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## Sexually transmitted infections – factors associated with quality of care among private general practitioners

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**Objectives.** To study the factors associated with quality of sexually transmitted infection (STI) care among private general practitioners in Gauteng.

**Methods.** We analysed 1 194 records of patients attending 26 randomly selected GP practices in the first 3 months of 2000 and 2002, for 3 STI syndromes, namely urethral discharge, pelvic inflammatory disease and genital ulcers. We assessed adherence to nationally accepted STI treatment guidelines and analysed the influence of patient and practice-level variables on effectiveness of STI drug regimens and trends over time.

**Results.** After controlling for syndrome mix, district and time period, appropriate drug treatment for STIs was significantly associated with the client having medical aid ( $p < 0.001$ ), recent graduation as a medical practitioner ( $p < 0.001$ ) and male GP gender ( $p = 0.007$ ). Between 2000 and 2002, STI care improved for clients with medical aids but for not cash clients.

**Conclusions.** There was variation in the quality of prescribing for STIs among GPs and positive trends in this prescribing. There is a need for interventions that address the financial incentives that may hamper quality of STI care for cash clients.

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It is estimated that half or more of sexually transmitted infection (STI) care episodes in the South African formal health sector are treated by private general practitioners (GPs).<sup>1</sup> Poor-quality STI care has been well documented in this setting and has been the subject of some debate and policy responses.<sup>1,4</sup> In the Department of Health's HIV/AIDS and STD Strategic Plan for 2000 - 2005,<sup>5</sup> the first objective for STI control is ensuring effective syndromic management in the private sector.

However, intervening in the private GP sector to improve management of diseases of public health importance is complex. Particularly in poor areas, GPs are often solo practitioners operating in a highly autonomous manner, even though they may be networked with other GPs in local practitioner associations. Moreover, the sector is facing many pressures resulting from changes in the regulatory environment (around dispensing, drug prices and certificates of need), an over-saturated market and declining profit margins. These challenges are not unique to South Africa<sup>6</sup> and call for a far greater understanding of private providers and the influences on their practice.

We report on a study of private practices using record reviews to measure quality of care for patients with STIs. In particular, the sample sizes achieved with such an approach made an analysis of prediction of quality possible. In the hard-to-reach private sector, valid and reliable measures of STI treatment quality, let alone predictors of this quality, are

difficult to achieve. Self-reported practice will overestimate quality, and observations of provider-client interactions and use of simulated or 'mystery' clients are costly if adequate sample sizes are to be obtained to conduct stratified analyses.<sup>7,8</sup> The latter two techniques may also be difficult to negotiate with independent providers.

### Methods

As part of a project to improve the quality of STI care among private GPs, we studied the records of GPs based in three districts (referred to as D1, D2 and D3) in Gauteng. The 64 GPs in D1 ( $N = 26$ ) and D2 ( $N = 38$ ) were the subject of a multifaceted intervention centred on a continuing medical education (CME) seminar series, while the GPs in D3 ( $N = 34$ ) formed a reference group. All three groups were organised into local independent practitioner associations (IPAs) and all GPs dispensed drugs from their practices.

At the end of the intervention period we obtained consent from 26 of 45 randomly selected GP practices (15 in each district) to examine retrospectively records of patients attending their practices for two 3-month periods, viz. January - March 2000 and 2002. Using practice registers and with the assistance of practice receptionists we identified 1 194 records of patient visits fitting 3 STI syndromes – urethral discharge (UD) in men, pelvic inflammatory disease (PID) in women, and genital ulcers (GU) in both men and women. Given the complexity of interpreting prescribing, we did not extract data on women with vaginal discharge. Each GP contributed a mean of 46 records (median 50, range 8 - 98). Two of the 26 GPs were women.

While ensuring patient anonymity and confidentiality, data were extracted on syndrome, drugs prescribed and medical aid status of the clients. Drug combinations were categorised into

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effective and ineffective (the latter including partially effective regimens), utilising national guidelines developed by the STI Reference Centre, National Health Laboratory Service. We also recorded practice-level variables, namely gender and year of qualification of the GP and whether s/he had worked as a sessional doctor in the public sector (where GPs would have been exposed to syndromic management of STIs).

