"
> "A man is a man and can do anything when he is out"

Some specifically mentioned that they knew or suspected that their partners had other sexual partners, while some felt that because he went out and drank he then often ended up with other women. This highlights the need for programs to reach men more effectively in education and counseling regarding STIs and behavior change.

Effectiveness of Syndromic Management

Staff at the Nakuru Municipal Council clinics had been trained in the use of standardized clinical algorithms for diagnosing and deciding management of clients presenting with symptoms suggestive of STIs. Syndromic diagnoses were made in 51 and 147 of the family planning and antenatal clients recruited in the study, respectively. Table 8 shows the proportion of family planning and antenatal clients that received diagnosis for the different STI syndromes. It should be noted that not all women attending for these services were recruited into the study, and therefore this does not necessarily indicate **all** women who were diagnosed through syndromic management at the clinics. Nonetheless, the limited proportion of these women diagnosed through syndromic management is particularly striking given the high prevalence of RTIs among this population.

Table 8:

Syndromic diagnoses made by providers

Syndrome	Family Planning clients (n=906)	Antenatal clients (n=815)
Vaginal discharge	4% (36)	13% (106)
Genital ulcer	.3% (3)	1% (8)
Lower abdominal pain	1.1% (10)	2.9% (24)
Bubo (swelling in the groin)	-	.5% (4)
Warts	.2% (2)	.6% (5)

During the study, clinic staff recorded all information obtained from the client on history and clinical examination using a standardized checklist. A review of these checklists showed that not all clients who complained of and/or were found to have abnormal vaginal discharge on clinical examination were diagnosed as having vaginal discharge syndrome and managed accordingly. A syndromic diagnosis of vaginal discharge was more likely if the woman complained of vaginal discharge and was found to have one on clinical examination (figure 6). It is not clear from this study as to why a syndromic diagnosis was made for some of the women complaining of vaginal discharge and those found to have an abnormal vaginal discharge and not the others.

Figure 6:

Proportion of clients with symptoms and/or signs of vaginal discharge for whom staff made syndromic diagnosis
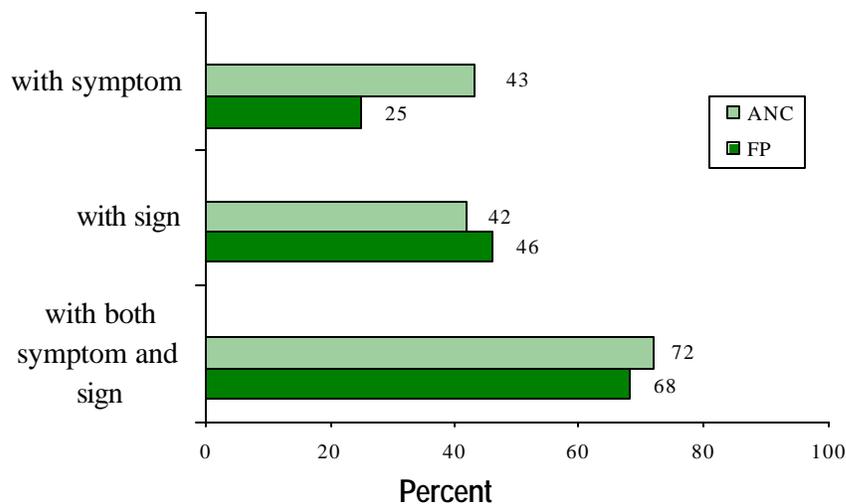
These findings suggest that clinic staff were not necessarily following the provided algorithms to diagnose and manage clients attending clinics for family planning and /or antenatal services. This finding may partially explain the big discrepancy between the small number of women syndromically diagnosed to have an STI and the large number of clients found to have an RTI on laboratory testing.

The findings also show that there is a discrepancy between reported symptoms of vaginal discharge and clinical findings. Fewer than one-half of women reporting vaginal discharge on history were found to have evidence of abnormal vaginal discharge on clinical examination. This in itself presents a decision-making problem for the clinical staff. Some of the syndromic algorithms available recommend that women be treated on the basis of symptoms alone while others recommend treatment only if the symptom is accompanied by clinical finding of an abnormal discharge. Since most of the available algorithms start with a symptom, clinical staff may not know what to do for those clients with no symptoms but have (not have) signs of abnormal vaginal discharge. This may be another reason for the smaller number of women for whom syndromic diagnosis was made in this study.

Another probable reason for the low number of women diagnosed syndromically is a function of the study; during the first debriefing meeting with providers, some indicated that because they knew women were getting tested, they chose to wait for lab results rather than using syndromic management. Although this was not the protocol for the study, it shows that some still have more faith in lab diagnosis, and will rely on this if they have the option.

How effective are current algorithms in identifying women with RTIs?

The effectiveness of using existing algorithms was assessed in this study by comparing syndromic diagnoses made by the clinic staff with laboratory test results. Data from this study show that using syndromic management will lead to some women being treated who do not have an RTI. However, the majority who were diagnosed to have the vaginal discharge syndrome, for example, did have an infection, though this was much more likely to be vaginitis than cervicitis. In fact, the positive predictive value—that is, the presence of infection in those treated syndromically for vaginitis is reasonable (either 61 or 70 percent), but is very low for cervicitis (8 or 11 percent). Using this approach to decide on treatment for vaginal discharge would have led to 36% and 29% of family planning and antenatal clients being treated for an RTI when in-fact they did not have any infection. As these data show, syndromic approach to management of STIs does not lead to so much over-treatment of uninfected clients- a common belief and criticism of syndromic management. Although the positive predictive values for any RTI and vaginitis were high, very few women with an infection were identified through this technique—that is, the sensitivity of using a diagnosis of vaginal discharge syndrome to manage RTIs is extremely low (Table 9). The study showed that the majority of women with infection are missed when the vaginal discharge syndrome is used - 95% and 82% of family planning and antenatal clients with laboratory evidence of an RTI were not diagnosed using syndromic approach.

