Prevention of sexually transmitted diseases: a randomised community trial

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Abstract

Study objective—The aim was to evaluate the effectiveness of a programme for the prevention of sexually transmitted diseases which affect fertility.

Design of the prevention programme—The programme took place in six French geographical departments. Three of these, randomly selected, served as experimental departments while the other three were matched with the first three and served as controls.

Design of the evaluation—Genital discharge was used as the indicator of a sexually transmitted disease. In each department, about 40 voluntarily participating general practitioners (263 in total) gathered information on the frequency of infected patients and on their characteristics, both before and after the campaign.

Patients—Before and after the programme respectively, 412 and 288 women and 117 and 94 men with a genital discharge were described.

Measurements and main results—After the programme, tests for chlamydia trachomatis were prescribed more often to both women and men with a discharge in the experimental departments. The characteristics of women having consulted a general practitioner with a discharge differed according to the department group studied. In the experimental departments, the women were younger than those in the control departments and had fewer sexual partners. In contrast to the results obtained for women, no behavioural changes were observed among men with a discharge.

Conclusions—The results may indicate a decreased risk in spread of infection. Methodological problems associated with such a design are discussed. There is a need to develop specific messages aimed at changing male sexual behaviour. The study design has implications for the best strategy in delivering prevention messages to the general population which are relevant to the present AIDS epidemic.

Some sexually transmitted diseases represent a major public health problem due to their effects on fertility. The risk for women essentially concerns pelvic inflammatory disease and for men, epididymitis.¹⁻⁴ The incidence of pelvic inflammatory disease in France is roughly 100 000 new cases each year.⁵ These cases are

responsible for about 12 000 new cases of sterility each year,^{5 6} a large proportion of which could be avoided by means of prevention programmes. *Neisseria gonorrhoeae* and *chlamydia trachomatis* are the most important organisms implicated in these disorders.

The characteristics of the population at risk for these sexually transmitted diseases and the measures for their prevention and treatment are both known. Thus public health programmes for primary and secondary prevention of these diseases urgently need to be organised, in order to reduce their frequency and their effects on fertility. The evaluation of such programmes (before a true prevention policy can be instituted at the national level) is difficult as rapid changes are observed in the incidence of the various sexually transmitted diseases. This incidence is linked to changes in sociodemographic and microbiological determinants.⁷ In France and in other developed countries, the proportion of 15 to 45 year old people, the most sexually active part of the population, has been rising over the last 25 years (owing to the baby boom). Furthermore, sexual behaviour and practices have changed over this period. Finally, new micro-organisms such as *Chlamydia trachomatis* have spread widely. For these reasons, the evaluation of any prevention campaign should be based on the study of experimental areas compared with control areas. Such a comparison would help to control for "spontaneous" changes,⁸ either secular or seasonal, in sexually transmitted diseases.

In France, between November 1986 and March 1987, a randomised community trial was conducted by INSERM U 292 (National Institute of Health and Medical Research) in collaboration with the Direction Générale de la Santé (Ministry of Health) and the Comité Français d'Education pour la Santé (French Committee for Health Education). The aim of the programme was to decrease the frequency of sexually transmitted diseases and the risks of complications upon fertility. The results of the evaluation of this programme are presented in this paper.

Methods

A feasibility study constituted the first phase of the project. It was implemented in the Hauts-de-Seine department (near Paris) in 1984-1985. The prevention programme was developed thereby by all the collaborating partners and the methodology and tools were tested. The results of this phase have been reported earlier.^{9 10}

STUDY DESIGN

This community randomised trial was conducted

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in six French departments (administrative areas). Departments where local prevention campaigns had already been implemented and those in which the public health authorities were not concerned by the problem of sexually transmitted diseases were excluded. Three pairs of departments were constituted by matching important determinants of sexually transmitted disease (habitat type: urban or rural, density of general practitioners, and age structure of the inhabitants). Departments inside each pair were chosen to be geographically separate to avoid a crossover contamination bias. In each pair, the experimental (E) department (in which the prevention campaign was set up) and the control (C) department (in which no campaign was conducted) were randomly selected. The following departments were selected as experimental departments: Ille et Vilaine (750 000 inhabitants), Bas-Rhin (915 000), and Val d'Oise (1 200 00). They were matched, respectively, with the Seine-Maritime (1 200 000), Indre et Loire (500 000), and Essone (1 000 000), the control departments. First pair (I) was made of a young population, second (II) of a slightly older one, the third (III) was a more urban one (near Paris).

