

# Sexually Transmitted Disease Syndromic Case Management Through Public Sector Facilities: Development and Assessment Study in Punjab Pakistan

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## ABSTRACT

**Objective:** Sexually transmitted infections (STIs) are a priority health problem. We proposed a prospective study in two districts of Punjab, using an intervention package, which included guidelines and protocols on syndrome-based management of STIs, adapted in light of technical guidelines from the National AIDS Control Program and the World Health Organization. The aim of this study was to assess the operational effectiveness of STI case management guidelines and to assess factors that determine the adherence to guidelines for management of STIs at public health facilities in Pakistan.

**Methods:** A prospective study lasting 18 months (January 2008 to June 2009), which reviewed early implementation experiences of updated case management guidelines for delivery of syndrome-based STI/reproductive tract infection care, through public-sector health care facilities. The project was implemented in two districts of Punjab, Sargodha and Jhang. A Cox regression model with stratification was done.

**Findings:** The prevalence of STI was 26 per 100,000 patients. In women, the reported symptoms were 80% vaginal discharge and 12% abdominal pain. Forty-four percent of men had a genital ulcer and 29% of men had genital discharge. Age of participants ranged from 13 to 60 years. The study comprised 28.6% men and 71.4% women. The majority of the population attending these clinics was from rural areas (70%). The variables independently associated with adherence to guidelines were availability of male paramedic, age of patient, and type of diagnosis made. There was an important interaction (effect modification) present between the area of health facility and patient sex.

**Conclusion:** Screening, diagnosis, and treatment costs for many STIs are expensive and thus an easier, low-cost, syndrome-based public health strategy is the adoption of the proposed STI syndrome case management guidelines.

**Key Words:** HIV, public sector, sexually transmitted diseases

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This project was funded by the COMDIS (UK). This document is an output from a project funded by the UK Department for International Development (DFID). MAK carried out the background literature

review, identified the research gap, conceived the research question and objectives, and proposed the project. WJ, MA, and MAM contributed to the study methodology. WJ and MA contributed to manuscript writing and its critical review for intellectual content. WJ performed the statistical analysis. JW reviewed the study design with regard to the health systems component and provided technical inputs for the overall project. MAM helped in designing and implementing the project in STI/HIV Pakistan program context and gave technical guidance for tool development. All the authors read and approved the final manuscript. The authors declare that they have no conflicts of interests.

<http://dx.doi.org/10.1016/j.aogh.2015.02.002>

## INTRODUCTION

Sexually transmitted infections (STIs) are spread primarily through person-to-person sexual contact. These infections are among the most common illnesses in the world and require prevention linked to HIV transmission.<sup>1</sup> Each year there are an estimated 340 million new cases of curable STIs, as well as many millions of incurable viral STIs in developing countries. Of the cases, 150 million occur in South Asia and Southeast Asia alone.<sup>2</sup> For several decades, STIs have ranked among the top 5 categories for which adults in developing countries seek health care services.<sup>3</sup> STIs remain a significant worldwide problem in terms of health, economics, and social consequences.<sup>4</sup>

STIs have been associated with HIV and are the focus of public health professionals. Hence, they have been the subject of significant studies over the years that have been conducted throughout Asia to effectively prevent and control STIs. Prevalence has been studied in both general populations and among high-risk groups. A 2009 study conducted in Karachi and Lahore revealed a significantly high prevalence of STIs in high-risk groups. The study, which focused on sex workers, injection drug users (IDUs), and truck drivers demonstrated that 55% of the female sex workers had vaginal discharge and 56% reported lower abdominal pain, whereas 25% of men (sex workers, truck drivers, Eunuchs, and IDUs) reported complaints of urethral discharge, 16% of anal discharge, and 13% of the whole group of genital discharge, whereas 46% reported to have at least one symptom.<sup>5</sup>