We pooled all the 1 194 records and entered patient and practice-level variables into a forward step-wise logistical regression model in order to assess factors associated with effective STI prescriptions. Also entered into the model were STI diagnosis (UD, PID or GU) to control for syndrome mix, and GP district and time period (2000 or 2002) to control for area and secular effects associated with the intervention. The before and after analyses assessing the effectiveness of the intervention are reported elsewhere,<sup>9</sup> although trends over time (between 2000 and 2002) for 2 syndromes (UD, PID) by explanatory factor are provided. A chi-squared test was performed on changes by sub-factor (e.g. medical aid status) over the time period. Analysis was performed using the Statistical Package for Social Sciences (SPSS). The project was approved by the University of the Witwatersrand's Committee for Research on Human Subjects (Medical).

## Results

The results of the logistical regression analysis are presented in Table I. Records were more or less evenly distributed between time periods and across districts. PID diagnoses constituted nearly two-thirds of records and GU only 7.5%. More than half the STI clients (53.4%) were cash paying. STI care was less than optimal – depending on the syndrome, one-third or less of drug combinations was judged effective.

Characteristics significantly associated with effective drug treatment (having controlled for syndrome, time period and area) were as follows: (i) recent qualification – GPs who qualified in the era of modern syndromic management (after 1993) were 3.5 times more likely to prescribe the correct treatment than those who qualified before 1993 ( $p < 0.001$ ); (ii) client medical aid – STI clients with a medical aid were 2.64 times more likely to receive effective treatment than cash clients ( $p < 0.001$ ); and (iii) male gender of GP – although on bivariate analysis women GPs had slightly higher rates of effective treatment, when controlling for other factors, male GPs had double the odds of providing effective treatment ( $p = 0.007$ ).

Exposure to sessional work in the public sector did not predict quality of prescribing.

**Table I. Associations with effective drug combinations for STI syndrome and adjusted odds ratio after multivariate analysis (N = 1 194)**

	N (% total sample)	% effective drug treatment	Adjusted odds ratio*	95% CI of adjusted odds ratio	p-value
Insurance (medical aid) status (data missing on 6 cases, N = 1 188)					
Uninsured	634 (53.4)	16.6	2.64	1.95 - 3.58	< 0.001
Insured	554 (46.6)	31.4			
GP gender					
Female	149 (12.5)	26.1	2.13	1.23 - 3.68	0.007
Male	1 045 (87.5)	23.1			
GP year of qualification					
Before 1993	854 (71.5)	18.1	3.47	2.39 - 5.01	< 0.001
After 1993	340 (28.5)	36.8			
Public-sector sessions					
No	791 (66.2)	27.0	0.72	0.51 - 1.02	0.063
Yes	403 (33.8)	21.6			
STI diagnosis					
PID	787 (65.9)	22.5	1.00	-	-
Urethral discharge	318 (26.6)	34.6	2.53	1.84 - 3.47	< 0.001
Genital ulcer	89 (7.5)	19.1	1.54	0.88 - 2.72	0.134
Area					
District 3	303 (25.4)	20.5	1.00	-	-
District 1	419 (35.1)	24.1	1.70	1.14 - 2.53	0.009
District 2	472 (39.5)	24.8	1.78	1.16 - 2.74	0.009
Period					
2000	598 (50.1)	20.7	1.57	1.18 - 2.10	0.002
2002	596 (49.9)	26.2			

\*Reference category first.

CI = confidence interval; PID = pelvic inflammatory disease.



