

# Screening for syphilis among homosexual men in bars and saunas in Amsterdam

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**SUMMARY** Serological screening of 1627 homosexual men visiting two saunas and two bars in Amsterdam showed that 32.2% were seroreactive for syphilis. The 18-month study period ended in June 1981. Follow-up was possible in 91% (224/245) of subjects with both positive TPHA and VDRL test results; 76 cases of previously undetected syphilis were identified among 75 of the 224 men (incidence rate 4.6%). The rate of previously undetected syphilis declined appreciably during the study period. The cost of identifying one new case of syphilis was Dfl577 (£120 or US\$220).

## Introduction

That some groups of homosexual men have much higher rates of syphilis than heterosexual men is well established.<sup>1-3</sup> Sexually active homosexual men visiting saunas seem to be especially at risk.<sup>4-8</sup> For this reason a pilot study was conducted among 318 homosexual men visiting two saunas in Amsterdam in August 1979, in which serological evidence of previous infection with *Treponema pallidum* was found in 34%.<sup>9</sup>

We decided to continue screening for syphilis in two bars and two saunas in Amsterdam to detect cases of untreated syphilis. Visitors to these locations were selected as contact tracing indicated they were a major source of syphilis. Cases of syphilis were referred to different physicians for further treatment.

## Subjects and methods

### STUDY POPULATION

The study population was as described in the pilot study.<sup>9</sup> In the present study blood samples were collected by venepuncture from male homosexuals in two saunas and two bars in Amsterdam, which were only accessible to men, between November 1979 and June 1981.

### SEROLOGICAL TESTS FOR SYPHILIS

Sera were inactivated at 56°C for 30 minutes before testing. The serological tests used were the Venereal Disease Research Laboratory (VDRL) slide test

(Wellcome) and the *Treponema pallidum* haemagglutination assay (TPHA, Fujizoki).

### FOLLOW-UP AND STAGING

All patients with serological findings suggesting recent syphilis (VDRL and TPHA test results positive) were contacted by letter. We asked these patients' permission to discuss their diagnosis and subsequent treatment with the physicians they contacted for treatment; permission was generally granted when the aim of the follow-up study was explained. Patients not responding to our letter were contacted by telephone.

The clinical stage of the disease could be assessed since additional information from the treating physicians was available on clinical follow up and by repeat laboratory tests. Over 85% of patients had been treated by specialists in dermatovenerology.

### STATISTICAL METHODS

The test against trend in a 2 × k table was applied.

## Results

A total of 1627 men participated in the study. Nearly half of them were between 25 and 35 years old (range 17-68 years): Of the men studied, 787 (48.2%) lived in Amsterdam, 683 (42.0%) elsewhere in the Netherlands, and 159 (9.8%) in 14 other countries. Participants were almost exclusively white (over 98%) and were living in Western Europe or the United States of America.

A total of 2385 blood samples was taken for serological testing at 52 screening sessions averaging six hours each. The mean number taken per session was 46 (range 15-80 samples) (table I).

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TABLE I Number of screening sessions, blood samples, and cases of previously undetected syphilis in male homosexual visitors to two saunas and two bars in Amsterdam

Period of screening	No of screening sessions	No of blood samples	Samples/session	Cases of untreated syphilis detected* (% of samples taken)
1979 October—December	3	142	47.3	3 (2.1)
1980 January—March	8	374	46.8	25 (6.7)
1980 April—June	8	378	47.3	9 (2.4)
1980 July—September	10	461	46.1	16 (3.5)
1980 October—December	9	427	47.4	16 (3.7)
1981 January—March	7	332	47.4	5 (1.5)
1981 April—June	7	271	38.7	2 (0.7)
Total	52	2385	45.8	76 (3.2)

\*Test against trend in a  $2 \times k$  table:  $t = -3.15$ ;  $P = 0.0008$ .

#### SEROLOGICAL FINDINGS

The results of the serological findings in the men participating in the study are summarised in table II. In one-third (524/1627) of the men a positive TPHA result was found; nearly half of these cases (245/524) also had a positive VDRL slide test result. Follow-up was possible in 91% (224/245) of subjects with both positive TPHA and VDRL test results; 75 of the 224 men were treated for previously undetected syphilis after serological screening. Over 85% (64/75) of patients had been treated by specialists in dermatovenerology in the Netherlands or at the clinics for sexually transmitted diseases (STDs) of the Municipal Health Service in Amsterdam. Six patients (8%) had been treated in other countries. The remainder (five patients) had received treatment from family practitioners. One patient was infected twice during the study period. There was no difference in the findings at the different locations.