Another study to assess the prevalence of STIs in Pakistan was conducted in 2001 and recruited women from private- and public-sector antenatal care (ANC) clinics in four cities. The most reported symptoms were vaginal discharge (63%), lower abdominal pain/backache (70%), and pelvic (29%) and cervical motion tenderness (18%). The etiologic diagnosis of an STI was usually not made but where done correlated poorly with symptoms or examination findings.<sup>6</sup> A 2001 study in Pakistan revealed that STIs were found in less than 0.5% all the women attending ANCs.<sup>7</sup> The prevalence is much higher in high-risk groups.<sup>7,8</sup> These studies suggested the need to understand the factors determining care-seeking among members of high-risk groups; and emphasizing the role of the private health care providers in treatment and control of STIs.

Over the years, Pakistan has been developing quality case management guidelines for STIs and they provided an effective basis for the training carried out by government and the private sector. The management and control of diseases has become a challenge in many countries because of the complexity to diagnose at the early stage, leading to serious and acute complications. Therefore, to take appropriate health measures, it is important to treat STIs at the first contact between

patients and health care providers. It is thus strongly recommended that countries establish and use national standardized treatment protocols for STIs. These can help to ensure the availability of adequate treatment to every patient at all levels of health care services. In 2007, the National AIDS Control Program revised the STI guidelines to use the syndromic approach. Previously, the policy included limited laboratory services available at the primary health care settings; hence the need for revised national guidelines.<sup>9</sup>

We thus proposed a prospective study in two districts of Punjab, using an intervention package, which included guidelines and protocols on syndrome-based management of STI (desk guide and communication tools), adapted in light of NACP and World Health Organization (WHO) technical guidelines.

The primary objective of the study was to assess the operational effectiveness of the proposed STI case management guidelines. The effectiveness was assessed by use of services for increased syndrome detection of STI in the general population. The secondary objective was to predict factors that determined the adherence to guidelines for management of STIs at public health facilities. The outcome of the study was guideline adherence.

## METHODS

### Study Design

This was an operational research prospective study that reviewed early implementation experiences of updated case management guidelines and training materials for delivery of syndrome-based STI/reproductive tract infection care through public-sector health care facilities.

### Study Duration

The study was completed in 18 months (January 2009 to June 2010), through collaborative efforts of the AIDS Control Program and district health offices. The study was integrated in the already established district program setup.

### Study Site and Setting

The project was implemented in two districts of Punjab, Sargodha and Jhang proposed in consultation with the Provincial Program. These districts were selected because the AIDS control program was already functioning in full strength in these districts. The selected districts represented typical health care systems as well as socio-economic background in Punjab.

The intervention package included the following:

- A case management desk guide based on WHO and Pakistan syndromic guideline for primary care facilities
- Training modules, record card and registration, performance management tools, leaflet

- Support to implementation: correct drugs together with a leaflet and condoms available for each patient

Based on the limited evidence available, especially syndromic guidelines, inclusions for the south Asian context were as follows:

- Prescribing for vaginal discharge for vaginitis, and also for cervicitis if symptoms. However, not including a risk identification score approach as in the WHO guidelines, as difficult questions to ask and likely inappropriate in this lower prevalence (than Africa) of STI setting.
- Notification slip to be given to their partner(s) to come in for treatment. We explored the feasibility of prescribing a second set of drugs for the patient to give to their partner, but this was not allowed for a patient not seen in Pakistan.

Through a technical group approach, the guidelines and training/communication materials were updated and further developed, consistent with the revised technical guidelines of the national program and the WHO guidelines for the management of STIs. The package included a training manual for doctors, manual for paramedics, a case management desk guide, and recording reporting tools. A flip chart was also developed to address patient health education. Monitoring tools and related guidelines were designed to collect patient data. Partner referral slips were especially designed for partner STI management. Every patient was counseled and given a referral slip for their partner with an advice to seek treatment for the same diagnosis.

