

## IN PRACTICE

# Changing the prescribing patterns of sexually transmitted infections in the White Nile Region of Sudan

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**Background:** The number of inappropriate prescriptions for sexually transmitted infections (STIs) in Sudan is suspected to be high. Simple multifaceted interventions directed at prescribers may improve prescribing patterns in the Sudan.

**Objective:** To evaluate the effect of multifaceted interventions on prescribing for STIs in the White Nile State, Sudan.

**Methods:** The study involved 20 health centres randomly assigned to four different multifaceted interventions to improve prescribing.

**Results:** Prescriber targeted interventions involving audit and feedback together with academic detailing and practice guidelines reduced the number of inappropriate prescriptions by 50% ( $p < 0.001$ ). Audit and feedback together with seminars and practice guidelines reduced inappropriate prescriptions by 43% ( $p < 0.001$ ). Audit and feedback alone reduced inappropriate prescriptions by 16% ( $p = 0.127$ ).

**Conclusion:** Prescribing for STIs in the White Nile State of Sudan needs improving. Multifaceted interventions appear effective in improving prescribing.

Sexually transmitted infections (STIs) are a major public health problem worldwide and lately have become more consequential because of their facilitation of the transmission of HIV.<sup>1</sup> Internationally, there is consensus that their control, including appropriate management of STIs, is one of the primary strategies for reducing HIV infections.<sup>2</sup> In Sudan, the true prevalence of STIs is unknown but estimated to be high. In addition, there is a suspicion that prescribing for these infections is largely inappropriate. Multifaceted prescriber targeted interventions have been reported as effective in improving prescribing in developed countries.<sup>3</sup> Such findings have not been demonstrated in Sudan. In this study the effect of multifaceted interventions on prescribing for STIs in the White Nile Region of Sudan was evaluated.

## METHODS

### Study setting and participants

The study was carried out in the White Nile State in central Sudan. In Sudan, the majority of people with general illnesses present at government health centres. This study was carried out in 20 such health centres, in which 18 medical officers and 19 medical assistants were responsible for prescribing.

### Interventions

The 20 health centres were randomly allocated to receive no intervention, or any of the three interventions described in table 1.

### Data collection

Thirty prescriptions for STIs were collected from each health centre before the intervention and 30 were collected

2 months after the intervention. From each prescription, data were abstracted on the prescriber's qualification, patient details, diagnosis, the drug prescribed, drug dose, and duration of therapy. Each prescription was evaluated by four prescribing experts for appropriateness of therapy based on WHO prescribing guidelines.<sup>4</sup>

### Data analysis

Data were analysed using SPSS for Windows version 12.0. The differences within each group before and after intervention and those within the control group before and after intervention were compared using one way repeated measures analysis of variance (ANOVA). The mean difference was significant at  $p < 0.05$ .

## RESULTS

Results are presented in table 2. The prescribing patterns among the study groups were similar at baseline. Pre-intervention study results showed high proportions of inappropriate prescriptions. Multifaceted interventions appeared effective.

## DISCUSSION

We have shown that prescribing for STIs in Sudan is largely inappropriate. This may result in increased morbidity and mortality. Prescribing inadequate doses of antibiotics or prescribing them for an inadequate duration of therapy should raise some concern internationally with regard to antimicrobial resistance. Inappropriate antibiotic use has been documented as one of the major causes of antimicrobial resistance.<sup>5</sup>

Inappropriate prescribing in Sudan could be the result of non-availability of appropriate drugs or to improper training of prescribers. During discussions with prescribers during outreach programmes it was apparent that inadequate knowledge was the main factor contributing to inappropriate

**Table 1** Intervention groups

Group Intervention	
I	Prescribers in this group received no intervention
II	Prescribers in this group received, with explanation, graphical results of 3–4 months of audits of prescribing patterns within the region and within each health centre (audit and feedback)
III	Prescribers in this group received audit and feedback; a copy of a prescribing guideline adapted by researchers from the WHO guideline for the effective management of STIs <sup>4</sup> and attended two seminars on prescribing conducted by experts in prescribing
IV	Prescribers in this group received audit and feedback plus routine face to face educational meetings with prescribing experts (academic detailing). In addition, this group also received a copy of the prescribing guideline described above

**Table 2** Number (mean (SD)) of inappropriate prescriptions

	Pre-intervention	Post-intervention	Intervention effect (95% CI)	p Value
<b>Number of inappropriate prescriptions according to diagnosis</b>				
Group I	27.6 (2.1)	27.2 (2.6)		
Group II	26.8 (3.9)	22.6 (1.1)	3.8 (-1.2 to 8.8)	0.127
Group III	28.0 (2.5)	16.0 (2.6)	11.6 (6.6 to 16.7)	<0.001
Group IV	29.2 (0.8)	14.6 (2.5)	14.2 (9.2 to 19.2)	<0.001
<b>Number of prescriptions with inappropriate dose and/or duration of therapy</b>				
Group I	29.6 (0.5)	29.8 (0.4)		
Group II	29.4 (1.3)	26.4 (4.0)	3.2 (0.3 to 6.1)	0.034
Group III	29.4 (1.3)	20.0 (2.0)	9.6 (6.7 to 12.5)	<0.001
Group IV	29.4 (1.3)	18.4 (1.6)	11.2 (8.3 to 14.1)	<0.001

**Key messages**

- Inappropriate prescribing for STIs in Sudan
- Limited resources appear to promote inappropriate prescribing
- Multifaceted interventions appear effective in improving prescribing in Sudan

prescribing. There is thus need for more training of prescribers in Sudan.

Lack of resources is also a contributing factor to inappropriate prescribing. Faced with a situation where a prescriber has to choose between sending a patient away with nothing for an infection or prescribing a poor alternative, a physician would most likely opt for the latter. An alternative approach would be for prescribers to prescribe the correct medicine and ask the patients to find the medicines themselves. A major drawback with this approach is that very few in Sudan could afford to purchase alternative medicines.

This study has confirmed that multifaceted interventions are effective in changing prescribing patterns in developing countries. Academic detailing, however, would present problems in developing countries because of its resource intensiveness. Reinforcement seminars, which were proved effective in this study, appear a cheaper and more practical alternative.

A potential weakness of this study is the small number of prescriptions evaluated. This was due to the limited resources available. The WHO, however, recommends 30 prescriptions per health facility as adequate to draw meaningful conclusions for such studies.<sup>6</sup>

Prescribing for STIs in the White Nile State in Sudan is largely inappropriate. Multifaceted interventions appear effective in improving prescribing.

**CONTRIBUTORS**

IBE, study perception, design, supervision; evaluation and writing; AIA, study perception, design, supervision; evaluation,

data collection, data analysis, and writing; MSM-S, study perception, design, data collection; data analysis, and writing; MAD-A, data collection; MBA, data collection; MAO, data collection; LM, study evaluation, results analysis and writing.

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