Table II. Trends in quality of STI care for UD and PID between 2000 and 2002 by predictive factor (N = 1 105)

Factor	2000			2002			p-value ( $\chi^2$ test)
	Effective Rx (%)	Ineffective Rx (%)	Total	Effective Rx (%)	Ineffective Rx (%)	Total	
Urethral discharge							
Medical aid	19 (28.4)	48 (71.6)	67	40 (58.0)	29 (42.0)	69	<0.001
Cash	27 (25.2)	80 (74.8)	107	23 (31.1)	51 (68.9)	74	0.243
Male GP	39 (25.2)	116 (74.8)	155	52 (40.0)	78 (60.0)	130	0.005
Female GP	8 (40.0)	12 (60.0)	20	11 (84.6)	2 (15.4)	13	0.013
Qualified							
before 1993	24 (19.0)	102 (81.0)	126	30 (30.0)	70 (70.0)	100	0.039
after 1993	23 (46.9)	26 (53.1)	49	33 (76.7)	10 (23.3)	43	0.003
Pelvic inflammatory disease							
Medical aid	48 (22.6)	164 (77.4)	212	57 (32.6)	118 (67.4)	175	0.019
Cash client	16 (10.0)	144 (90.0)	160	29 (12.3)	207 (87.7)	236	0.296
Male GP	52 (16.5)	263 (83.5)	315	78 (21.9)	278 (78.1)	356	0.047
Female GP	12 (20.0)	48 (80.0)	60	8 (14.3)	48 (85.7)	56	0.286
Qualified							
before 1993	28 (11.0)	226 (89.0)	254	54 (17.6)	252 (82.4)	306	0.018
after 1993	36 (29.8)	85 (70.2)	121	32 (30.2)	74 (69.8)	106	0.529

There was an overall increase of effective scripts (from 20.7% to 26.2%) between 2000 and 2002. When controlling for other factors, GPs were 1.57 times more likely to prescribe appropriate antibiotics for STIs in 2002 than in 2000. Of the factors identified above, medical aid status emerged as the most consistent predictor of treatment change in UD and PID, the 2 syndromes where sample sizes allowed for analyses over time (Table II). There was statistically significant improvement in quality of prescribing for medical aid clients with UD ( $p < 0.001$ ) and PID ( $p = 0.019$ ) between 2000 and 2002, whereas the quality of care for cash clients remained static. Among GPs, recent graduates showed higher baseline levels of appropriate treatment than older graduates. They were also more likely to change their treatment regimen for UD ( $p = 0.003$ ) than older GPs ( $p = 0.039$ ).

## Discussion

There is variation in the quality of prescribing within the private sector. Of the 4 factors measured, 3 emerged as significantly associated with prescribing, namely year of qualification and gender of the GP, and medical aid status of the patient.

The generational differences in quality suggest that undergraduate education effectively sets the patterns for future practice. Alternatively, younger GPs may have less fixed repertoires of prescribing, making them more receptive to new knowledge received through CME than older GPs.

Gender variation may reflect difficulties for women GPs in balancing domestic roles with the need to update professional knowledge. However, possible clustering effects from the small

number of women GPs in the study may limit the ability to draw firm conclusion on gender differences in quality.

Client insurance status influenced quality of care, independent of GP knowledge. There was selective implementation of new knowledge in favour of medical aid clients. For insured clients, the costs of drugs are recouped from third-party payers, whereas cash clients pay an all-inclusive fee that includes both the consultation and drugs. In managing the latter, there is a financial incentive for GPs to minimise costs by prescribing cheaper and less effective drugs.

While methods to ensure greater access to updated knowledge in the private sector is of key importance, it is our view that without clear financial incentives the state has limited leverage in ensuring quality private-sector treatment of diseases of public health importance. Targeted subsidies (such as provision of STI drugs for cash clients) to GPs in carefully designed contracts may be one way not only to improve the quality of STI care but to involve GPs more actively in the district health system.

Finally, patient record systems were sufficiently developed in GP practices to conduct record reviews; with the necessary trust this may prove to be a viable form of routine quality monitoring in the private health sector in South Africa. However, doing this is premised on building trusting and co-operative relationships between public and private sectors, a situation that does not always obtain in South Africa.

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