## Training

In the two study districts, trainers from AIDS control program were involved in training about 70 doctors and 70 paramedics on updated guidelines and training materials. One male and one female doctor and paramedic involved in STI care delivery was trained in each facility. The training duration was of 2 days each for doctors and paramedics. Paramedics were also trained on completion of the monitoring tool. The training sessions for doctors and paramedics were funded through project resources. In these two districts, medicines, condoms, printed materials, and other supplies were provided through combined funds or resources of the AIDS program and research resources. Association for Social Development (ASD) regional coordinators managed and facilitated the implementation of new guidelines in two study districts.

## Recording Reporting

STIs were already included in the Health Management Information System (HMIS). Paramedics were trained to record and report STI case management in the routine HMIS. The STI cases were recorded without regard to sex. An effort was made to record the sex of the cases.

Improved recording was important for logistics such as estimates of drugs required.

## Monitoring

The monitoring of the STI case management in the selected facilities of intervention districts was managed through cluster monthly meetings at the district level. The STI facilitator from the respective health facilities reported monthly data on monitoring tools. The indicators included input data such as staff availability, drug supplies, and output data of male/female patients, syndromic diagnosis, treatment prescription, and partner management. The district STI focal person (DTC) then reviewed and verified the reports as per guidelines.

## Logistics

The drugs for STI case management were provided in the initial phase by the project. Later, the program made the arrangements for the supply of drugs in the intervention districts.

**Data collection and data entry.** The data was collected with the help of monitoring forms from each facility by the STI facilitator. Before data transfer, all forms were checked for completeness and consistency. For data entry, databases and entry screens were developed. The data was single entered by a data entry operator. A subsample of the data was manually checked to examine data entry errors. SPSS version 14 was used to enter quantitative data. The routine recording/reporting and monitoring data on selected process and output indicators were the main source for assessing the effectiveness.

**Data analysis.** The baseline and outcome indicators used for assessing the effectiveness of STI case management and monitoring were finalized in consultation with the NACP.

Descriptive statistics of baseline variables and outcome indicators (guideline adherence) were completed, including frequencies and measures of central tendency and dispersion.

Initially a Cox regression univariate analysis was performed for all possible covariates, and unadjusted crude hazard ratio (HR) was reported with 95% confidence intervals (CIs). Those that had a significant  $P$  value ( $<0.25$ ) in the univariate analysis or were biologically significant were taken in the multivariate model by the enter method.

Multivariable analysis using Cox proportional regression was used to find an association between baseline variables and guideline adherence as outcome and adjusted HR and 95% CIs were reported. Significance of each independent variable in the multivariable analysis was assessed by its Wald  $P$  value and likelihood ratio testing. Statistical significance was defined as  $P < 0.05$ . The scales of the continuous variables were checked for assumption of linearity by quartile analysis (age) and then

**Table 1.** Descriptive Characteristics of Patients with sexually transmitted infections

Variable	n (%)
Sex	
Women	1026 (71.4)
Men	411 (28.6)
Type of health facility	
Urban	419 (29.2)
Rural	1018 (70.8)
Quarters in months	
1	103 (8.5)
2	404 (29.0)
3	689 (46.3)
4	241 (16.3)
District patient lives in	
Jhang	362 (25.2)
Sargodha	1075 (74.8)
Availability of male doctor	
No	202 (14.05)
Yes	1235 (85.95)
Availability of female doctor	
No	471 (32.7)
Yes	966 (67.3)
Availability of male paramedic	
No	192 (13.4)
Yes	1245 (86.6)
Availability of female paramedic	
No	309 (21.5)
Yes	1128 (78.5)
Age (y)	
<25	241 (16.1)
>25	1125 (75)
Guideline Adherence	
Followed	581 (40.4)
Not followed	856 (59.6)

changed to categorical variables where applicable. Multicollinearity was assessed for independent covariates. Confounding was also assessed for independent covariates previously found as confounders or thought to be potential confounder at level of significance of 0.1. Interactions between plausible independent variables were also assessed prior to assessment for confounders at 0.10 level of significance. Any variable in the model with  $P > 0.05$ , which was not a confounder or not interacting with any other variable and biologically not important, was removed from the model to obtain parsimonious and biologically meaningful model. All statistical analysis was performed using SPSS Version 17.0.