Table 9:

Performance of vaginal discharge syndrome in identifying RTIs

	Sensitivity	Specificity	Positive predictive value
Any RTI FP	5%	79%	48%
ANC	16%	92%	74%
Vaginitis: FP	5%	97%	61%
ANC	16%	91%	70%
Cervicitis: FP	6%	96%	11%
ANC	10%	87%	8%

The current algorithms are symptom based- that is the starting point is the symptom that the client presents with. Once a client complains of a symptom, clinical assessment is undertaken and a decision taken whether to treat the client for that syndrome or not. Figure 7 pulls together some of the information on symptoms, signs and risk factors, showing the proportion of women with an RTI that has at least one symptom or clinical sign or risk factor. The data show that almost half of women who had a positive laboratory test for an RTI had no clinical signs or symptoms suggestive of an infection. This poses a significant problem for syndromic management to reach the majority of women with infection. Although roughly two-thirds of women with an RTI on laboratory testing did have at least one risk factor, this is still not a very useful way to identify cases since each individual risk factor had low prevalence and therefore is not useful as a predictor.

Figure 7:

Proportion of women with an RTI (lab diagnosis) with any symptom, clinical sign or risk factor
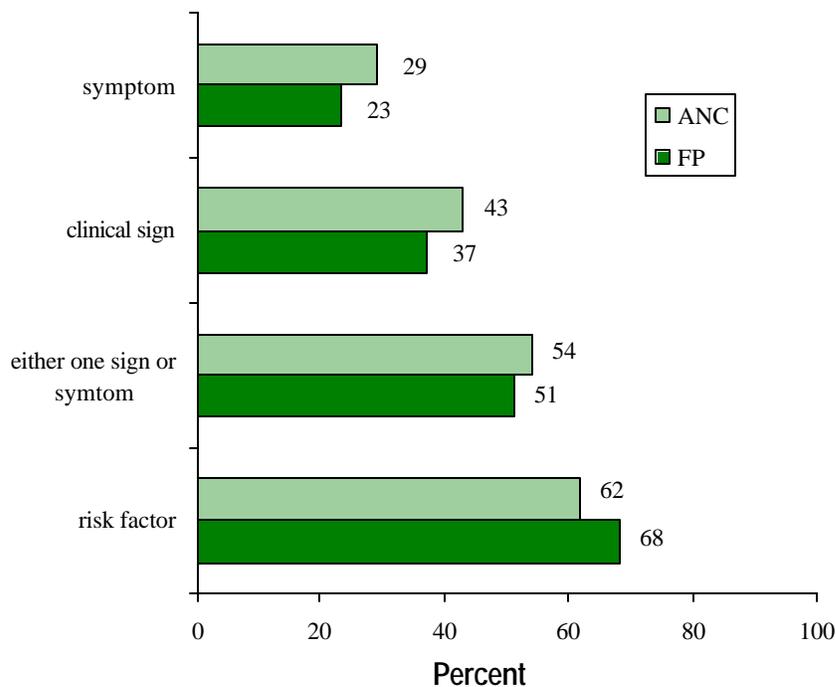
The effectiveness of the vaginal discharge symptom and/or sign[16] in identifying cervical infections was assessed using laboratory test results for the presence of gonorrhea and/or chlamydia as the gold standard. Table 10 shows the sensitivity, specificity and positive predictive values when vaginal discharge symptom and/or sign are used to diagnose cervical infections in women attending clinics for family planning and antenatal care services. In summary, vaginal discharge symptoms and/or signs have poor sensitivity and positive predictive values but have a good specificity. This can be interpreted to mean that the vaginal discharge symptoms and/or signs are very good in identifying women who do not have cervical infection but poor in identifying those with the infection.

Table 10:

Effectiveness of the vaginal discharge symptom and/or sign in identifying clients with cervical infection

Vaginal discharge symptom and/or sign	Type of client	Sensitivity	Specificity	Positive predictive value
Symptom alone	FP	9	93	9
	ANC	19	84	11
Sign alone	FP	7	94	9
	ANC	26	80	12
Both symptom and sign	FP	4	98	16
	ANC	6	93	8

Do clients return for follow-up?

The clinical algorithm currently in use in Kenya recommends that all women presenting with abnormal vaginal discharge be treated for vaginitis (trichomoniasis, candida and bacterial vaginosis) first and requested to return to the clinic one week later for review. At the one-week visit, a decision will be taken whether there has been clinical cure or the client needs treatment for cervical infection (gonorrhea and chlamydia). For this approach to effectively reach clients with cervicitis, the clients must return to the clinic for follow-up. Overall, 42 percent (381) of family planning clients and, 46 percent (371) of antenatal clients returned for their scheduled follow-up visits. It should be noted that this follow-up rate (over 40 percent) is higher than one would normally expect because women were more likely to return since they wanted to get their lab results. In addition, women were promised a reimbursement of their travel cost if they returned for the follow-up and that they would not have to pay any registration fee. Clients diagnosed to have an RTI using a syndromic approach were more likely to return for their follow-up visits. For example 57% of the 42 family planning clients for whom staff made a syndromic diagnosis ever came back to the clinic for review. Similarly, 51% of the 121 antenatal clients with a syndromic diagnosis ever returned to the clinic for review. Given that this was a research project with other incentives mentioned above for the clients to come back, one would expect an even poorer return rate in normal clinic operations. Therefore, many clients with cervical infections may not receive appropriate treatment despite having attended the clinics with suggestive symptoms.

Does risk assessment make a difference?

One way of improving on the effectiveness of the current clinical algorithms (flow charts) that has been proposed is the addition of risk assessment information to these tools. However, as shown earlier, most risk factors are not common among clients attending clinics for family planning and/ or antenatal

care services. In addition there has been no general agreement on what risk factors to include in the risk assessment. One suggestion has been that these have to be adapted to local situations. In an attempt to identify locally relevant risk factors, information on several potential risk factors was obtained from all women recruited into the study. Using univariate and multivariate analysis procedures[17] a set of risk factors were identified for the family planning and antenatal clients separately. For the family planning clients, a model containing six risk factors (see Table 11) was fitted. This model was associated with a sensitivity of 5%, specificity of 100% and positive predictive value of 60%.

Table 11:

Risk Assessment model for cervicitis among family planning clients

Variables in model	Prevalence of variable	Crude ODDS ratio	Adjusted ODDS Ratio	Relative importance of variable in model
History of lower abdominal pain in client	8.5	0.03	0.07	3
History of purulent vaginal discharge in client	3.6	2.29	8.98	2
Condom use during last sexual intercourse	7.2	0.58	0.20	2
Frequent alcohol intake by partner away from home	42.4	1.58	1.74	1
History of lower abdominal pain in partner	0.9	4.2	17.6	1
History of STI treatment in partner	2.1	0.68	0.14	1

To determine the relative importance of each of these variables in the model, we calculated the standardized coefficients for each of the variables and used the absolute values (corrected to the nearest whole number) to represent their relative importance. Using this approach, we found that a negative history of lower abdominal pain in the client was the most important variable. This was followed, in order of importance by a positive history of purulent vaginal discharge in the client, history of not using a condom during last sexual intercourse, history of no recent STI treatment in partner, frequent drinking by partner and a positive history of lower abdominal pain in the partner.

