EPIDEMIOLOGICAL REVIEW

Sentinel surveillance of sexually transmitted infections in South Africa: a review

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Objectives: To review studies of sexually transmitted infection (STI) prevalence in South Africa between 1985 and 2003 in selected sentinel populations. To examine how STI prevalence varies between populations and to identify the limitations of the existing data.

Methods: Studies of the prevalence of syphilis, chancroid, granuloma inguinale, lymphogranuloma venereum, gonorrhoea, chlamydia, trichomoniasis, bacterial vaginosis, candidiasis, and herpes simplex virus type 2 (HSV-2) were considered. Results were included if they related to women attending antenatal clinics or family planning clinics, commercial sex workers, individuals in the general population (household surveys), patients with STIs, patients with genital ulcer disease (GUD), or men with urethritis.

Results: High STI prevalence rates have been measured, particularly in the case of HSV-2, trichomoniasis, bacterial vaginosis and candidiasis. The aetiological profile of GUD appears to be changing, with more GUD caused by HSV-2 and less caused by chancroid. The prevalence of gonorrhoea and syphilis is highest in "high risk" groups such as sex workers and attenders of STI clinics, but chlamydia and trichomoniasis prevalence levels are not significantly higher in these groups than in women attending antenatal clinics.

Conclusions: The prevalence of STIs in South Africa is high, although there is extensive variability between regions. There is a need for STI prevalence data that are more nationally representative and that can be used to monitor prevalence trends more reliably.

Surveillance of the prevalence of sexually transmitted infections (STIs) is recognised increasingly as a key priority in public health. The sexual transmission of HIV occurs more readily in the presence of other STIs,¹ and both mathematical models and empirical data suggest that these STIs account for a high proportion of incident HIV infections.^{2–4} STIs are also responsible for a high proportion of adverse pregnancy outcomes.⁵ The monitoring of STI prevalence is crucial for the evaluation of STI treatment programmes, and can also provide an indirect measure of change in sexual behaviour.

South Africa is one of the few African countries to have nationally representative data on the prevalence of HIV and (to a lesser extent) syphilis.^{6,7} For other STIs, there are no nationally representative microbiological studies, but there are many sentinel surveillance studies. The results of these studies are difficult to compare, because of differences in populations sampled and differences in diagnostic methods used. Almost all of the studies are conducted among users of public health facilities, and there are very few studies of STI prevalence in individuals of higher socioeconomic status.

The objective of this paper is to review the STI sentinel surveillance studies that have been conducted in South Africa between the beginning of 1985 and the end of 2003. These results are used to draw conclusions about the changing epidemiology of STIs in South Africa, and the limitations of the existing data are discussed.

METHODS

Sentinel surveillance studies were identified using a number of different sources. A computerised search of the Medline database was conducted on 4 February 2004. The search term was "South Africa and (herpes or syphilis or treponema pallidum or chancroid or haemophilus ducreyi or chlamydia or gonorrhoea or neisseria gonorrhoeae or trichomoniasis or trichomonas vaginalis or bacterial vaginosis or candidiasis or

candida albicans or lymphogranuloma venereum or granuloma inguinale or donovanosis or calymmatobacterium granulomatis)." This search yielded a total of 916 hits. Further studies were identified from an earlier review of studies conducted between 1980 and 1995,⁸ and by manually searching the *Southern African Journal of Epidemiology and Infection*. Grey literature was identified by searching the abstracts of recent AIDS conferences and by consulting local STI experts.

The focus of this study is restricted to sentinel populations that are frequently studied: women attending antenatal clinics and family planning clinics, commercial sex workers, men and women in the general population (household surveys), patients with STIs, patients with genital ulcer disease (GUD), and men with urethritis. Human papillomavirus has not been included in this review, as the sentinel populations in which this disease is monitored usually differ from those in which other STIs are monitored, and the epidemiology of the disease is complex. Human immunodeficiency virus (HIV) has also not been included, as the prevalence of this disease has already been studied extensively in more nationally representative studies.^{6,7} The focus of this review is further limited to microbiological prevalence data and does not include estimates of the prevalence of STI symptoms. Studies were excluded if they were conducted before 1985 or (in cases where the date of the study was not reported) published before 1985.