## RESULTS

### Diagnosis Rates of STI

In all, 1501 STI cases were diagnosed and reported over the 18-month period. Of these, 1082 were women and

419 were men. Taking into account a catchment population of 578,6164 the prevalence was 25.94 per 100,000.

### Descriptive Characteristics of the Population

The sociodemographic and outcome characteristics of the participants are shown in Table 1. Age ranged from 13 to 60 years with a mean of 31.4 years ( $\pm 6.61$  years). In all, 28.6% were men and 71.4% were women. The majority of the population attending these clinics was from rural areas (70%). Half of the women were from rural areas and 22% were from urban districts. However, 21% of men were from rural areas with 7% only from urban locations. Patient influx was initially slow but reached maximum by the third quarter of the study. Figure 1 shows the sex-wise distribution of patient influx and case notification. The number of women kept increasing during the project period compared with male STI cases. Three-fourths of the patients were registered in Sargodha district, and the rest in Jhang district. More male trained doctors were available compared with female doctors. Guideline adherence was 40%. One of the key findings of the study also shows that 100% of partner referral slips were given to STI cases whether regardless of sex.

### Syndromic Diagnosis of STI Cases

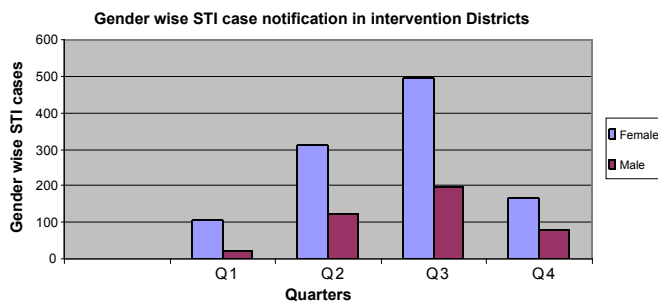
Figure 2 shows the STI male and female cases against each syndrome. The syndrome with the highest reporting percentage (80%) was vaginal discharge among the women, followed by abdominal pain (12%). Genital ulcers (44%) remained the highest reported symptom among men. Of the men 29% reported urethral discharge as the second most common symptom.

### Factors Associated at Univariate Analysis

Sex of the patient was associated with guideline adherence outcome (HR, 0.81; 95% CI, 0.67-0.95) at the univariate level and the result was statistically significant (Table 2). Other factors found to be associated with guideline adherence were type of health facility, months in quarters, availability of male and female doctors, availability of male paramedics, age of patient (dichotomized at 25 years), and diagnosis. Some factors not associated at univariate level are also shown in Table 2 along with crude unadjusted HR for each covariate.

### Predictors of Adherence to Guidelines after Cox Proportional Hazard Regression

Table 3 shows the final model after adjusting for all confounding and interaction. The variables availability of male paramedic, patient age, and type of diagnosis are independently predicting the adherence to guidelines. There was an important interaction (effect modification)



**Figure 1.** STI case notification in intervention districts by gender. STI, sexually transmitted disease.

present between area of health facility and patient sex, hence it was stratified according to these two variables and results presented.

Availability of a male paramedic was also found to be an independent predictor. After adjusting for other variables, risk for chance of guidelines being followed when a male paramedic was present was 1.38 times that of when a male paramedic was not present (95% CI, 1.01-1.85).

The chance of guidelines being followed was 1.25 times for patients older than age 25 years compared with their younger counterparts, controlling for all other variables (HR, 1.25; 95% CI, 1.01-1.67).

Similarly the chances of guidelines being followed in patients who symptomatically presented with a single enlarged inguinal swelling were 4.20 times (95% CI, 0.97-18.1) compared with patients presenting with nonspecific abdominal pain.