The clinical stages of syphilis of the patients was as follows: primary syphilis, nine cases; secondary syphilis, seven; early latent syphilis, 24; late latent, 10; and unknown, 26.

#### DECREASING INCIDENCE IN STUDY PERIOD

The test against trend in a  $2 \times k$  table was applied to the figures in table I. This test relates the number of cases of untreated syphilis detected to the number of blood samples taken. This test gave a  $t = -3.15$  which, as it is a one-sided test here, gave  $P = 0.0008$ . This means that rates of previously undetected syphilis (new cases/blood samples taken) declined significantly during the study period.

#### COSTS

The cost of staff-hours spent taking blood samples and performing laboratory investigations amounted together to Dfl 44 000. Thus, the cost of identifying one patient with previously undetected syphilis in our study was Dfl 577 (about £120 or US\$220).

#### Discussion

Incidence rates of 1-3% have been reported<sup>4-8</sup> in screening programmes for syphilis among male visitors to gay baths in the United States of America. In this study the incidence of syphilis was 4.6%

TABLE II Serological findings by age in homosexual visitors to two saunas and bars between November 1979 and June 1981. (Numbers in brackets indicate men who gave histories of treated syphilis.)

Age group (years)	Test results:				Adequately treated	No follow-up	Untreated	Total
	VDRL - TPHA -	VDRL - TPHA dubious	VDRL - TPHA +	VDRL + TPHA +				
<24	150 (3)	2 (2)	17 (13)	9 (9)	4 (1)	6 (2)	188 (30)	
25-34	509 (25)	19 (12)	142 (108)	64 (64)	5 (2)	44 (19)	783 (230)	
35-44	275 (25)	18 (11)	95 (78)	56 (56)	10 (3)	20 (11)	474 (184)	
>45	123 (8)	7 (5)	25 (16)	20 (20)	2 (2)	5 (2)	182 (53)	
All ages	1057 (61)	46 (30)	279 (215)	149 (149)	21 (8)	75* (34)	1627 (497)	
Percentage of total	65	2.8	17.1	9.2	1.3	4.6	100	

\*75 patients, 76 cases

(75/1627). We do not think that some cases could have had yaws (framboesia) because only two of the 75 patients were non-whites from Surinam. One case seroconverted from negative to highly positive, and in another (who gave a history of syphilis) a fourfold increase in VDRL titres was found before treatment. Both cases were classified as latent syphilis.

One-third (524/1627) of the participants of the study had a positive TPHA test result. This was the only positive serological finding in 279 men, of whom 215 volunteered a history of syphilis. The TPHA has been evaluated in a number of studies and is highly specific and sensitive for the detection of treated and untreated cases of syphilis.<sup>10-13</sup> We, therefore assumed that the isolated positive TPHA results in sera of 279 patients were not biological false-positive reactions. Thus, 32.2% (524/1627) of the participants in the study were seroreactive for syphilis. This is in accordance with the findings of our pilot study.<sup>9</sup>

The VDRL slide test has been evaluated by Notowicz<sup>14</sup> among others. His evaluation suggested that the predictive value of a positive VDRL slide test for the detection of untreated cases of syphilis was much higher than the predictive value of a positive TPHA result. We therefore regarded patients with a negative VDRL slide test result as having been adequately treated. These patients were therefore not included in our follow-up.

The follow-up of 91% (224/245) of subjects with both positive VDRL and TPHA test results was possible because of the facilities for diagnosis, treatment, and contact-tracing of STD that exist in the Netherlands. Serological diagnosis of syphilis is provided free of charge by regional public health laboratories and treatment is provided free of charge by STD clinics in the major cities and by private specialists in smaller towns. The costs are borne by the National Ministry of Health, which also employs the contact-tracing staff.

In this study screening for syphilis in bars and saunas coincided with a significant fall in rates of previously undetected syphilis. A causal relationship between screening and the declining rates seems plausible but cannot be inferred on the basis of our findings alone.

The cost of identifying one patient with untreated syphilis in our study (£120 or US\$220) was low compared with the costs of traditional methods of finding cases in STD clinics.

In this study simple serological screening in high-risk locations in Amsterdam has been effective in detecting untreated cases of syphilis. We decided therefore to continue the programme. As the rates of undetected syphilis, however, declined during the programme the interval between the screening sessions was increased. If the rate starts rising again, we shall adjust the interval accordingly.

Blood samples were taken by Nelleke van den Akker, Lidwien Berkhout, Thérèse van der Helm, Fem Jansen Schoonhoven, Jeannette Kok, and Liesbeth Lanser (Municipal Health Service, Amsterdam). Serological testing was carried out at the bacteriological laboratory of the Municipal Health Service, Amsterdam. We thank Dr Hilda Kuipers for her statistical advice.

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