RESULTS

After applying the exclusion criteria, a total of 47 independently conducted studies (that is, studies conducted in different periods or by different investigators) were

Abbreviations: GUD, genital ulcer disease; ELISA, enzyme linked immunosorbent assay; HSV, herpes simplex virus; RPR, rapid plasma reagin; STI, sexually transmitted infection

Table 1 STI prevalence rates in sentinel surveys

Reference	Date	Location	Ages	Number	TP	NG	CT	TV	BV	CA	HD	HSV-2	CG	LGV
Men in the general population (household surveys)														
Auvert ¹¹	1999	Carletonville	14–24†		1.8%‡ (560)	2.9%¶ (560)	4.8%¶ (560)					17.0%¶¶¶ (718)		
Colvin ¹²	1995	Hlabisa			9.3%‡ (86)	2.4%¶ (85)	5.6%¶ (90)							
Williams ¹³	1998	Carletonville	15–49	443	6.1%‡	3.0%¶	3.6%¶							
	2000			606	8.1%‡	3.3%¶	12.4%¶							
Women in the general population (household surveys)														
Auvert ¹¹	1999	Carletonville	14–24†		4.5%‡ (622)	10.9%¶ (622)	14.6%¶ (622)					53.3%¶¶¶ (771)		
Colvin ¹²	1995	Hlabisa			8.5%‡ (142)	5.8%¶ (137)	6.4%¶ (140)							
Cronje ¹⁴	1994*	Urban Free State	18–49		15.6%‡ (403)		29.6%‡‡‡ (405)							
		Rural Free State			12.3%‡ (465)		27.4%‡‡‡ (470)							
Williams ¹³	1998	Carletonville	15–49	691	9.8%‡	6.9%¶	7.9%¶							
	2000			893	18.7%‡	8.6%¶	13.8%¶							
Men with genital ulcer disease														
Chen ¹⁵	1993–4	Cape Town		180	32.2%§						17.2%§			
		Durban		199	14.6%§						53.3%§			
		Johannesburg		159	11.9%§						21.4%§			
Dangor ¹⁶	1986	Carletonville		240	25.8%¶						68.3%***			
Kharsany ¹⁷	1998	Durban		400	31%***						6%***		0.4%¶¶¶	6.7%‡‡‡‡‡‡‡‡‡‡
Lai ¹⁸	1993–4	Carletonville		232	10.3%§						17.2%§		4%***	3%
	1998			186	12.4%§						69.4%§			
Moodley ¹⁹	2000	Durban		438	16.4%‡†						50.5%§		1.4%§	8.4%§
O'Farrell ²⁰	1988–9	Durban		100	42%‡‡	12.0%***					11.0%§		11%¶¶¶	6%¶¶¶
Women with genital ulcer disease														
Moodley ¹⁹	2000	Durban		149	8.7%††						6.0%§		1.3%§	17.4%§
O'Farrell ²¹	1988–9	Durban		100	40%‡‡	11.0%***					14%***		16%¶¶¶	7%¶¶¶
Rajagopal ²²	1997	Durban		23							0%***		0%¶¶¶	
Men attending STI clinics														
Mathews ²³	1995	Cape Town		170	14.1%‡	54.7%¶	11.8%¶						4.9%¶¶¶	
O'Farrell ²⁴	1988–9	Durban		1745	20.3%‡	34.5%***								
Women attending STI clinics														
Allin ²⁵	2002	Cape Town		150	3.3%‡	11.0%†††	13.7%†††	10.1%***	65.3%‡‡‡‡‡	35.3%***		0%***		
Kharsany ²⁶	1994	Durban		51	29%§§	31%***	37%¶¶¶	47%§§§§§	43%***	26%***				
Mathews ²³	1995	Cape Town		161	22.4%‡	30.4%¶	19.9%¶	34.8%§§§§§	30.4%‡‡‡‡‡	17.4%‡‡‡‡‡‡‡				
Moodley ²⁷	1999–2000	Hlabisa		692		12.4%***	10.5%¶¶	29.3%***	69.2%‡‡‡‡‡					
O'Farrell ²⁴	1988–9	Durban		937	22.9%‡	10.4%***							5.4%¶¶¶	
Rajagopal ²²	1997	Durban		250	20.8%‡	18.0%***	12.8%¶¶	27.2%§§§§§	21.6%‡‡‡‡‡	30.4%‡‡‡‡‡‡‡				
Men with urethritis														
Ballard ²⁸	1986*	Johannesburg				53.3%*** (334)	17.0%*** (306)					36.0%*** (182)		
Chen ¹⁵	1993–4	Cape Town			25.0%‡ (196)							47.4%*** (175)		
		Durban			24.3%‡ (206)							42.3%*** (196)		
Crewe-Brown ¹⁰	1991*	Johannesburg		201	32.3%‡ (96)	77.1%***	23.4%***	3.5%¶¶¶		0.5%***				
Dangor ²⁹	1988	Pretoria		216		95.4%***								