### Stratification by Sex

In the case of male patients, those attending the rural health facility for treatment of STIs have 2.69 times the chance of guidelines being followed compared with the

urban health facility after adjusting for age, availability of male paramedic, and type of diagnosis. In the case of female patients, those attending the rural health facility for treatment of STIs have 0.87 times the chance of guidelines being followed compared with the urban health facility.

### Stratification by Location of Health Facility

In urban areas, women have 2.59 times the chance of guidelines being followed compared with men after adjusting for age, availability of male paramedic, and type of diagnosis. Whereas in rural areas, women have 0.84 times the chance of guidelines being followed compared with the urban men.

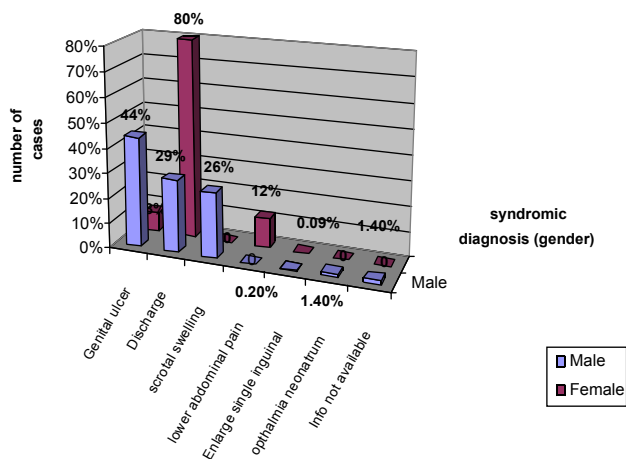
### DISCUSSION

The results of the study showed that STI was a very prevalent disease in these settings with a diagnosis and registration rate of 25.94 per 100,000. Seventy percent of the STI cases were women. Vaginal discharge (80%) and abdominal pain (12%) were the most common symptoms that women presented to the STI clinics. This is somewhat consistent with findings from another study<sup>6</sup> in the region where the most reported symptoms were vaginal discharge (63%), lower abdominal pain/backache (70%), and pelvic (29%) and cervical motion tenderness (18%). In another study done in Asia<sup>10</sup> with 2494 women, 14.5% complained of abnormal vaginal discharge. There were more females STI cases registered in rural than urban areas. It could be that because there are fewer private clinics in rural areas, the caseload on government health facilities is increased. Another possibility is that rural women have less stringent health-seeking behaviors than urban women and open up more about their illness to health care providers. Further qualitative research is needed to see if this postulation holds true in other areas of the country.

The results of this study demonstrated that majority of the STI cases who presented with overt symptoms such as enlarged single inguinal swelling, or genital ulcer were prescribed treatment as per the STI management guidelines compared with nonspecific symptoms like vaginal discharge and abdominal pain. In this way, nonspecific symptoms still go unaddressed and future policies should be aimed at training health professionals at diagnosing nonspecific symptoms like vaginal discharge and abdominal pain and giving them proper management.

According to our study in the case of male patients, those attending the rural health facility for treatment of STI had greater chance of guidelines being followed compared with those who attended the urban health facility after adjusting for all other confounders. It was the reverse in the case of female patients, in whom those attending the rural health facility for treatment of STI had 0.87 times the