To evaluate the prevention programme one measurement was undertaken before the campaign and one after, in each of the six departments.

THE PREVENTION PROGRAMME

The main messages of the programme were the following:^{11 12} (1) to inform about the risks associated with multiple sexual partners; (2) to encourage the use of condoms among the population at risk for sexually transmitted diseases; (3) to decrease the delay between infection and consultation; (4) to treat all the sexual partners of infected patients; (5) to educate health professionals, particularly regarding organisms such as *Chlamydia trachomatis*.

Various educational media were chosen in accordance with the most important target, the young people (15–30 years). However, the entire population of the experimental departments was potentially exposed to the campaign. Means used to reach the specific objectives were informative, technical, or by regulation:

Measures facilitating access to care—Free treatment and screening for minors, systematic refunds for *Chlamydia trachomatis* tests.

Diffusion of condoms—Installation of automatic vending machines, free distribution by health centres, university medical centres, and youth clubs.

Public information—Messages were disseminated using a variety of media and actions, adapted to different social groups. Most of the information aids were developed specifically for the study; some already existing documents were also used. The media used were the following: advertisements on local radio and in newspapers, debates, freephone hot line (using a recorded message), posters¹³ in medical offices and public areas, a 13 minute videotape¹⁴ used to introduce the debates, a two minute cartoon¹⁵ shown during advertisements in the major cinemas of the experimental departments, a pamphlet¹⁶ distributed through general practitioners, chemists, planning centres, and school health services, and three differently styled strip cartoon books^{17–19} freely distributed by youth clubs, schools and cinemas.

Education for health professionals—A pamphlet²⁰ and a technical guide²¹ were used in this programme, circulated to all general practitioners and some other professionals. An audio cassette tape specifically developed for general practitioners²² was also sent to all those working in the three experimental departments. In addition conference debates were organised, bringing together general practitioners, chemists, and paramedical staff. The main messages were about the increasing importance of *Chlamydia trachomatis* and about the need for treatment of all the partners of infected patients.

This entire programme was offered in the three experimental departments. In each one, a public health physician was entirely responsible for implementation and coordination. The programme began in December 1986 and lasted until March 1987, just before the first national campaign against AIDS.

THE PROGRAMME EVALUATION

Before implementation of the study, a sample of 600 general practitioners (100 per department) was randomly drawn and asked to participate. They did not know at that time whether they belonged to an experimental (E) or control (C) department. The proportion of physicians who agreed to participate in the study was very similar

Table 1 Number of general practitioners (GPs) sampled who participated in the study, and number of discharges and sexually transmitted diseases (STD) declared by the study GPs

Department	Sampled GPs (n)	Accepted (n)	Participated			
			November 86		November 86 and March 87 (before and after) = study GPs (n)	
			Before (n)		Before	After
Pair I						
E	100	54	46		65(8)	37(8)
C	100	55	50	40	59(9)	34(1)
Pair II						
E	100	55	46	43	64(8)	57(8)
C	100	48	46	44	74(8)	46(6)
Pair III						
E	100	54	47	42	78(16)	58(15)
C	100	59	51	46	72(9)	56(14)
Total E	300	163	139	125	207(32)	152(31)
Total C	300	162	147	138	205(26)	136(21)

E = experimental department; C = control department

in each of the six departments (table I). For the analysis, only the 263 general practitioners who participated in the two study periods were selected. We chose to study general practitioners' patients because in previous studies it had been shown that about 80% of gonococcal infections were diagnosed at private clinics, most of them (80%) by general practitioners.²³