Table 1 Continued

Reference	Date	Location	Ages	Number	TP	NG	CT	TV	BV	CA	HD	HSV-2	CG	LGV
Hoosen ²⁰	1985	Durban		217		95.9%***	17.0%***							
Meiring ³¹	1986	Port Elizabeth		290		80.3%***								
Pillay ³²	1994*	Durban		227		93.4%***		18.5%***						
Taylor-Robinson ⁹	1997	Roadpoort and Vereeniging		182		47.3%**	15.4%**							
Commercial sex workers														
Ramjee ³³	1996-2000	Truck stops on Johannesburg-Durban route		416	42.1%†	14.3%***	16.4%**	41.3%***	71.0%***	40.9%*		84%***		
Ramjee ³⁴				145										
Steen ³⁵	1996-7	Lesedi		407	33.8%§§	17.3%¶	14.3%¶							
Williams ¹³	1998	Carletonville		121	25.0%†	15.7%¶	9.1%¶							
	2000			93	34.4%†	16.1%¶	12.9%¶							
Pregnant women attending antenatal clinics														
Coetzee ³⁶	1990-2	Cape Town		1973	5.2%†									
Dietrich ³⁷	1992*	Durban		170	7.6%†	4.1%***	4.7%¶							
Donders ^{38, 39}	1988	Pretoria		256	9.0%†	3.9%***	10.2%††††							
Funk ⁴⁰	1995	Pretoria		798				25.4%††††						
Govender ⁴¹	1994-5	Durban		168	11.9%**	3.0%***	8.3%*	12.3%¶¶¶¶	24.8%§§§§§	23.6%†††††††				
Hoosen ⁴²	1996*	Durban		32	12%†	6%***	41%¶¶	20.8%¶¶¶¶	52.4%†††††	9.5%§§§§§§§				
Kharasny ²⁶	1994	Durban		52	27%§§	6%***	19%¶¶	19%¶¶¶¶	41%***	59%†††††††				
Mashiane ⁴³	1997	Pretoria		3000	12.4%†			52%§§§§§	25%***	56%***		0%***		
Myer ⁴⁴	1998-2000	Hubbisa		7391	7.5%§§									
O'Farrell ⁴⁵	1987	Empangeni		193	11.9%†	5.7%***	11.4%¶¶	49.2%§§§§§		26.9%***				
Opai-Teitoh ⁴⁶	1993*	Durban		200	11%†									
Qolohle ⁴⁷	1999	Durban		363	9.4%†									
Surm ⁴⁸	1999	Hubbisa		327	12%**	5%**	9%**	44%**	38%†††††					
				245	6%**	7%†††	11%†††	32%†††	34%†††††					
				449	2%*	4%†††	11%†††	27%†††	31%†††††					
	2002	Hubbisa		327	8.4%†	7.8%***	12.9%¶¶	41.4%***						
Women attending family planning clinics														
Fehler ⁵⁰	1998*	Johannesburg			8.6%†	8.6%†††	18.1%†††	10.6%***	35.1%†††††	22.9%†††††††				
				221	(210)	(210)	(210)	(207)	(208)	(210)				
Frohlich ⁵¹	2002	Vulindlela		40	2.2%†	2.2%§§§	8.8%§§§	23.8%§§§	58.4%†††††	5%				
Hoosen ⁵²	1997*	Durban		50	8%†	5%***	15%¶¶	20%§§§§§	15%***					
Hoosen ⁵³	1986-7	Durban		50	8%†	10%***	26%¶¶	20%§§§§§						
Kharasny ²⁶	1994	Durban		55	22%§§	5%***	13%¶	25%§§§§§	36%***	27%***		0%***		
Schneider ⁵⁴	1994	Bushbuckridge		249	5%†	3%¶	12%¶	18%¶¶¶	29%¶¶¶					
Wilkinson ⁵⁵	1997*	Hubbisa		189	7.9%†	4.2%***	7.4%¶¶	13.8%***	15.3%†††††	29.6%¶¶¶¶				