For the antenatal clients, the best model fitted included six variables (Table 12). Apart from condom use during the last sexual intercourse and history of lower abdominal pain in partner, the rest of the variables were different from those identified in the model for family planning clients. The differences in socio- demographic characteristics and prevalence of infections between family planning and antenatal clients reported earlier may be responsible for the differences in the models. This model was associated with a sensitivity of 7%, specificity of 100% and positive predictive value of 63%.

Table 12:

Risk Assessment model for cervicitis among antenatal clients

Variables in model	Prevalence of variable	Crude ODDS ratio	Adjusted ODDS Ratio	Standardized Coefficient
Age of client (less than 19 years)	20.7	.99	2	1
Condom use during last sexual intercourse	3.6	.96	.0003	4
Frequent travel from home by partner	19.8	1.6	1.75	1
History of blood stained discharge in client	1.0	5.9	8.30	1
History of lower abdominal pain in partner	0.5	9.8	12.65	1
History of pain on passing urine in partner	0.4	19.7	20.41	1

Using the absolute values of the standardized coefficients for the variables in the model as described before, we found that not using a condom during the last sexual intercourse was the most important variable in the model. This was followed by age of the client (less than 19 years), history of frequent travel away from home by partner, history of blood stained vaginal discharge in client, history of lower abdominal pain in partner and history of pain on passing urine in partner in that order.

In summary, although these are the best risk assessment models that can be fitted from the data for predicting the presence of cervical infection among women attending clinics for family planning and antenatal services, they only identify a small number of clients with cervical infections. However, they have good specificity and positive predictive values.

Adding the presence of vaginal discharge symptom and/or sign to the risk assessment models did not lead to any significant improvements in the ability of the clinical algorithms (flow charts) to predict the presence of cervical infection in women. The combined models for family planning clients were associated with poorer sensitivity, specificity and positive predictive values. The combined models for the antenatal clients did not have any effect at all on the ability of the algorithms to predict cervical infection

These data suggest that combining risk assessment and the clinical algorithms that rely on the presence of vaginal discharge symptom and/or sign may not lead to any significant improvements on the effectiveness of clinical algorithms (flow charts) in detecting cervical infections.

Although risk assessment, or at least the risk factors that we measured in this study, do not appear to be helpful in improving case management, there are other potential benefits for incorporating risk assessment into services for ANC and FP clients. It can be an important aspect of counseling and generally of educating clients about their potential risk for STIs. It could certainly help in addressing one of the priority interventions recommended in the recent USAID integration guidelines: *"counseling services to increase knowledge, perception of personal risk, behavior change, contraceptive method selection, etc."* There is a need now to determine how to make sustained improvements to counseling and assess what kind of impact this has on clients' perceptions and behavior change. This study does provide evidence for the feasibility of adding risk assessment to counseling sessions. In addition, a study in Zimbabwe that included a time-motion study of providers showed that risk assessment took very little time, and so was not a significant burden on providers. (Marangwanda et al. 1999)

As part of the checklist, providers noted whether they counseled clients for various issues related to STIs and HIV/AIDS. As figure 8 shows, the majority of women did receive this counseling, according the provider reports. It is certainly possible with self-reporting to get an overestimate. However, what is notable is that the figures for dual contraception and for condom use are lower than for the other issues. Based on the high prevalence of RTIs and the low ever use of condoms among clients in the study, it seems clear that counseling on condoms, including their use with other methods, is an area that still needs improvement. Although no baseline information was collected immediately prior to the introduction of the checklist, an earlier study (Kariba et al.) had found that clients attending the Nakuru Municipal Council clinics for MCH/FP services rarely received any STI/HIV IEC and counseling. One reason given at the time was lack of a standardized checklist to guide and keep reminding the providers of the need to provide this service to clients. This study, therefore, demonstrates that when such a checklist is made available most clients get counseled about STIs and HIV/AIDS.

Figure 8:
Counseling on STI related issues among FP and MCH clients
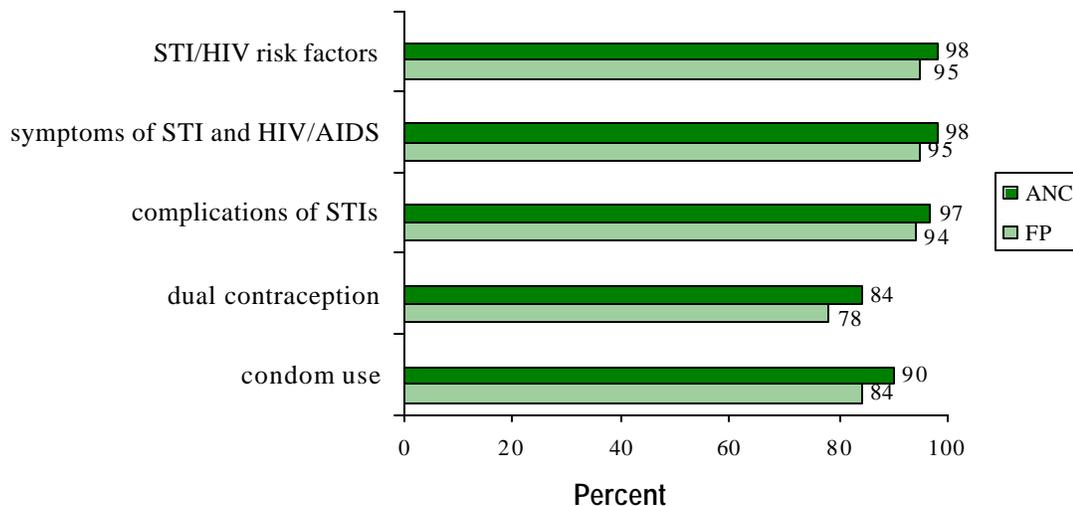
It is essential that integrated programs look at effective ways to have partners treated. Otherwise, women are at a significant risk of being re-infected even if they do actually receive treatment and are cured of their infection. However, there are a number of problems with partner notification in syndromic management. First of all, with syndromic management, some women without infection are actually diagnosed. Having them notify partners then that they should get treatment can lead to various negative repercussions. In addition, syndromic management does not give a specific diagnosis but instead identifies a woman as having a syndrome, which can be caused by various infections, only, some of which are sexually transmitted. In this project, the most common RTIs among the ANC and FP clients were bacterial vaginosis and candidiasis, both of which are not sexually transmitted and do not necessarily require partner notification. It is important to keep in mind that one of the principles of partner notification is to "do no harm". In a discussion on partner notification in the AIDSCAP handbook on the control of STDs, the authors point out that *"Vaginal discharge is less specific for the presence of an STD. The decision to treat male partners of women with vaginal discharge should be made based on the overall prevalence of STD in the community and the availability of laboratory diagnosis."*[18]