Each general practitioner had to fill out an anonymous questionnaire for all women with a genital discharge and all men with a urethral discharge. Discharge was chosen as the indicator of a sexually transmitted disease to avoid dependence on laboratory tests. Information was collected about sociodemographic characteristics, sexual activity in the previous three months (number of sexual partners and type: regular or occasional), clinical characteristics, and the delay taken before seeking a consultation. The general practitioners noted whether they prescribed laboratory tests, and the results. They also indicated the total number of patients seen over the same period. For each doctor a frequency of discharge among all patients could then be computed. This information was gathered both before the implementation of the programme (November 1986) and after (March 1987), in each case during a four week period.

Before the programme the comparability of the two departments of each pair was checked. The efficacy of the programme was first evaluated by comparing, after the programme, the mean frequency of discharge among patients by general practitioners and the characteristics of the patients with discharge between experimental and control departments. Analysis of these characteristics was conducted separately among men and women, and among the subgroup of patients for whom laboratory tests had been prescribed and a sexually transmitted disease diagnosed. A sexually transmitted disease was defined by the presence in the genital smear of at least one of the following organisms: *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, *Trichomonas vaginalis*, or genital mycoplasmas.

To sum up all the information, the following measure of association was chosen: the overall difference in change (after-before) in E minus change (after-before) in C, with its 95% confidence interval. Frequency of discharge among patients was considered as a quantitative

variable for each general practitioner. Mean frequency of discharge, changes after-before, and overall differences in changes were compared by analysis of variance. Comparisons of qualitative characteristics of patients were tested within each pair by χ^2 or Fischer tests. Global comparisons between experimental and control groups were made after adjustment on the pair by the Mantel-Haenszel method.²⁴ The overall difference in change (after-before) in E minus change (after-before) in C was computed by weighting each difference in change E minus change C in each pair with the inverse of its variance. When the confidence interval comprised 0, the effect of the programme was not considered statistically significant. Analyses were made using SAS software.²⁵

Results

FREQUENCY OF DISCHARGE AMONG PATIENTS

The results of frequency of discharge evaluations are given in table II. Prior to the campaign, mean frequency of discharge by general practitioner in each department ranged from 0.38% to 0.95%. No statistical difference was observed between the two departments of each pair. As would be expected, mean values in pair III were higher than in the other pairs, as it was located near Paris in very urban departments with a young population. Each doctor had seen an average of 2.6 cases of discharge in four weeks; a similar proportion in the six departments (about 30%) saw no cases during that period.

After the campaign, the mean frequency of discharge had decreased in all six departments, as expected from seasonal variations.⁸ Nonetheless, no difference was observed between experimental and control departments after the campaign, nor in the mean difference "after-before". The overall difference in change E minus change C was -0.01 (95% CI = -0.16, 0.14). Those comparisons between E and C were not modified when a possible influence of the denominator, ie, the total number of patients, was accounted for: a similar outcome was noted in each pair when the mean number of patients with a discharge per general practitioner and per 28 days was considered instead of the frequency of discharge among patients.

The sex ratio of patients with a genital

Table II Evolution of the frequency of discharge among patients (FDP) of general practitioners (GPs)

	Number of GPs (n)	Before 100xFDP, mean (SEM)	After 100xFDP, mean (SEM)	Evolution: after-before 100 x {FDP _{after} - FDP _{before} }, mean (SEM)
Pair I				
E	40	0.60(0.12)	0.48(0.12)	-0.12(0.09)
C	48	0.38(0.06)	0.27(0.05)	-0.11(0.06)
p ^a		0.09	0.11	0.92
Pair II				
E	43	0.47(0.09)	0.43(0.14)	-0.03(0.09)
C	44	0.51(0.09)	0.31(0.06)	-0.21(0.07)
p ^a		0.72	0.39	0.14
Pair III				
E	42	0.95(0.31)	0.69(0.27)	-0.26(0.13)
C	46	0.84(0.18)	0.76(0.13)	-0.08(0.12)
p ^a		0.76	0.83	0.37
Overall				
E	125			-0.14(0.06)
C	138			-0.13(0.05)
p ^a				0.95
E-C (CI 95%)				-0.01(-0.16, 0.14)

E = experimental department; C = control department; CI = confidence interval

^a Comparison between E and C, p value of F test

discharge was about three women to one man, and was similar in all the departments, before and after the programme.