**Gender wise distribution of Syndromic diagnosis of STI cases**



**Figure 2.** Sex-wise distribution of syndromic diagnosis of STI case. STI, sexually transmitted disease.



**Table 2.** Univariate Analysis: Factors Predicting Effectiveness of STI Guidelines\*

Variable	n (% age)	HR	95% CI HR	P Value
Gender				
Women	1026 (71.4)	0.81	0.67-0.95	0.014
Men (reference)	411 (28.6)	1	-	
Type of health facility:				
Urban (reference)	419 (29.2)	1	-	0.004
Rural	1018 (70.8)	1.32	1.09-1.60	
Quarters				
3	689 (46.3)	1.22	1.01-1.49	0.02
4	241 (16.3)	1.08	0.84-1.40	
1	103 (8.5)	0.55	0.35-0.87	
2 (reference)	404 (29.0)	1	-	
District patient live in				
Jhang (reference)	362 (25.2)	1	-	0.652
Sargodha	1075 (74.8)	0.97	0.80-1.17	
Availability of male doctor				
No (reference)	202 (14.05)	1	-	0.08
Yes	1235 (85.95)	0.826	0.67-1.03	
Availability of female doctor				
No (reference)	471 (32.7)	1	-	<0.001
Yes	966 (67.3)	0.54	0.46-0.63	
Availability of male paramedic				
No (reference)	192 (13.4)	1	-	0.006
Yes	1245 (86.6)	1.48	1.11-1.95	
Availability of female paramedic				
No (reference)	309 (21.5)	1	-	0.54
Yes	1128 (78.5)	0.94	0.78-1.14	
Age (y)				
<25 (reference)	241 (16.1)	1	-	0.07
≥25 y	1125 (75)	1.26	0.98-1.61	
Diagnosis				
Genital ulcer		1.988	1.349-2.931	0.00
Other STI				0.01
Urethral discharge		1.409	.894-2.222	0.14
Scrotal swelling		1.616	1.027-2.544	0.038
Enlarged single inguinal		3.645	872-15.231	0.076
Neconjunctivitis ophthalmia		3.038	1.181-7.812	0.21
Vaginal discharge		1.349	.9321-.952	0.112
Lower abdominal pain (reference)		1	-	-

STI, sexually transmitted infection.

\*Crude hazard ratio from Cox regression = RR when time to event is constant and lost to follow-up minimal.

chance of guidelines being followed compared with the urban health facility. Female patients were being treated better according to guidelines in urban areas.

Another important finding of the study was that older patients (>25 years) were treated better according to guidelines compared with younger patients. This is plausible as health professionals may be more comfortable discussing taboo health topics with older patients than with younger individuals. We need to make the guidelines more sensitized to the context of younger patients so that their disease is better diagnosed and managed.

Case registration continued along with treatment prescription with a regular pace throughout the implementation period of the study. But, training one male and female doctor is not enough; additional or all doctors if possible need training on STIs at every facility level. Additionally, involvement of paramedics in the process is also important. Even if doctors fill a position, it is difficult to make them available throughout the opening hours. Seeing alternative sources of prescribing treatment is also an area that can be further researched.

**Table 3.** Final Model with Interactions: Risk Factors for Having Adherence to Guidelines

	Adjusted	95% CI for HR	
	HR	Lower	Upper
Availability of male paramedics	1.376	1.023	1.851
Not available (reference)	1		
Age (>25 y)	1.295	1.001	1.677
<25 y (reference)	1		
Genital ulcer	2.431	1.454	4.062
Urethral discharge	1.613	0.864	3.013
Scrotal ulcer	1.613	0.858	3.035
Enlarged single inguinal	4.200	0.972	18.145
Neconjunctivitis ophthalmia	3.559	1.239	10.225
Vaginal discharge	1.383	0.889	2.151
Abdominal pain (reference)	1		
At a Rural Health Facility			
Men	1		
Women	0.84		
At an Urban Health Facility			
Men	1		
Women	2.59		
In female patients			
Rural	0.87		
Urban	1		
In male patients			
Rural	2.69		
Urban	1		

HR, hazard ratio; CI, confidence interval

## CONCLUSION

Screening, diagnosis, and treatment costs for many STI are expensive and likely to exceed the per capita health care budget in many countries. A less expensive, easier to use, syndrome-based public health strategy is thus the adoption of STI syndromic case management.

## ACKNOWLEDGMENTS

The project was part of the COMDIS (UK) program, implemented by Association for Social Development with the Nuffield Centre for International Health and Development, University of Leeds. COMDIS was funded by the UK Department for International Development (DFID) for the benefit of developing countries. The views expressed and the information contained is not necessarily endorsed by DFID.

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