Provider and client perspectives

As described earlier, providers used a checklist to collect information from each client. This checklist included medical history, obstetric and gynecological history, clinical information, counseling issues and risk assessment questions. The amount of information collected was more extensive than what was done in regular practice in the clinic, so we asked both providers and clients how they felt about this process and about the project in general. In particular, we focused on perceptions of the pelvic and speculum examination and the risk assessment questions. All 18 providers who participated in the study were interviewed. In addition, 195 clients were interviewed, including 101 antenatal and 94 family planning clients. The researchers based at the clinics conducted the interviews with all clients who consented over a one-week period.

General comments

Many providers felt that the checklist was initially difficult to implement. Of the 18 providers involved in the study, 13 felt it was either somewhat difficult (9) or very difficult (4). Mostly, they emphasized that it took a lot of time. Some also felt that a few of the questions in the risk assessment portion were too difficult or too personal to ask. However, providers said that after using the checklist for a couple of months, their perceptions changed. Only 2 of the 18 felt that it was somewhat difficult, while 16 said it was not difficult to implement (figure 9).

Figure 9:

Change in provider attitudes towards implementing the checklist
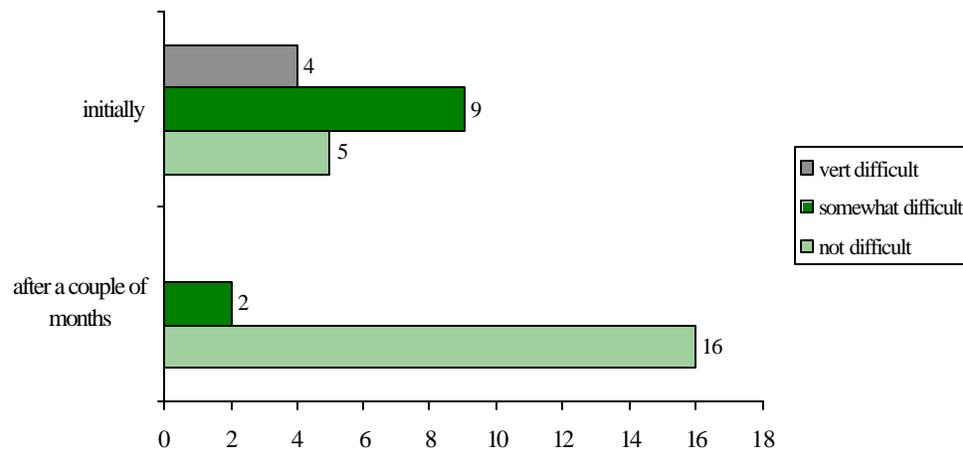
Overall, providers felt that the checklist was useful. Most (14) said it was very useful, while the remainder (4) felt that it was somewhat useful. As one provider explained, *"we were able to detect things we wouldn't have detected, e.g. ANC mothers have infections, which we normally overlook if the client doesn't mention it."* Another said that *"after completing the checklist you know what type of partner she has and also during the checklist you counsel the woman on various ways to handle situations, i.e. if her partner is cheating on her."* Almost all (17) would like to continue using a checklist for managing clients, either the same one (6) or a modified version (11). Most changes that providers proposed had to do with shortening the checklist to make it more manageable as part of their regular practice. They felt that there were sections that were unnecessary and just created extra work and wasted time.

Providers were also asked about general issues around integration of services. The main problems that they had encountered included the following: staff shortages, time taken to complete checklist, some clients could not pay for treatment if an STI was identified, contact tracing, and lack of equipment. The solutions that they proposed included adding more staff, providing drugs free of charge and improving counseling to help improve contact tracing.

Clients were very enthusiastic about the services that they received. The comments shown in box show some of their feelings.

> **Client comments regarding integrated services**
>
> "This is a blessing, because of these exams. So many women will benefit and this should continue."
>
> "These services are very helpful for women because if the husband is unfaithful and infects her with a disease, she will be able to get treatment and both will receive counseling on STIs and ways to avoid them, especially the man."
>
> "I would recommend that we women be getting these kind of services at least once a year. I was very happy and satisfied."

Almost all (99.5 percent) would recommend the clinic to a friend. When asked why, about half (49 percent) said because they liked the services, 23 percent mentioned that they would like her to benefit as well, 21 percent cited the importance of the exams and 17 percent referred to that fact that the staff were pleasant and good-hearted. Of those who had not come to a Municipal Council clinic before, roughly one-third (32 percent) had themselves been recommended by a friend. Of the women who had received services previously from the clinic, they felt that the services were very different and that they were happy and pleased about these differences. In particular, they liked the fact that they would find out if they were sick. Antenatal clients were also happy to find out if their baby was healthy. When clients were asked what they particularly disliked about the services, most (87 percent) said they liked it all. Of the remaining 13 percent, the most common responses were that they waited too long (five percent) or that they disliked the speculum exam (five percent).