CHARACTERISTICS OF WOMEN WITH A GENITAL DISCHARGE

Prior to the campaign, the 412 women with genital discharge did not differ between experimental and control departments for sociodemographic characteristics (age, marital status, type of sexual partners) and for time before seeking a consultation. Frequency of prescription of laboratory tests was the same in each pair (microbiological tests and specific chlamydia tests).

After the campaign, despite a lower number of women with a discharge ($n=288$), some differences were noted between experimental and control departments, similar in the three pairs. In experimental departments, women less often reported irregular or multiple sexual partners. They were significantly more often prescribed a chlamydia test (prescription rates of standard microbiological test remained similar). In table III, absolute levels and changes (after-before) are presented. To summarise the information, pooled estimates of the difference in change E minus

change C were computed. They did not include zero for the percentage of women with irregular or multiple sexual partners, and for the prescription rate of a chlamydia test, which confirms a real change in the experimental departments.

CHARACTERISTICS OF CONFIRMED CASES OF SEXUALLY TRANSMITTED DISEASES AMONG WOMEN

A laboratory test was prescribed to 250 women before and 167 after the campaign (ie, 61% and 58% of all the women with a discharge). Compliance of these patients (ie, frequency of those who actually had the test) was 88%, similar before and after the campaign. Because of the small numbers involved it was difficult to determine whether this change in general practitioner behaviour influenced the number and type of organisms diagnosed.

A sexually transmitted disease was diagnosed in 58 women before the programme and in 52 after. Before the campaign, those women with a confirmed sexually transmitted disease were similar within each pair for sociodemographic and clinical characteristics. After the campaign (table IV), differences were noted between experimental and control departments. Women with a sexually transmitted disease were more often under 30

Table III Comparison of characteristics of women with a discharge before programme, after programme, and change after-before, between experimental (E) and control (C) departments, among the three pairs and overall

	Chlamydia test			Age < 30 years			Irregular or multiple partners			Delay before consultation > 7 d		
	Before %	After %	After-before % (CI 95%)	Before %	After %	After-before % (CI 95%)	Before %	After %	After-before % (CI 95%)	Before %	After %	After-before % (CI 95%)
Pair I												
E	29.69	54.55	24.86 (4.51, 45.20)	52.38	40.00	-12.38 (-49.58, 24.82)	22.81	0	-22.81 (-33.71, -11.91)	49.02	48.15	-0.87 (-24.17, 22.43)
C	30.51	30.30*	-0.20 (-19.63, 19.61)	57.63	42.42	-15.21 (-36.26, 5.84)	13.21	12.50*	-0.71 (-15.35, 13.93)	59.26	57.58	-1.68 (-23.04, 19.68)
Pair II												
E	40.63	58.97	18.34 (-12.4, 37.92)	63.49	68.75	5.26 (-14.71, 25.23)	18.97	16.67	-2.3 (-19.02, 14.42)	53.33	40.00	-13.33 (-34.93, 8.27)
C	30.14	36.36*	6.22 (-11.46, 23.90)	48.57	51.16	2.59 (-16.41, 21.56)	23.81	28.95*	5.14 (-12.72, 23.00)	51.61	57.50	5.89 (-13.85, 25.63)
Pair III												
E	44.16	65.38	21.22 (3.99, 38.45)	52.56	61.22	8.66 (-8.92, 26.24)	13.24	8.11	-5.13 (-17.07, 6.81)	47.54	50.00	2.46 (-18.51, 23.43)
C	45.83	50.91†	5.08 (-12.44, 22.60)	58.57	56.36	-2.21 (-19.67, 15.25)	21.88	23.08†	1.2 (-14.09, 16.49)	63.64	54.35	-9.29 (-27.77, 9.19)
Overall change E-change C % (CI 95%)			17.33 (2.15, 32.50)			5.96 (-9.63, 21.55)			-13.12 (-24.80, -1.44)			-1.95 (-18.98, 15.08)