Sample sizes are given in parentheses where these differ according to the STI.

TP, *Treponema pallidum* (syphilis); NG, *Neisseria gonorrhoeae* (gonorrhoea); CT, *Chlamydia trachomatis* (chlamydia); TV, *Trichomonas vaginalis* (trichomoniasis); BV, bacterial vaginosis; CA, *Candida albicans* (candidiasis); HD, *Haemophilus ducreyi* (chancroid); HSV-2, herpes simplex virus type 2; CG, *Corynebacterium granulosum* (granuloma inguinale); LGV, lymphogranuloma venereum.

*Date of publication. †Excluding individuals who were not sexually experienced. ‡Non-treponemal, confirmed by treponemal tests. §M-PCR. ¶Positive on dark field microscopy or both RPR (rapid plasma reagin) and FTA-Abs. ** Method not stated. ††Combination of M-PCR, ELISA for IgM antibodies, RPR, and treponemal tests. ‡‡Positive on dark field microscopy or FTA-Abs for IgM antibodies. §§Non-treponemal only. ¶¶ILCR on urine. ***Culture. †††PCR on swabs/tampons. †††††CR on urine and swabs. §§§DNA amplification. ¶¶¶Direct immunofluorescence. ****Direct immunofluorescence and culture. ¶¶¶¶EIA. †††††Pap smears. §§§§Culture and microscopy. ¶¶¶¶Microscopy. ****Amstel's criteria. †††††Presence of clue cells, pH ≥ 4.5 , and positive amine test. §§§§§Nugent's criteria. ¶¶¶¶¶Amine test. ¶¶¶¶¶Presence of clue cells and positive amine test. ****Culture (all *Candida* spp). †††††Clinical diagnosis, confirmed by culture/microscopy. †††††Microscopy (all *Candida* spp). §§§§§Clinical diagnosis, confirmed by culture/microscopy (all *Candida* spp). ¶¶¶¶¶Western blot. ¶¶¶¶¶Culture or antibody titre $\geq 1:256$.

identified. Of these, 34 were conducted in urban areas, 11 were conducted in rural areas, 1 was conducted in both rural and urban areas, and one could not be classified. Of the 47 studies, 25 were conducted in KwaZulu-Natal, 14 were conducted in Gauteng, three were conducted in Western Cape, one was conducted in all three of these provinces, and four were conducted in other provinces. Only two studies were conducted among users of private health facilities.^{9, 10} The study characteristics and STI prevalence estimates for each sentinel population are shown in table 1. In general, there is little consistency in diagnostic methods used. In the case of men and women with GUD, results represent the proportion of ulcers in which each STI was detected rather than the prevalence of infection, though two studies of GUD patients also measured the prevalence of gonorrhoea.