We asked providers if their participation in the project has influenced the way they do their work and relate to clients, and most (16) said that it did. In particular they focused on the improvements in their interactions with clients. They felt that through spending more time with clients they were able to develop better rapport, the relationships became closer and the trust greater. In addition, it enabled providers to understand clients better. In the words of one provider, *"I can relate very nicely with clients because they feel that the provider is interested in their health and we are ready to help them in case of any problem."* In the quote (shown in box), a provider describes how the relations with clients changed and how this in turn acted as a motivation in her work:

"The nature of this study has meant that one is spending more time than we usually do with a client…The fact that you've dealt so closely and personally with a client motivates you to follow her up and see that she gets treatment if it's necessary and that she's okay… One tries to do one's best and you give each client time and make sure you've done a thorough job. The reward has been the client's appreciation. They have told us we are doing an excellent job—one that's very helpful to women."
provider

However, one provider pointed out problems with the way they had been offering services during the project. She felt that the services offered actually deterred single women from coming. As she explained, *"the single ones have kept away because they know what it is we're looking for (i.e. STIs) and they don't want these tests."*

Clinical Procedures

Providers were asked about the various procedures they performed as part of the checklist, including the general exam, breast exam, pelvic exam and clinical history. The vast majority felt completely comfortable with performing these procedures, with the exception of the pelvic exam, for which one-third of the providers indicated that they were only partly comfortable. They explained

that this was due to the fact that they had not been typically doing this and so they felt out of practice. Almost all felt that the procedures were very useful in terms of managing clients. As one provider explained, *"all these procedures are very useful as they act as a way to determine a client's condition even before the specimen taking. They help one rule out certain conditions as well as determining any problems a client may be having right from the beginning."*

Providers did feel that it was more difficult to implement portions of the checklist with antenatal clients. In particular, the digital exam posed a problem with these clients, especially checking for cervical excitation and the position of the uterus. However, they did feel that it was important to continue performing a speculum exam for both FP and antenatal clients in order to sustain the quality of care that they had been providing.

While the majority (76 percent) of clients said they were completely comfortable with the speculum exam, 21 percent were only partly comfortable and 5 women (3 percent) were not at all comfortable. Many of those who were partly comfortable said that they were initially scared, as some had never had "that metal thing" inserted in them before, but it was not as bad as they had expected. The following quotes elaborate on this:

• *"at first I was scared, but sister explained everything and I was reassured"*

• *in the beginning I was tense, but actually the speculum is not painful. I was just scared for nothing."*

• *"first I was scared of the speculum, but I found it is not painful only uncomfortable"*

The following quote from a client shows the difference in perception of the examination when clients are not properly counseled beforehand: *"I was slightly scared of having the speculum inserted. I thought that the doctor was going to leave it inside and also I didn't understand why it was being inserted."* Another woman explained her discomfort with the taking of specimens: *"I've never had a blood or urine sample taken before so I felt slightly embarrassed giving a urine sample and scared of having blood removed. It's not that I disliked it, it was just a bit embarrassing."*

> "I particularly liked the exam. You know us mothers never get time to be examined. Now that it is done at this time it is much better and very convenient."
> Client.

When asked about what they particularly liked about the services that they had received, the majority (71 percent) specifically mentioned the examination and the tests done to find out whether or not they were sick.

Not only did women mention the exams as an aspect of services that they particularly liked, but they also mentioned the exams as a key reason that they would recommend the services to a friend. This was referred to by 21 percent of women interviewed. They felt these exams were important and thorough and would detect any infection the woman might have.

The risk assessment portion of the checklist included 23 questions about the client's behavior as well as her partner's behavior (see appendix 1). Questions included issues such as number of sexual partners, drinking patterns and whether the client or her partner's work takes them away from home. There is a widespread assumption that neither providers nor clients feel comfortable with these types of questions, in particular the questions regarding sexual behavior. We found that this was generally not true. Although some questions were viewed as problematic, both providers and clients felt fairly comfortable about asking or being asked these questions, and also saw the usefulness of doing so. One client explained that *"the questions asked are good—they make one think,"* while another explained that *"they are informative."* One woman said she particularly liked those questions about sexual behavior because *"they make me aware of possible STIs and how to avoid them."*

Among the 18 providers, only one indicated that she was not at all comfortable with asking the questions. The rest were split between feeling partly comfortable (9) and completely comfortable (8) with the questions. A few questions were seen as repetitive or unnecessary. The one question that a large number of providers felt was a problem was the question "When was the last time you had sexual intercourse". They felt that this was too personal and that it *"goes against our cultural beliefs to ask so it tends to make clients uncomfortable."*   Two providers thought that the checklist would be better without the risk assessment portion.

Almost all (99.5 percent) of the clients interviewed said that they were completely comfortable with being asked about their behavior, while 98 percent were completely comfortable with being asked questions about their partner's behavior. When women were asked what they particularly liked about the services they had received, 11 percent mentioned the questions that they were asked. It is certainly likely that there was some courtesy bias in how clients responded to these questions. Providers indicated that they felt that clients sometimes did not answer truthfully during the risk assessment questions because they were uncomfortable with being asked sensitive questions.

Concluding Observations and Recommendations

These findings support some of the guidelines put forth in a recent document from USAID, *Integration of Family Planning/MCH with HIV/STD Prevention, Programmatic Technical Guidance: Priority for Primary Prevention with a Focus on High Transmitters* (December 1998). The authors summarize a number of weaknesses of integrated programs, including an overemphasis on the clinical management of STDs, the ineffectiveness of the syndromic algorithm for vaginal discharge, and inadequate support for primary prevention of sexual transmission of HIV and other STDs, especially for condom promotion and behavior change intervention. Based on these weaknesses and successes of various other projects, they recommend a number of activities, including the following:

• *behavior change communication to reduce unsafe, unprotected sex*

• *aggressive condom promotion both in clinics and non-clinical settings*

• *counseling services to increase knowledge, perception of personal risk, behavior change, contraceptive method selection, etc.*

In addition to supporting the above, the findings from this study also provide evidence for the feasibility of improving counseling and other primary prevention activities. The findings also stress the importance of the community element in improving efforts at addressing the problems of HIV/AIDS and STDs. The authors of the USAID report refer to this in stating that *"interventions for the general population support a social norm for action against STDs that is necessary for the overall effort."* The problems of STIs and HIV/AIDS will not be changed solely by work in the clinics, and it is clear that there must be continuing efforts to help change community norms regarding sexual behavior, condom use, health seeking behavior and partner communication. It is only in this way that there will be true and sustained change.

Two dissemination workshops were held: the first in Nakuru with over 50 participants on February 2, 1999 and the second two days later in Nairobi with over 40 participants. The meeting in Nakuru included representatives from the Provincial Medical Officer's office, the Nakuru Municipal Council, including the nurses from the clinics who had been involved in the study, the MOH's Provincial General Hospital and other district and provincial level personnel.

The Provincial Clinical Officer set the tone of the meeting in Nakuru with the following words: *"research is meant to improve our work so we can do things effectively."* This led to extensive discussion and suggestions on the meaning of the findings and the implications for programs and policy. The

recommendations from Nakuru were then incorporated into the Nairobi dissemination and became part of the lively discussion that followed the presentation of findings. The following were the key recommendations.