CI = confidence interval

* Comparison between E and C inside the pair $p < 0.05$; † comparison between E and C adjusted on the pair, $p < 0.05$

Table IV Comparison of characteristics of women with a diagnosed sexually transmitted disease before the programme, after the programme, and change after-before, between experimental (E) and control (C) departments, among the three pairs and overall

	Age < 30 years			Irregular or multiple partners			Delay before consultation > 7 d		
	Before %	After %	After-before % (CI 95%)	Before %	After %	After-before % (CI 95%)	Before %	After %	After-before % (CI 95%)
Pair I									
E	57.14	57.14	0 (-51.84, 51.84)	57.14	0	-57.40 (-94.07, -20.73)	80.00	83.33	3.33 (-42.69, 49.35)
C	55.56	0	-55.56 (-88.12, -23.20)	42.86	100	57.40 (-20.73, 94.07)	85.71	100	14.29 (-11.64, 40.22)
Pair II									
E	37.50	80.00	42.50 (-6.03, 91.03)	37.50	40.00	2.50 (-51.99, 56.99)	75.00	50.00	-25.00 (-82.47, 32.47)
C	75.00	33.33	-41.67 (-89.87, 6.53)	37.50	50.00	12.50 (-21.06, 46.06)	57.14	66.67	9.53 (-43.08, 62.14)
Pair III									
E	50.00	76.92	26.92 (-6.62, 60.50)	31.25	0	-31.25 (-53.97, -8.53)	50.00	44.44	-5.56 (-47.27, 36.15)
C	55.56	38.46*†	-17.10 (-58.97, 24.77)	75.00	30.77*†	-44.23 (-83.35, -5.11)	87.50	83.33	-4.17 (-35.31, 26.97)
Overall change E-change C % (CI 95%)			58.10 (23.35, 92.86)			-35.08 (-65.16, -5.00)			-11.35 (-44.83, 22.13)

CI = confidence interval

* Comparison between E and C inside the pair, $p < 0.05$; † Comparison between E and C adjusted on the pair, $p < 0.05$

years of age in the three experimental groups and more often single. The frequency of those with irregular or multiple partners was lower in experimental than in control groups. The delay before seeking a consultation was shorter in women of experimental departments. When the initial levels before the programme were accounted for by computing the overall difference in change, the delay no longer appeared significantly different, as its confidence interval contained the null value. This overall lack of decrease in the time before consultation was attributable to a lack of change in the third pair, as in the first two a tendency towards a shorter delay in experimental departments was noticed.

We checked that these differences between experimental and control groups among women with a sexually transmitted disease were not attributable to more frequent microbiological screening by physicians among young women or those who were likely to have regular sexual partners. We also verified that those behavioural differences were not explained by the recruiting of younger women, who tended more often to have multiple or irregular partners.

CHARACTERISTICS OF MEN WITH A URETHRAL DISCHARGE

Before and after the campaign, 117 and 94 men attended the study general practitioners with a urethral discharge. Sociodemographic and behavioural characteristics of these men were similar in the various departments. The efficiency of the programme appeared less pronounced than among women. The only differences after the programme were in relation to the frequency of laboratory tests. In the three experimental departments, men were more often prescribed both a chlamydia test and a standard microbiological test. No difference was noted after the programme when analysis was restricted to the 37 men with a confirmed sexually transmitted disease.