The seroprevalence of syphilis (*Treponema pallidum*) is typically around 10% in women attending antenatal and family planning clinics. Prevalence rates are significantly higher in "high risk" groups such as sex workers and men with urethritis (24%–42%). Although there is little consistency between studies in terms of techniques used to detect syphilis in genital ulcer specimens, studies involving the more accurate M-PCR have usually estimated that between 10% and a third of GUD cases are attributable to syphilis.

Chancroid (*Haemophilus ducreyi*) has been studied exclusively in individuals with GUD. Historically, the disease has accounted for over 50% of GUD in males, and a substantially lower proportion of GUD in females. There appears to have been a significant decline in the proportion of ulcers attributable to chancroid in recent years. All studies of the disease have been conducted in urban centres in Gauteng, Durban, and Cape Town, with proportions of GUD cases attributable to chancroid usually being higher in urban Gauteng than in Durban and Cape Town.

In contrast with chancroid, herpes simplex virus type 2 (HSV-2) appears to be responsible for an increasingly high proportion of male GUD. Data on the seroprevalence of HSV-2 are scarce. The only estimate of prevalence in "low risk" groups is from a household survey of 14–24 year old individuals in a mining town,¹¹ which is likely to underestimate the seroprevalence of HSV-2 at older ages. In high risk groups, seroprevalence rates range from almost 50% in men with urethritis to over 80% in commercial sex workers.

The two other causes of GUD that are commonly studied, granuloma inguinale (*Calymmatobacterium granulomatis*) and lymphogranuloma venereum (*Chlamydia trachomatis*), are both relatively rare. With the exception of one study which found granuloma inguinale to account for more than 10% of GUD cases,^{20, 21} most studies estimate the proportion of GUD attributable to granuloma inguinale to be close to 1%. Lymphogranuloma venereum usually accounts for 3–10% of GUD cases, with occasional exceptions.¹⁹

Gonorrhoea (*Neisseria gonorrhoeae*) accounts for the vast majority of urethritis cases in men, and men attending STI clinics also have extremely high prevalence rates. The prevalence of the disease in women attending family planning and antenatal clinics is usually around 5%. As with syphilis, the prevalence of the disease in women is significantly higher in high risk groups such as sex workers and women attending STI clinics (10–31%).

Chlamydia (*Chlamydia trachomatis*) is more prevalent than gonorrhoea in low risk groups, but its prevalence is lower than that of gonorrhoea in individuals with STI symptoms. Unlike gonorrhoea and syphilis, chlamydia does not appear to be substantially less prevalent in antenatal clinics and family planning clinics than in high risk groups such as sex workers and STI clinic attenders.

Few studies of trichomoniasis (*Trichomonas vaginalis*) have been conducted in men. It would appear that this disease

accounts for less than 20% of male urethritis cases, a lower proportion than that for gonorrhoea and chlamydia. In women, however, the disease is highly prevalent, with prevalence rates typically in excess of 20%. Like chlamydia, its prevalence appears not to differ substantially between women in antenatal and family planning clinics and women in STI clinics.

Bacterial vaginosis and candidiasis (*Candida albicans*) are also conditions that are highly prevalent in women, although they are not traditionally regarded as STIs. In both cases, there is much inconsistency in the diagnostic algorithms used, and the data also show little consistency. It is clear, however, that the prevalence of bacterial vaginosis is extremely high, with the highest prevalence rates being observed in STI clinic attenders and sex workers. The prevalence of candidiasis is usually between 20% and 40%, except in studies in which definitions are based on clinical diagnosis.

Three of the studies have involved periodic assessments in the same sentinel population. A study of pregnant women in Hlabisa found that the prevalence of syphilis and trichomoniasis had declined significantly between 1995 and 2002, but changes in diagnostics used over the period obscure the change in the prevalence of other STIs.⁴⁸ In contrast, a study in Carletonville found increases in the prevalence of syphilis, gonorrhoea, and chlamydia between 1998 and 2000, in both men and women in the general population and in sex workers.¹³ The third survey, also conducted in Carletonville, found significantly increased detection of HSV-2 in male genital ulcers between 1993–4 and 1998, while the frequency of chancroid detection reduced significantly and the frequency of syphilis detection remained roughly unchanged.¹⁸

DISCUSSION

This study updates the earlier review of Pham-Kanter *et al.*⁸ and demonstrates the continuing STI burden in South Africa. STI prevalence rates in South Africa are high, even when compared with other African countries. The prevalence of gonorrhoea, chlamydia, and trichomoniasis in South African household surveys exceeds that estimated in recent household surveys conducted in various African cities^{56, 57} and in communities in Uganda and Tanzania.⁵⁸ The prevalence of these STIs in South African sex workers is also generally comparable to or higher than that observed recently in sex workers from other African countries.⁵⁹ This high STI prevalence rate may be a reflection of the high levels of migration in South Africa, the legacy of the migrant labour system that existed during the apartheid era.⁶⁰ It may also be because the HIV/AIDS epidemic in South Africa is less mature than the epidemic in other African countries. Model simulations suggest that bacterial STIs decline in prevalence over the course of an HIV/AIDS epidemic,⁶¹ and the relatively late start to the South African HIV/AIDS epidemic would therefore suggest a higher prevalence of curable STIs than in other African countries.

Studies from other African countries suggest that there have been significant declines in the prevalence of curable STIs in recent years.^{62–66} The data reviewed in this paper are of limited use in determining whether or not similar declines are occurring in South Africa. Although it is possible to adjust for the differences in diagnostic techniques used in different sentinel surveys,⁵⁸ there remains substantial heterogeneity between individual surveys in terms of populations sampled, and this reduces the reliability of statistical tests for trend. Only three studies have involved periodic assessments of STI prevalence in the same sentinel population, and these do not show consistent trends.

These limitations aside, it would appear that HSV-2 is accounting for an increasingly high proportion of GUD cases

in men, while chancroid is accounting for fewer GUD cases. The decline in the detection of chancroid in recent years may be related to the introduction of syndromic management protocols in South Africa since 1994, or to the rising levels of condom use observed in South Africa recently.⁷ However, it is not clear to what extent the increased isolation of HSV-2 in genital ulcers is the result of declines in the prevalence of other STIs that cause GUD, and to what extent it is the result of changes in HSV-2 seroprevalence. HIV prevalence might be associated with rising HSV-2 seroprevalence, since HIV co-infection increases HSV-2 viral shedding and hence HSV-2 transmissibility.^{67–69} However, there are no reliable local seroprevalence data to demonstrate temporal changes in HSV-2 seroprevalence. Although the HSV-2 seroprevalence in men with GUD appears to be lower in 1993–4¹⁵ than the seroprevalence rates of close to 100% recorded in male GUD patients in the early 1980s,^{70–71} the latter are probably exaggerated owing to the poor performance of the early HSV-2 enzyme linked immunosorbent assay (ELISA), which showed extensive cross reactivity with HSV-1.⁷² There is a need for greater monitoring of HSV-2 seroprevalence in South Africa, particularly as this infection has been found to be highly correlated with HIV infection.¹¹

Within South Africa, STI prevalence levels are highly variable. Chancroid, for example, seems to account for a higher proportion of GUD cases in Gauteng than in Durban and Cape Town. This may be the result of the association between chancroid and sex work,⁸ as levels of migrant labour and corresponding frequencies of commercial sex are particularly high in Gauteng.

Although the risk of syphilis and gonorrhoea infection is substantially higher in “high risk” groups than in women attending antenatal clinics, this is not the case for trichomoniasis and chlamydia. Other African studies have also failed to detect a significant association between trichomoniasis infection and sexual risk behaviours,^{57–73–74} which suggests that other factors may play a more important part in the epidemiology of this disease. Acquired immunity to chlamydia may explain the lack of association between chlamydia and sentinel facility type.⁷⁵

The geographical distribution of sentinel surveillance studies is generally not proportional to that of the South African population. Of the 47 independently conducted studies, 43 were conducted in KwaZulu-Natal, Gauteng, or Western Cape, though these provinces accounted for only 49% of the South African population in the 1996 census.⁷⁶ Thirty four of the studies were conducted exclusively in urban areas, though only 54% of the 1996 population lived in urban settlements.⁷⁶ Most of the rural studies were conducted in Hlabisa (now Umkanyakude) in KwaZulu-Natal. In addition, many of the studies were conducted in Carletonville, the largest gold mining complex in the world.⁷⁷ Exceptionally high HIV prevalence rates have been observed in this centre,⁷⁷ and STI prevalence rates observed in Carletonville are not likely to be representative of those in the rest of the country. Several other problems result from the above sources of geographical bias. Granuloma inguinale, for example, occurs mainly in tropical and subtropical regions.⁷⁸ Almost all of the South African studies of this disease have been conducted in Durban, and it is unlikely that these would be representative of other less tropical parts of the country.

Given the limitations associated with the sentinel surveillance data reviewed here, it is clear that there is a need for studies that are more nationally representative. There is also a need for more cross sectional studies conducted periodically in the same population, using the same diagnostic techniques, which can be used to monitor trends in STI prevalence more reliably. In addition, it is necessary to develop strategies

Key messages

- The prevalence of STIs in South Africa is high, although STI prevalence varies substantially between sentinel populations
- Lack of consistency between sentinel surveys precludes a rigorous analysis of trends in STI prevalence, although there appears to be a change in the aetiological profile of genital ulcer disease
- There is a need for more nationally representative STI prevalence studies in South Africa and more periodic cross sectional studies that can be used to monitor prevalence trends and the success of STI treatment initiatives

for monitoring STIs treated in the private health sector. Only two of the studies reviewed here were conducted among patients of private practitioners, although almost half of STI cases are believed to be treated by private practitioners.⁷⁹

Currently, the South African Department of Health conducts annual surveys of HIV and syphilis prevalence levels in pregnant women attending public antenatal clinics, and these surveys suggest significant declines in syphilis prevalence since 1997.⁶ The Department of Health also collects data on numbers of STI cases and male urethritis cases treated at public STI clinics, which do not show any significant trend.⁸⁰ Data on the prevalence of other STIs and STI symptoms are lacking, but improved microbiological surveillance and drug resistance monitoring for different STI syndromes are currently being introduced.⁸⁰ The microbiological surveillance will be conducted in selected sites on a periodic basis, and its initial focus will be on ciprofloxacin resistance in gonococcal isolates. A clinical sentinel surveillance system is also being introduced at selected sites to collect more detailed data on the age, sex and presenting syndromes of patients attending public health facilities.⁸⁰ While the new microbiological data will be useful, data collected only from STI clinics will be of limited use in monitoring trends in STI prevalence in the general population. It is therefore recommended that the new microbiological surveillance system incorporate other facilities such as antenatal and family planning clinics.

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CONTRIBUTORS

This study was conceptualised by LJ; it is part of a larger project conducted by LJ and supervised by RD; DC assisted in identifying unpublished literature; the manuscript was prepared by LJ, with contributions from DC and RD.

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