• **Focus on prevention**; given the problems associated with using the syndromic approach to identify and manage RTIs among women attending MCH/FP clinics, we should emphasize taking a public health approach where we emphasize preventive approaches that have been shown to be cost-effective compared with treatment. A participant at one of the workshops summed the discussions thus;

"While we continue to debate syndromic management, we can focus on TEC, condom promotion, counseling and raising awareness about STIs"

• **Improve on STI/HIV IEC;** the large discrepancy between reported symptoms and signs found during clinical examination might be a reflection of clients' poor knowledge of the symptoms associated with these infections. Therefore there is a need to improve skills of providers and to encourage them to undertake systemic STI/HIV IEC for clients in order to improve on clients' knowledge of STI/HIV related symptoms and signs.

• **Emphasis on clinical examinations;** Data from the study showed major discrepancies between reported symptoms suggestive of RTIs and clinical findings. Clinical examinations identified more women with RTI related signs compared with reported symptoms. In addition, clinic staff were comfortable conducting the examinations and the clients appreciated being examined. Therefore, staff need to be encouraged and enabled to undertake clinical examinations for antenatal and family planning clients routinely.

• **Encourage the use of integrated and standardized checklists in the provision of family planning, antenatal care and STI/HIV services.** Data from the study showed that the checklist enabled more clients with symptoms and signs suggestive of STIs to be identified and the vast majority of clients received STI/HIV counseling.

• **Review our partner notification strategies and improve community understanding that not all infections are sexually transmitted given that most of the infections among women attending MCH/FP clinics are not sexually transmitted**; as one provider explained, "we need to have a language to explain the infection… most RTIs are not STIs. The moment we label it an STI, we break up the family rather than unite the family."

• **Review treatment guidelines to emphasize effective treatment of vaginal infections, which have a high prevalence among this population;** though there has been a strong focus on cervical infections, recent evidence indicates the importance of treating bacterial vaginosis and trichomoniasis both of which are much more common than gonorrhea and/or chlamydia and have a high potential for serious health impacts.

• **Continue using syndromic management in Nakuru to manage clients presenting with symptoms in spite of its problems, until there is something better**; the following comments reflect this opinion from participants in Nakuru: "What alternative is there?"; "For some time we may have to do without labs as there are no funds to support them"; " meanwhile, we need to do something for those clients with symptoms."

[1] *AIDS epidemic update: December 1998*. UNAIDS Joint United Nations Program on HIV/AIDS and the World Health Organization.

[2] *An Overview of Selected Curable Sexually Transmitted Diseases*.
WHO Office of HIV/AIDS and Sexually Transmitted Diseases.
http://www.who.int/asd/akagmer.htm

[3] *AIDS in Kenya: Background, Projections, Impact and Interventions.*
Edited by TM Okeyo,

GM Baltazar, J Stover, A Johnston. Fourth Edition, National AIDS and STDs Control Program (NASCOP), 1998.

[4] Grosskurth, Heiner et al. "Impact of improved treatment of sexually transmitted diseases on HIV infection in rural Tanzania: randomized controlled trial." *The Lancet*. Vol. 346. August 26, 1995.

[5] *Action for the 21ˢᵗ Century Reproductive Health & Rights for All. Summary report of recommended actions on reproductive health and rights of the Cairo ICPD Program of action, September 1994*. Prepared by Maria Jose Alcala, Family Care International. 1994. New York.

[6] *Health Worker Training in Sexually Transmitted Infections: Facilitator Notes*.
Strengthening STD/AIDS Control in Kenya Project. University of Nairobi and University of Manitoba. March 1996.

[7] Maggwa, Baker Ndugga and Ian Askew. *Integrating STI/HIV Management Strategies into Existing MCH/FP Programs: Lessons from Case Studies in East and Southern Africa*. The Population Council. Nairobi, Kenya. July 1997

[8] Welsh, M., P. Feldblum and S. Chen. "Sexually Transmitted Disease Risk Assessment Used Among Low-Risk Populations in East/Central Africa: A Review." *East African Medical Journal*. Vol. 74 No. 12. December 1997.

[9] Twahir A., Maggwa BN and Ian Askew. *Integration of STI and HIV/AIDS Services with MCH-FP Services: A Case Study of the Mkomani Clinic Society in Mombasa, Kenya*. Africa OR/TA Project II, Population Council, Nairobi, Kenya. 1996; and Kariba WJ., Kariuki KB and Maggwa BN. *Integration of STI and HIV/AIDS with MCH-FP Services: A Case Study of the Nakuru Municipal Council's Project on Strengthening STD/AIDS Control*. Africa OR/TA Project II, Population Council, Nairobi, Kenya. 1997

[10] Mukaire J., Kalikwani F., Maggwa BN and Kisubi W. *Integration of STI and HIV/AIDS Services with MCH-FP Services: A Case Study of the Busoga Diocese Family Life Education Program, Uganda.* Africa OR/TA Project II, Population Council, Nairobi, Kenya. 1997.

[11] Baakile B., Maribe SJ., Maggwa BN and Miller RA. *A Situation Analysis of the Maternal & Child Health/Family Planning (MCH/FP) Program in Botswana*. Africa OR/TA Project II, Population Council, Nairobi, Kenya. 1996;

[12] Maggwa BN and Askew I. *op. cit.* 1997.

[13]   Kariba, WJ, BK Kariuki and BN Maggwa. *op cit*. 1997.

[14]   Dallabetta, Gina A, Antonio C Gerbase and King K Holmes. "Problems, solutions, and challenges in syndromic management of sexually transmitted diseases." *Sexually Transmitted Infections.* June 1998. Vol. 74, Supplement I.

[15]   *Kenya Demographic and Health Survey 1998, Preliminary Report.* Macro International Inc. Calverton, Maryland. September 1998.

[18]   Toomey, Kathleen E., Ahmed S. Latif and Richard C. Steen. "Partner Management" in *Control of Sexually Transmitted Diseases: A Handbook for the Design and Management of Programs*, edited by Gina Dallabetta, Marie Laga and Peter Lamptey. AIDSCAP/ Family Health International.

[16]   A vaginal discharge symptom was said to be present if a client complained of the presence of yellow, or blood stained or foul smelling or an increase in the vaginal discharge. The vaginal discharge sign was said to be present if on clinical examination the client was found to have a white curd-like or greenish or yellow vaginal discharge or curd-like discharge in the vagina or a discharge from the cervix.