Discussion

This community trial for prevention of sexually transmitted diseases has shown, three months after its implementation, some differences between the experimental and the control departments. The prevention programme has had a favourable impact upon general practitioners and led them to a greater awareness of the importance of *Chlamydia trachomatis*. This was illustrated by a more frequent request for this test in the experimental departments to both men and women with a discharge. This result is in accordance with the recommendations of the programme and with data of a poll which was conducted in parallel on a representative sample of 182 general practitioners distributed throughout the three experimental departments. This poll showed that 95% of general practitioners were aware of the campaign; 55% of them considered that it helped them in their task of informing patients, 63% considered that the technical guide was the most useful medium. Women who consulted their general practitioners because of a genital discharge declared less often that they had had multiple or irregular sexual

partners in the previous three months. This could indicate a decreased risk in spread of the disease. When analysis was restricted more specifically to women with a diagnosed sexually transmitted disease, the delay before seeking a consultation tended to be shorter in the experimental departments, which could implicate a decreased risk of complications. In contrast to the results obtained for women patients, no behavioural changes were observed among men who had consulted with a urethral discharge, either in the type of partners or in the time before consulting.

In this study, the departments were matched on important determinants for sexually transmitted diseases, in order to improve comparability inside each pair before the campaign.²⁶ The programme was then randomly allocated to one department inside each pair to avoid an indication bias. General practitioners were recruited for this study before they knew whether they belonged to an experimental or control group; their eventual participation did not differ according to the group. For these reasons, the differences observed after the campaign between experimental and control departments can be attributed to the intervention. The number of general practitioners involved in this study was less than 50% of the sample drawn. The representativeness of our results could therefore be questioned. It seems however highly unlikely that the patients of our study group of general practitioners behaved any differently from the patients of general practitioners who did not participate.

The sexual behavioural changes noticed in women with a discharge or a sexually transmitted disease were not reflected in a change in the frequency of discharge among patients. No difference in the frequency of discharge among patients emerged between experimental and control departments. This apparent discrepancy can be addressed in several ways. First, it raises the problem of the validation of behavioural items. Did women really tell the truth or did they answer by conforming themselves to the norms conveyed in the programme? In the end, whatever the truth our results indicate a good dissemination and understanding of the messages that were distributed at the community level. This question of validation is relevant as those behavioural changes were observed among women who were infected with a sexually transmitted disease. We do not think that these women had been infected before a change of behaviour induced by the programme, since the time interval before seeking a consultation was no longer than in the control group. A more plausible hypothesis is that they had been infected by a male partner who himself had not changed his sexual behaviour. This is supported by the fact that no differences were observed between experimental and control groups among men with a urethral discharge. In the programme, emphasis was placed on female infertility risks. The lack of differences observed among men might reflect lower impact and efficacy of the programme. In the future, specific messages towards men should be developed and evaluated.

In our study, women with a diagnosed sexually transmitted disease were younger (and so more often single) in the experimental departments

than in the control ones. Older patients with a sexually transmitted disease might have consulted elsewhere. This is unlikely to have occurred, as no message advising women to change from their general practitioners to a gynaecologist or to a sexually transmitted diseases clinic was stated. In confirmation of this, the results of a parallel study among a sample of gynaecologists in the same six departments showed no increase in the proportion of older women with a sexually transmitted disease (unpublished data). It is more likely that some differential changes according to age may have occurred in the general population. Older women could have adopted efficient preventive measures more often than younger women (either the use of condoms or a reduction of the number of sexual partners). Of course, these hypotheses would have been more easily verified if simultaneous data on sales of condoms and profile of users could have been collected.

Symptomatology of lower genital tract infection with sexually transmitted diseases particularly *Chlamydia trachomatis*, remains controversial. In our study, 52 out of 412 women with a vaginal discharge had a sexually transmitted disease diagnosed. This number must be considered with caution as not all the women with a discharge were prescribed a test. Some of them could have had a suspected sexually transmitted disease treated without a laboratory diagnosis, for example on an epidemiological basis. Nayyar *et al*²⁷ found no difference in the proportion of vaginal discharge between carriers and non-carriers of chlamydia. Conversely, more recently Handsfield *et al*²⁸ studied among 1059 women the relationship between chlamydia and genitourinary symptoms. Only discharge was significantly associated with a chlamydia infection. Its specificity was evaluated at 81%. Thus, at the time of designing our study, we had to strike a balance in choosing an indicator of a sexually transmitted disease. It had to be independent of laboratory tests, the frequency of which was supposed to change because of the programme; it had also to be simple, inexpensive, and used by all general practitioners during the two study periods in the same way. Moreover, the indicator "discharge" could permit us to discard some persistent viral sexually transmitted diseases such as herpes, papillomavirus or HIV infection. But its low specificity may have led to a lack of power in our estimation of the change in the frequency of discharge among patients; this could explain the apparent discrepancy in the results between behavioural changes and lack of change in the frequency of discharge. Obviously, the general practitioners could not be blind to the occurrence of a prevention campaign in their district, and it was impossible to design a "placebo campaign" in the control departments. We tried to reduce the risk of an increased laboratory ascertainment by doctors by the choice of genital discharge as the indicator of sexually transmitted diseases.

One statistical problem is the choice of the best unit to consider when assessing randomised groups instead of individuals. In this study, the allocation of the treatment was decided at the level of the department. This was intentional, as the programme had to be distributed collectively and

the inhabitants were expected to communicate among themselves and then to improve the dissemination of the messages. Like other workers²⁹⁻³¹ we did not consider the group as the statistical unit in the analysis. We did however present results pair by pair, and we considered that the efficacy of the programme was all the more likely since similar results were observed in the three pairs. Conversely, if discordant results among the pairs had been observed, it would have been difficult to settle between a random fluctuation or a department-programme interaction. As suggested by Donner and Donald,²⁶ a statistically satisfactory alternative would be to increase the number of randomised groups inside each strata. Unfortunately, this is quite unrealistic when considering the number of French departments.

Another question concerns the duration of the observed effects of the programme. An optimal situation, in view of seasonal variations of sexually transmitted diseases, would have consisted in re-evaluating the efficacy of the programme with a new measurement over the same period as the "before" measurement, ie, in November 1987. For the obvious reason of the AIDS epidemics, we did not consider trying to prevent control departments from implementing their own programmes until that date.

To our knowledge, there has been no previous study of this type. Most of the published studies on prevention of sexually transmitted diseases either have no control group, or deal inadequately with the evaluation process (did the programme reach the target population?) or with the evaluation of knowledge and attitudes. In the early 1970s, Weström, in Sweden, was the first to launch a national prevention campaign centred on the use of condoms and the prevention of chlamydiosis as a sexually transmitted disease. Since 1980,³² he has observed a reduction in the incidence of pelvic infections. While this was probably due to the campaign, there can be no certainty of this since no control areas were available. In London, several workers³³⁻³⁵ have studied the impact of the media coverage of AIDS upon the incidence of gonorrhoea among patients at venereal disease clinics. All the authors observed a reduction in the incidence. Koutsky *et al* in Seattle³⁶ and Judson and Boyd in Denver³⁷ measured the level of awareness among physicians and medical staff before and after a specifically designed sexually transmitted disease training programme. Using randomised designs, Solomon and Dejong in Boston³⁸ have demonstrated the effectiveness of education upon the awareness level and on the behavioural changes among young men infected with *N gonorrhoea* and consulting at clinics frequented mostly by black people. More recently, in Switzerland³⁹ the nationwide educational programme evaluated by pre- and post-test the increase in knowledge in the community. It would appear that our study is the only one which has attempted to assess experimentally the effectiveness of a prevention programme implemented in a large community, by measuring changes in behaviour and efficacy on health.

Because of the AIDS epidemic, no such trial (using a control group) is likely to be done again

today. But an important public health question regarding HIV heterosexual transmission remains. It concerns the choice, among several, of the best strategy in delivering prevention messages to the general population.⁴⁰ Such a study design as ours could be very helpful in arriving at this type of decision. In particular, by comparing two or more prevention programmes instead of one against a control group, the risk of unreliable answers about sexual variables among experimental groups could then be decreased.

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