[17]   Model selection using Multivariate Logistic Regression: variables were entered into the model if they were observed to be significant at 10% in the univariate analysis for each specific section, i.e. history, clinical exam and risk assessment. They were subjected to a stepwise multiple logistic procedure using the backward selection procedure in order to control for confounding factors.

REPRODUCTIVE HEALTH ASSESMENT AND MANAGEMENT FORM FOR THE NAKURU MUNICIPAL COUNCIL STI STUDY/ FP FORM

**Informed Consent obtained (circle one):   yes   no

attach sticker

1.   Clinic and Personal Information

Health Facility name		Marital status	YES	NO
Client No.		Cohabiting		
Study No.		Married (Polygamous)		
Time consultation began:		Married (Monogamous)		
Date: Day Month Year		Divorced/Separated		
Client's Name		Widowed		
Date of birth Day Month Year		Single (never married)		
Education (Grade completed)	Grade	**Age at first marriage:**		
Primary		**Contact address (Ask for physical address: "how do I find you?")**		
Secondary		box:		
Tertiary		village/estate:		
Occupation of client		sublocation:		
Occupation of spouse/partner		other info:		
Husband/Father's name		**Religion:**		

2.   Reason for clinic visit, Obstetric and Gynaecologic History

Reasons for visiting the clinic today	YES	NO	Gynaecologic History (Does client currently have ----- ?	YES	NO
New family planning client			Lower abdominal pain (PID)		
Restarting Family Planning			Yellow discharge		
Annual examination			Blood stained discharge		
Re-supply / revisit			Foul smelling discharge		
Problem with method			Increased amount of discharge		
STD treatment			Post coital bleeding		
Infertility			Pain during sexual intercourse		
Date of last visit:			Pain on passing urine		

Obstetric History		Genital ulcers/wounds/sores		
No. of total pregnancies		Painful swellings in the groin		
No. of living children		Warts in the genital area		
Ages of children		Bleeding between periods		
No. of stillbirths		Dysmenorrhoea		
No. of neonatal deaths				
Date last pregnancy ended: Day Month Yr.		**LMP**: Day Month Year		

Out come of last pregnancy	YES	NO	Age at menarche:		
Live birth					
Stillbirth			**Reproductive Intentions**		
Abortion			No. of desired children:		
Neonatal death			Timing of next child:		
Is client on menses?					
Cycle length (No. of days):					
No. of bleeding days:					
Flow: regular/irregular:			**Is client currently breast-feeding?**		

3. General Medical and Contraceptive History

Medical history (Has client ever had or currently have ------ ?)	YES	NO	Contraceptive use history	Ever Use	Current Use
Varicosis			Combined pill		
Jaundice			Progesterone only pill		
Renal disease			Male condom		
Hypertension			Spermicide		
STD			IUD/Loop		
Diabetes			Injectables		
Epilepsy			Implants		
Tuberculosis			Female Sterilisation		
Goitre			Male Sterilisation		
Severe weight loss			Traditional Methods		
Severe weight gain			LAM		
Headaches			Natural FP		
Thrombosis			Female Condom		
Allergy to medicines (e.g., Penicillin)				YES	NO
Toxaemia of pregnancy			Are you on any medication?		
Asthma			Does client smoke?		

4. Clinical examinations, Diagnosis and Treatment

General examination.			*Speculum examination [TAKE SPECIMENS AT THIS TIME]*	YES	NO
Blood Pressure			Warts on vagina wall		
Weight			Curdy discharge in vagina		
Does the Client Have --------- ?	YES	NO	Cervical warts/polyps		
Hair loss or colour change			Discharge from cervix Os		
Jaundice			Cervical erosion/ulcers		
Anaemia			*Digital examination/ Bimanual*		
Ulcers/sores in mouth			Cervical excitation		
Enlarged thyroid gland			Retroverted uterus		
Skin rashes			Anteverted uterus		
Enlarged lymph-nodes			Enlarged uterine size		
Enlarged liver			Tenderness in adenexia		
Breast Exam. Does client have -?	YES	NO	Ovarian masses		
Dimples in the skin			**Syndromic Diagnosis**		
Breast masses/lumps			Vaginal Discharge		
Discharge from the nipple			Genital ulcer		
Ulcers/sores on breast			Lower abdominal pain		
Enlarged axilla nodes			Bubo (swelling in the groin)		
Pelvic exam. Does client have -?	YES	NO	Warts		
Inspection (vulva/ buttocks/ groin)			**Treatment given for syndrome**		

Rashes/Vesicles			1.	
Ulcers/wounds/sores			2.	
Warts			3.	
Swellings in the groin			4.	
Clear discharge			**Family Planning method given (for pill, note # of cycles given; for condom, # of condoms)**	
White/curdy discharge			1.	
Greenish discharge			2.	
Yellow discharge			**If none, reason:**	
			Return Date: Day Month Year	

5. Counselling

Counselling for STIs and HIV/AIDS (NOTE: for all clients)	YES	NO	Information given to Clients with STIs (NOTE: only for clients who are given treatment)	YES	NO
STI/HIV risk factors			Importance of completing therapy		
Modes of transmission			Importance of protecting partners during therapy		
Symptoms of STD and HIV/AIDS			How to protect partners from infection		
Complications of STDs			Condom use		
Dual Contraception			Need to refer partner for therapy		
Condom use			Need to return for check up		

6. Laboratory tests

Specimens taken for lab tests (check if taken)	YES	NO	Laboratory Test Results (to be completed later)	Positive	Negative
urine for Gonorrhea/ Chlamydia			LCR for Gonorrhea		
			LCR for Chlamydia		
HVS for Candidiasis			Candida		
HVS for Bacterial Vaginosis			Bacterial Vaginosis		
HVS for Trichomonas (in-pouch)			in pouch test		
Urine for pregnancy test			Pregnancy test		

7. Follow-up

[NOTE: Follow-up information to be completed when client returns for follow up appointment]

Follow-up Visit	YES	NO	Contact tracing	YES	NO
Date returned: Day Month Year			Contact treated		
Returned on scheduled date					
Returned after due date					
Returned following home visit					
Clinically cured if had STI					
Treatment changed to if not cured					
1.					
2.					
3.					
Client referred elsewhere					

STD/HIV RISK ASSESSMENT CHECK LIST   attach sticker

Questions	YES	NO	DK
1. Does your employment /major source of income activity involve travelling and staying away from home frequently? (Ile kazi ambayo unafanya ama ile njia ambayo inakupatia mapato inakubidi usafiri na ukae mbali na nyumbani mara nyingi?)			
2. Have you stayed away from home for a month or more in the past three months? (Kwa miezi mitatu iliopita, umewahi kukaa mbali na nyumbani kwa mwezi mmoja ama zaidi?)			
3. Have you stayed away from home in the past four weeks? (Katika mda wa wiki nne zilizopita, umewahi kukaa mbali na nyumbani?)			
4. Do you have a regular sex partner? By regular sex partner I mean someone you had a relationship for at least one year **[for married women, other than spouse]** (Uko na rafiki wa kila mara ambaye mnaonana kimwili?)			
5. For how long have you known your spouse (regular partner)? (Umemjua kwa mda gani?) Years: _____			
6. Does your spouse's (regular partner's) employment /major source of income activity involve travelling and staying away from home frequently? (Kazi ambayo huyo mpenzi mmeo wako anayofanya, ama njia ile ambayo inampatia mapato, inambidi asafiri na akae mbali na nyumbani mara nyingi?)			
7. Has your spouse (regular sex partner) stayed away from home for more than a month in the past three months? (Katika mda wa miezi tatu iliyopita huyo mpenzi mmeo wako amewahi kukaa mbali na nyumbani kwa mda wa mwezi moja au zaidi?)			
8. Has your spouse (regular partner) stayed away from your home in the past four weeks? (Katika mda wa wiki nne zilizopita, huyo mpenzi mmeo wako amewahi kukaa mbali na nyumbani?)			
9. Does your spouse (regular partner) go out to drink alcohol at least once a week? (Mpenzi mmeo wako huenda nje kunyua pombe angalao mara moja kwa wiki?)			
10. Do you go out to drink alcohol at least once a week? (Wewe mwenyewe huenda nje kunyua pombe angalao mara moja kwa wiki?)			
11. Some men have sex with more than one woman. Do you think that your spouse (partner) has sex with other women? (Wanaume wengine wanaonana kimwili na wanawake wengine. Unadhani mpenzi wako/mmeo hufanya hivyo?)			
12. Do you think that you are at an increased risk of getting an STD infection? (Unadhani unaweza kuambukizwa ugonjwa wa zinaa?)			
12a.**If yes to Q12**.Why do you think that you are at increased risk?(Kwa nini unadhani unaweza kuambukizwa)			
13. Do you think that you are at increased risk of getting HIV infection? (Unadhani uko hatarini kwambukizwa na Ukimwi?)			
13a.**If yes to Q.13.** Why do you think that you are at increased risk? (Kwa nini unadhani unaweza kuambukizwa?)			
14. Do you think that you might be having an STD infection currently? (Unadhani waweza kuwa na ugonjwa wa zinaa wakati huu?)			
14a. Have you been treated/or sought treatment for an STD in the past 12 months? (Umewahi kutibiwa au kutafuta matibabu ya ugonjwa wa zinaa kwa mda wa miezi kumi na miwili iliyopita?)			
15. Have you experienced (Read from list below---------) the past 12 months before coming to the clinic today? (Katika mwezi kumi na miwili iliyopita, umewahi …….)			
Lower abdominal pain (Kuwa na maumivu katika sehemu ya chini mwa tumbo lake)			
Foul smelling vaginal discharge			

	(Kutokwa na uchafu ambayo unanuka sehemu ya uke wako)			
	Purulent vaginal discharge (Kutokwa na uzaa sehemu yako ya uke)			
	Blood stained vaginal discharge (Kutokwa na uchafu umechanganyika na damu sehemu yako ya uke)			
	Post coital bleeding (Kutokwa na damu baada ya kuonana kimwili na mwanaume)			
	Painful sexual intercourse (Uchungu wakati wa kufanya mapenzi)			
	Pain on passing urine (Uchungu wakati unakojoa)			
	Genital ulcers/wounds (Vidoda katika sehemu za uke)			
	Swellings in groin (Uvimbe kando ya sehemu yako ya uke)			
	Sores/wounds in the mouth (Vidonda kwa mdomo)			
	Skin rashes (Vipele kwa ngozi)			

16. Does your partner currently have or has had any of the following … in the past four weeks? (Kwa mda wa wiki nne zilizopita, huyo mpenzi wako amepata, ama amewahi kupata)

	Lower abdominal pain (Kuwa na maumivu katika sehemu ya chini mwa tumbo lake)			
	Purulent urethral discharge (Kutokwa na uzaa sehemu yako ya ume)			
	Pain on passing urine (Uchungu wakati wa kukojoa)			
	Wound/sores in the genital area (Vidonda katika sehemu yake ya ume)			
	Swellings in the groin (Uvimbe kando ya sehemu yako ya ume)			
	Wounds/sore in the mouth (Vidonda kwa mdomo)			
	Skin rash (Vipele kwa ngozi)			
	Treatment for STIs (Matibabu ya magonjwa ya zinaa)			
	Antibiotic treatment (Capsules or injection) (Autumia capsuli au akadungwa sindano)			

17.When was the last time you had sexual intercourse? (Ni lini mara yako ya mwisho ya kuonana kimwili na mwanaume?)	Day Month Year		

18. Have you had more than one sexual partner in the past three months? (Kwa mda wa miezi mitatu iliyopita, umewahi kuonana kimwili na waume zaidi ya moja?)

19. Have you had more than one sexual partner in the past four weeks? (Kwa mda wa wiki minne zilizopita umewahi kuonana kimwili na waume zaidi ya moja?)

20. With whom did you have sex the last time? (Mlionana kimwili na nani mara ya mwisho?)

	Spouse (Mmeo/mpenzi wako?)			
	Regular Partner (Mpenzi wa kawaida?)			
	New Partner (Mpenzi mpya?)			
	Other (Mtu mwingine?)			

21. Did your partner use a male condom the last time you had sexual intercourse? (Mlitumia mpira?)

22.(**If last partner not spouse**) Did you receive or give money or other types of gifts the last time you had sex? (Alikupatia ama ulimpatia pesa ama zawadi?)

23. Have you used any intra-vaginal preparations for the purpose of constricting and/ or drying the vagina to prepare yourself for sexual intercourse in the past

three months? (Katika miezi mitatu iliyopita, umewahi kutumia kitu chochote cha kukausha ama kukaza sehema ya uke kabla kuonana kimwili na mwanaume?)			

Time consultation ended: