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ANRS–COM'TEST: Description of a community-based HIV testing intervention in non-medical settings for men who have sex with men

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Key words: MSM, community, rapid HIV testing.

Article summary

Article focus

- How extend testing facilities to reach and test for HIV more MSM, and diagnose HIV-infected MSM earlier?
- The presence of peers and non-clinical staff members who address sexuality more openly and avoid medical jargon during counseling sessions could offset cultural barriers and reduce fears of HIV and associated stigma.
- The article describes an experimental program of community-based HIV testing: the population reached, the quality of the program and the satisfaction of participants.

Key messages

- This community-based HIV testing and counseling program reaches MSM with high-risk sexual behavior, a substantial proportion of whom has not tested for HIV recently.
- Community testers are able to perform rapid HIV test into a comprehensive prevention approach in line with participant's life.
- 2.8% of participants tested positive. Infection was confirmed in all cases, 80% were linked to care. Cases were diagnosed at early stages of disease.

Strengths and limits

- This HIV testing and counseling program is exclusively based on MSM community, and continuing the prevention counseling with the awareness of the HIV serostatus includes testing into a comprehensive prevention approach.
- Community-based HIV testing programs may be attractive and efficient in large urban areas (like Paris), but perhaps less so in smaller cities, where an outreach approach may work better.
- The number of HIV diagnoses was small; the prevalence and median CD4 count among the few HIV-infected participants should therefore be interpreted with caution.

Abstract

Objective: To describe a community-based HIV testing program.

Design and setting: An intervention of HIV testing conducted in non-medical settings in four French cities.

Participants: Men who have sex with men (MSM)

Intervention: Counseling and rapid HIV testing staffed by trained personnel from an HIV/AIDS community-based organization.

Primary and secondary outcome measures: the population reached, the quality of the program, and the satisfaction of participants. Data were collected on demographics, HIV testing history, sexual practices, quality and satisfaction with the testing program.

Results: 532 MSM were tested between 2009/02 and 2010/06, of whom 49 (9%) were tested ≥2 times. 468 MSM (88%) had casual male partners in the previous six months, and 152 (35%) reported having unprotected anal intercourse with risky casual partners (HIV-infected or HIV-serostatus unknown). 159 men (30%) had not been tested in the previous two years, 50 (31%) of whom had unprotected anal intercourse with risky casual partners. Steps of counseling and testing procedure were respected by testers and difficulties in handling tests were rare. Among the 15 patients who tested positive (2.8%), 12 (80%) received confirmation and were linked to care (median CD4 cell count=550/mm^3). Satisfaction was high: 92% reported being "very satisfied" with their experience.

Conclusion: This community-based HIV testing program reached high-risk MSM, of whom a substantial proportion had never been tested before. This novel service supplements pre-existing HIV testing services and increases access to HIV testing in high-risk groups.

Introduction

Until very recently in France, only physicians could prescribe, perform, and provide the results of HIV tests. Although current HIV testing rates in France rank second in Europe, [1] roughly 50,000 of an estimated 135,000–170,000 people infected with HIV remain unaware of their infection.[2] Among people the most concerned by HIV, men who have sex with men (MSM) account for half of new HIV infections approximately.[3-4] The HIV incidence in MSM is 60-fold higher than in the overall population.[3] Moreover, a recent study demonstrated that 32% of MSM were diagnosed at advanced stages of disease.[5]

The most significant barrier to early HIV testing is the absence of perception of risk for HIV.[6-8] In an effort to overcome this barrier, the French ministry of health recently recommended that physicians perform one-time routine voluntary HIV tests in the general population, and annually in population groups at high risk of infection such as MSM.[9-10] However, barriers to HIV testing remain at the individual level: fear of the disease, its disclosure and subsequent social stigma, as well as poor access to HIV testing.[6-8] In addition, the gay community highlight moralistic attitudes face to their sexual practices and testing habits in conventional testing services as barriers to regular HIV testing.[11]

The recent availability and acceptability of rapid HIV tests [12-13] offer an opportunity to implement new HIV testing strategies. A community-based HIV screening program, for instance, may increase access in some populations by offering a more attractive and convenient location than doctor's offices. The presence of peers and non-clinical staff members who address sexuality more openly and avoid medical jargon during counseling sessions could also offset cultural barriers and reduce fears of HIV and associated stigma. Furthermore, some community-based organizations (CBOs) have been engaged in outreach prevention in which sexual practices, HIV exposures and testing are addressed. Continuing

the prevention counseling with the awareness of the HIV serostatus could include testing in a comprehensive strategy of HIV exposure reduction.

Several European countries [14-17] have begun implementing community-based HIV testing with rapid tests in recent years. However, all of these programs involve medical staff, with HIV tests performed by healthcare workers. To our knowledge in Europe, the only ongoing community-based HIV testing programs that do not involve medical staff is Checkpoint in Barcelona, Spain [18] and LASS in Leicester, England (http://www.lass.org.uk). Data on these programs have not yet been published.

The ANRS–COM'TEST study is an intervention study that describes a community-based HIV testing and counseling program performed by peers in non-medical settings that targeted MSM. The purposes were to describe characteristics of the population reached by this program, the quality of the testing and counseling performed by non-healthcare workers, and the satisfaction of participating MSM.

Methods

Ethics statement

ANRS–COM'TEST study was approved by the French Comité de protection des personnes Nord-Ouest III and the Agence française de sécurité sanitaire des produits de santé (AFSSAPS). All participants were informed of the study and had to sign a consent form to be included. The survey was anonymous.

Intervention (Figure 1)

The community-based HIV testing was managed by *AIDES*, a French community-based organization (CBO) that focuses on outreach and prevention among exposed population and notably MSM. Although not being healthcare workers, trained *AIDES* CBO staff members performed the whole testing procedure including pre- and post-test counseling, rapid HIV tests, as well as delivery of test result. Prior to HIV testing, testers spoke with participants about their sexuality, risk perceptions, and sexual safety. Once the results were available, participants learned their HIV status, as well as strategies to reduce sexual risk-taking.

AIDES CBO staff members were trained specifically in risk assessments, risk-reduction strategies, counseling using published motivational interview methods.[19] They were also trained in performing the rapid HIV test, reading the test and delivering the result, and referral for confirmatory test or other services if needed.

The VIKIA® HIV1/2 BioMérieux rapid HIV test kit (sensitivity: 99.8%; specificity: 99.9% [20]) was used to analyze a self-drawn whole blood sample from the participant's fingertip. Results were available within 30 minutes. Participants who tested positive were referred to HIV clinics for confirmatory blood tests and linkage to care.

The intervention offered HIV tests during three-hour sessions once or twice a week in the evening and/or on the weekend in the *AIDES* CBO locations in the French cities of Montpellier, Lille, Bordeaux and Paris. No appointment was required, and HIV tests were

performed on a first-come first-served basis. We informed the MSM community of the study through campaigns at commercial and non-commercial gay venues, as well as in gay websites, magazines and organizations. The study began on February 2009 in Montpellier, March in Lille, May in Bordeaux, and July in Paris, and ended in all cities on June 2010.

Study population

ANRS–COM'TEST exclusively targeted MSM. Eligibility for the study included age ≥18 years and pursuit of HIV testing at one of the four participating *AIDES* CBO locations. MSM who reported potential exposure ≤48 hours prior to enrollment were not included. Rather, they were immediately referred to medical settings for HIV testing and post-exposure prophylaxis.

Study outcomes

The population reached through the program was described, in particular its demographic characteristics, HIV testing habits, and sexual practices.

The quality of the HIV testing program performed by peers was described by checking whether every step of counseling and testing procedures was respected, but also by assessing difficulties occurred in handling rapid tests, and the proportion of participants tested positive who were linked to care.

The satisfaction of the participants with the program was collected just after the testing.

Data collection

Participants completed one questionnaire before and one after the test. The pre-test questionnaire assessed demographic characteristics, previous HIV testing history, STIs diagnosis in the previous six months, and sexual practices in the previous six months. Using a

four-point Likert scale, the post-test questionnaire assessed satisfaction with the testing experience, i.e. satisfaction globally and with each step of counseling and testing procedure. It also assessed satisfaction during the interviews with counselors, satisfaction with words used, items addressed, and information learned. Finally, it addressed stress and comfort of an HIV testing performed by peers in non-medical settings.

Staff members used a form that outlined every step of the intervention: welcome and description of the study, participant's signature of the consent form, major concerns to address during pre- and post-test interviews, and difficulties faced at each step of HIV testing procedure. For every participant, staff members marked the completion of each step (done or addressed: yes/no/partially) and mentioned any comments. This form was in particular used to identify problems faced during testing and counseling procedures to evaluate the quality of testing by non-healthcare community peers.

AIDES CBO staff members conducted face-to-face interviews with patients who were tested positive three months later to evaluate their linkage to care.

Data analysis

The main analysis was descriptive: medians and interquartile ranges (IQR) were used to describe quantitative data, and numbers and proportions were used to describe qualitative data.

Some comparisons were performed between participants tested negative and positive, and participants retested during the study period at study sites and those were not retested. For this purpose, the Fisher exact test was used to compare proportions.

Statistical analyses were performed with SAS 9.2 software (SAS Institute Inc., Cary, NC, USA).

Results

Overall, 598 men sought voluntary HIV testing at *AIDES* CBO involving locations. We excluded 66 participants, mainly because they reported sex exclusively with women (n=25), were women (n=14), or refused to participate due to the amount of time they should have spend for testing and research procedures (around two hours, n=10). One man reported a potential HIV exposure in the previous 48 hours and was referred to a post-exposure prophylaxis service. We enrolled 532 MSM in the study and performed 592 tests; 49 participants (9%) were tested ≥2 times throughout the study period. More than half of the tests were performed in Paris (285/592, 54%).

Median age was 31 years (IQR, 25-38; Table 1). Most men were single (69%), educated (71% above high school level), and employed (64%). Although 432 participants (82%) defined themselves as homosexual and 66 (12%) as bisexual, 128 of these (25%) stated that their sexual identity was not known to their family, and 64 (13%) said that they had not revealed it to anyone.

Of the 527 MSM who answered questions regarding their HIV testing habits, 368 (70%) reported having been tested in the previous two years. Among these men, the median number of tests in the previous two years was two (IQR, 1-4) and the last test was performed a median of eight months (IQR, 4-14) prior to enrollment (Table 2). Among the 159 MSM (30%) who had not been tested in the previous two years, the last test was conducted a median of 46 months (IQR, 34-62) before enrollment.

Nearly all participants (96%) reported having had at least one male partner in the previous six months; 92% said these were casual partners. The median number of casual partners within

the last six months was 12 (IQR, 6-25). Among MSM who were tested in the previous two years, 100 (27%) had unprotected anal intercourse with casual male partners who were HIV-infected or whose serostatus was unknown (Table 2). This proportion was 31% among participants who had not been tested in the last two years. During the prior six months, 415 men (78%) stated using at least once recreational drugs before or during sex, and 205 men (39%) reported regular use of them (Table 2).

The most frequent reasons for participating in ANRS-COM'TEST and seeking HIV testing were: 1) reassurance (86%), 2) routine testing (42%), and 3) recent risky sexual exposures (41%). Forty-nine men (9%) returned to ANRS-COM'TEST study sites to be retested. Of these, seven (14%) returned more than twice. The median time between two tests among these participants was four months (IQR, 2.5-6.7). MSM who returned did not differ demographically from those who came only once, but a larger proportion of returners had tested for HIV within the previous two years (94% vs. 68%; $p<0.0001$).

The quality of the 592 community-based HIV tests performed was assessed. The different steps of testing and counseling procedures were respected (more than 90% of completion for every step). Difficulties in handling tests were rarely reported by testers. The highest difficulty rates concerned self-drawn blood samples (19%), and blood collection by testers (14%). A second test had to be performed for eight of the 592 tests (1.5%), most often because an insufficient amount of blood had been collected. The results of each of these second tests were negative. No other adverse or unexpected events were reported. During pre-test counseling, major concerns were not addressed rarely: risk perception in 4% of interviews, information about HIV transmission routes in 7% and the anticipation of test results in 8%. During post-test counseling, the test result was not explained in 6% of cases,

strategies for a better prevention was not discussed in 8% and information about STIs testing was not given in 10% of cases.

Of the 532 participants, 15 (2.8%; 95% CI, 1.4-4.2) were tested positive. Among these, 12 (80%) received confirmatory test results and linked to care, and three (20%) lost to follow-up. Their median CD4 count at diagnosis was 550/mm^3 (IQR, 484-571). Among the 15 men with positive results, eight (57%) had not been tested for HIV in the previous two years (vs. 30% among HIV-negative men; p=0.03).

We collected 514 post-test satisfaction questionnaires; 92% of participants who tested negative (464/504) and 70% of those who tested positive (7/10) reported being "very satisfied" with the intervention. Three-quarter would recommend "certainly" community-based HIV testing and counseling to a friend and 54% of those who tested negative stated that they would choose "certainly" the same venue in the future. The main reasons for which some patients were not "very satisfied" (43; 8%) were the amount of time spent at the testing facility (median, two hours, including a 45-minute explanation of the study and questionnaires completion) and the hours during which testing was available. Among the 440 MSM who had reported to have performed HIV tests in the past, 55% found community-based HIV testing less stressful than traditional HIV testing, while only 5% found it more stressful. 88% found that testing in non medical settings offers a best welfare.

Discussion

ANRS–COM'TEST was a HIV testing program that targeted MSM and studied community-based HIV testing using rapid HIV tests. Counseling and testing were performed by community members who were not healthcare workers. The program reached MSM who reported high rates of risky sexual behavior known to be risk factors of seroconversion for HIV.[21-23] Sexual behaviors in this population is similar to that of MSM who attend commercial gay venues in Paris in whom HIV prevalence was estimated recently at 18%.[24]

A substantial proportion of men enrolled in this study had not been tested for HIV recently even though they were at high risk of HIV infection. These results may suggest that community-based HIV testing programs may be attractive and convenient for population groups that have not been reachable with traditional HIV testing methods as it has been shown recently by a community-based HIV testing program in the United Kingdom.[17] The authors demonstrated that MSM at the community-based program were less likely to have been tested previously, compared to people who were seen at genitourinary medicine clinics. The program also reached MSM regularly tested. Moreover, although our study lasted only 12-17 months, almost 10% of participating men were tested twice or more. A community-based voluntary counseling and testing program for MSM in Geneva has shown that the proportion of MSM who return for testing is likely to increase over time.[15] Increased availability and selection of HIV testing services may therefore encourage even those who already test regularly in traditional programs to test more often, thereby moving HIV diagnoses to earlier in infection.

Counseling and testing were performed by community members who are considered as peers. Although they were not healthcare workers, they were able to handle tests correctly, deliver

test results, refer men according to their test result, and respect counseling and testing procedures along the whole study period. They added testing and awareness of HIV serostatus to comprehensive prevention counseling in line with participants' lives that is one of the added values in comparison with HIV testing in the health care system. The high rate of satisfaction in MSM who participated in this study also shows that community-based HIV testing and counseling was largely acceptable. The Barcelona Checkpoint in Spain that is completely staffed by peers as ANRS-COM'TEST, drawn the same conclusions.[18]

In France, the HIV prevalence among MSM who attended voluntary counseling and testing clinics run by medical staff was 1.6%.[25] In our study, 2.8% of men tested positive for HIV, and all of those who underwent confirmatory testing were found to be HIV-infected. The HIV prevalence was high, and consistent with rates seen in other recent community-based HIV testing programs in Europe. During the first year of implementation, these programs found MSM prevalence rates of 2.4% in Geneva, Switzerland,[15] 3.2% in Brighton, United Kingdom,[17] 3.2% in Barcelona, Spain,[18] and 5.2% in Amsterdam, Netherlands.[14] These results suggest again that community-based HIV testing programs like ANRS–COM'TEST could reach MSM who are at high risk of HIV infection.

A large proportion of those men who tested positive for HIV at *AIDES* CBO were referred and linked to care. They were diagnosed at early stages of the disease, with median CD4 counts of 550/mm^3 – higher than previously seen in traditional testing programs. Data from the French HIV surveillance system in 2009 demonstrate that 20% of MSM were diagnosed with CD4 counts <200/mm^3 and 62% had CD4 counts <500/mm^3.[2, 4] These results are consistent with the British study, which found a median CD4 count of 431/mm^3 among MSM who were diagnosed in community-based programs compared to 311/mm^3 among those who

were diagnosed in genitourinary medicine clinics.[17] When HIV testing is performed by peers at CBOs, MSM who show evidence of repeated risky sexual behavior may feel less judged than in a traditional HIV testing program run by healthcare workers. This difference in attitude may lead MSM to check their serostatus more frequently and sooner after exposure, resulting in earlier diagnoses.

This study has several limitations. First, ANRS-COM'TEST was conducted in four French cities, but more than half of the participants enrolled in Paris. Community-based HIV testing programs may be attractive and efficient in large urban areas, but perhaps less so in smaller cities, where an outreach approach may work better. Second, we certainly underestimated the proportion of MSM who would return for regular testing at CBOs, since the study duration was short and many participants found the time spent completing questionnaires too lengthy. Third, the quality was assessed with a form completed by the community staff. The completion rates of different steps of the testing and counseling procedure may be overestimated. Finally, the number of HIV diagnoses was small. The prevalence and median CD4 count among the few HIV-infected participants should therefore be interpreted with caution.

The ANRS-COM'TEST study was an HIV testing and counseling program exclusively based on MSM community. It showed first, that this type of program could reach high-risk MSM, of whom a substantial proportion had not been tested recently; second, peers testers involved in such programs may have the capacity to perform the test into a comprehensive prevention approach; third, participants tested positive are at early stages of disease and that a high proportion of them are linked to care. The program demonstrated that community-based HIV testing delivered by non-medical staff could increase access to and choice of HIV testing

facilities, supplementing existing HIV testing programs. Based on this study results, French ministry of health recently authorized community-based HIV testing by non-healthcare CBO workers [26] as a complementary HIV testing service in France. Community-based HIV testing programs should also be assessed in other populations at high risk for HIV infection and late presentation to care, such as sub-Saharan African immigrants.[27-28]

Table 1: Participant characteristics

Participant characteristics	median	IQR
Age	31	25-38
Participant characteristics	**n**	**%[a]**
Sexual identity		
Homosexual	432	82
Bisexual	66	12
Heterosexual or did not want to define themselves	32	6
Homo/bisexual identity is		
Accepted by everyone	140	28
Unknown to everyone	64	13
Unknown to family[b]	128	25
Ever insulted because of sexuality	106	20
Matrimonial status		
Single	367	69
In a free union with a man	124	23
Married or in a free union with a woman	26	5
Other[c]	13	3
Educational level		
Above high school	372	71
High school or below	155	29

Table 1 (continued)

Participant characteristics	n	%[a]
Professional status		
Employed	337	64
Unemployed	92	17
Student	99	19
Sex worker	16	3

IQR: interquartile range

[a] The study enrolled 532 men who have sex with men (MSM). Percentages are calculated based on the number of respondents to each question. There were 527-532 respondents to each question, except for questions regarding acceptance of homosexuality and bisexuality, to which 497-510 participants responded.

[b] Parents and/or siblings

[c] Divorced or separated from partner

Table 2: Risk profile of the 532 ANRS–COM'TEST participants

	Value
History of HIV testing in the previous two years [a]	
No test in the previous two years, n (%)	159 (30%)
Months since previous test, median (IQR)	46 (34-62)
At least one test in the previous two years, n (%)	368 (70%)
Months since previous test, median (IQR)	8 (4-14)
Number of tests in the previous two years, median (IQR)	2 (1-4)
Casual male partners and sexual behavior six months prior to testing	
No test in the previous two years (n=159), n (%)	132 (83%)
Number of casual partners, median (IQR)	11 (5-20)
Partners were HIV-infected or serostatus was unknown, n (%)	123 (77%)
Number of casual partners who were HIV-infected or whose serostatus was unknown, median (IQR)	8 (3-13)
Unprotected anal intercourse with partners who were HIV-infected or whose serostatus was unknown, n (%)	50 (31%)
At least one test in the previous two years (n=368), n (%)	333 (90%)
Number of casual partners, median (IQR)	14 (6-30)
Partners were HIV-infected or serostatus was unknown, n (%)	307 (83%)
Number of casual partners who were HIV-infected or whose serostatus was unknown, median (IQR)	10 (4-20)
Unprotected anal intercourse with partners who were HIV-infected or whose serostatus was unknown, n (%)	100 (27%)

Table 2 (continued)

	Value
History of STIs in the previous two years, n (%) [b]	54 (10%)
No test in the previous two years (n=159)	8 (5%)
At least one test in the previous two years (n=368)	44 (12%)
Occasional or regular consumption of recreational drugs before or during sex, n (%) [c]	
Alcohol	336 (65%)
Poppers	236 (46%)
Cannabis	140 (27%)
Crack or cocaine	48 (9%)
Erectile dysfunction drugs	25 (5%)

IQR: interquartile range; STI: sexually transmitted infection

[a] 5 missing data points (<1%)

[b] 1 missing data point (<0.2%)

[c] 17-26 missing data points (3-5%)

Table 3: Clinical characteristics of men who have sex with men who tested positive for HIV

Positive rapid HIV test, n (%)	15 (2.8%)
Loss to follow-up, n (%)	3 (20%)
Confirmation of positive rapid HIV test, n (%)	12 (80%)
Linkage to care, n (%)	12 (80%)
CD4 count at diagnosis (cells/mm^3), median (IQR)	550 (484-571)

IQR: interquartile range

Figure 1: ANRS–COM'TEST study diagram

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There is no additional data are available.

Potential conflicts of interest

With the exception of YY, none of the authors report any association that might pose a conflict of interest. YY has received travel grants, honoraria for presentation at workshops and consultancy honoraria from Bristol-Myers Squibb, Gilead, Glaxo-SmithKline, Merck, Pfizer, Roche and Tibotec.

Authorship

KC, JMLG, SJ, CM, LR, OB, FL, BS and YY contributed substantially to conception, design and feasibility of the study. KC and JMLG wrote the protocol of the study and coordinated the study. SJ, CM, LR, OB contributed to acquisition of data, and CJ and SV were responsible of the management of the data. KC performed the statistical analysis, and presented results. All authors participated to interpretation of results. KC and YY draft the article. All authors

revised the manuscript critically for important intellectual content and approved the final version to be published.

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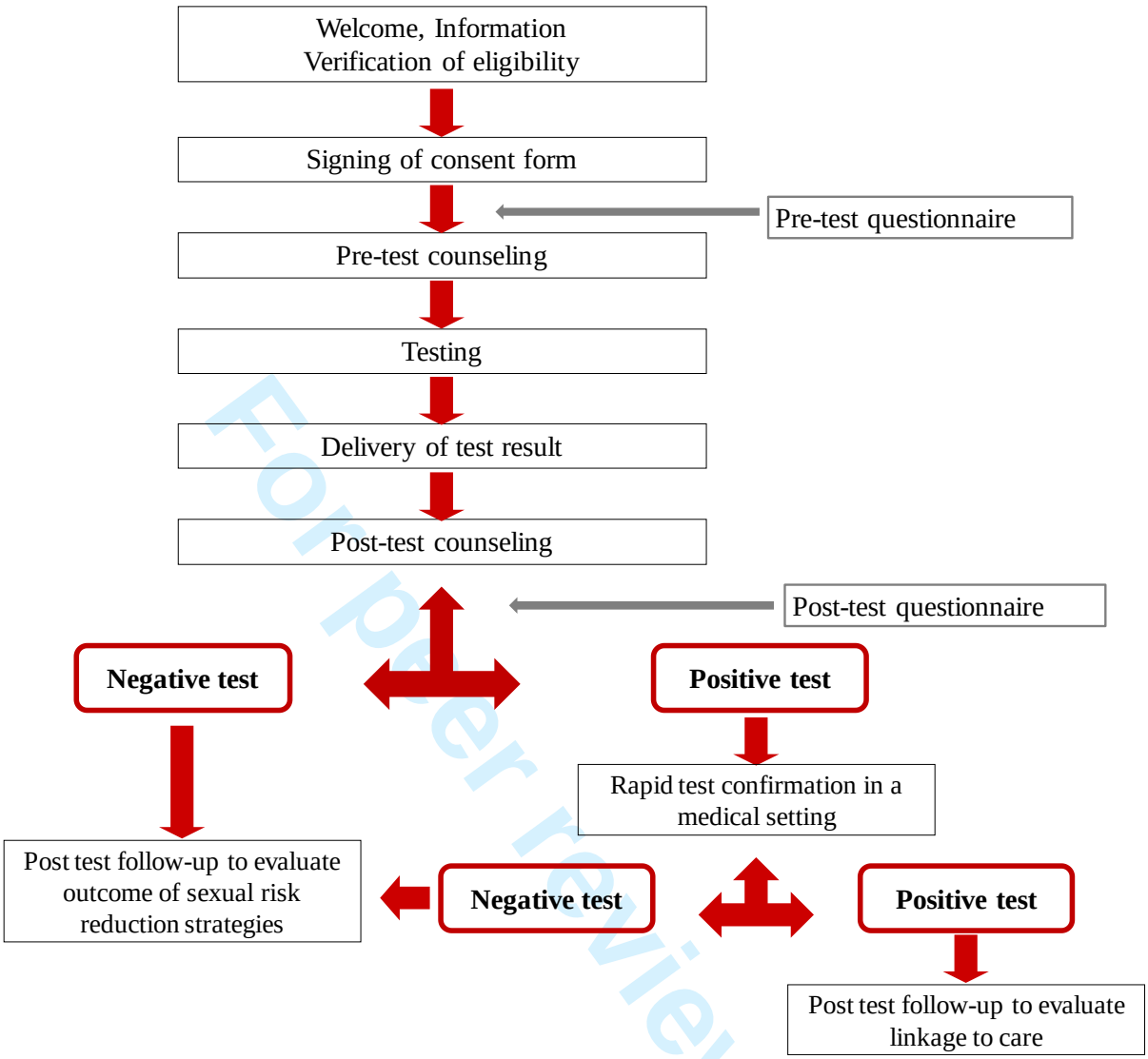

STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cross-sectional studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1; 3
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	3
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4-5
Objectives	3	State specific objectives, including any prespecified hypotheses	5
Methods			
Study design	4	Present key elements of study design early in the paper	5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	6-7
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	7
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	7
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	7-8
Bias	9	Describe any efforts to address potential sources of bias	*NA*
Study size	10	Explain how the study size was arrived at	NA
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	8
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	8
		(*b*) Describe any methods used to examine subgroups and interactions	NA
		(*c*) Explain how missing data were addressed	-
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	NA
		(*e*) Describe any sensitivity analyses	NA
Results			

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	9
		(b) Give reasons for non-participation at each stage	9
		(c) Consider use of a flow diagram	Not used
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	9-11 + Tables
		(b) Indicate number of participants with missing data for each variable of interest	9-11 + Tables
Outcome data	15*	Report numbers of outcome events or summary measures	9-11 + Tables
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	NA
		(*b*) Report category boundaries when continuous variables were categorized	NA
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	NA
Discussion			
Key results	18	Summarise key results with reference to study objectives	12
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	14
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	12-15
Generalisability	21	Discuss the generalisability (external validity) of the study results	13
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	21

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

ANRS–COM'TEST: Description of a community-based HIV testing intervention in non-medical settings for men who have sex with men

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ANRS–COM'TEST: Description of a community-based HIV testing intervention in non-medical settings for men who have sex with men

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Short title: Community-based HIV testing for MSM

Key words: MSM, community, rapid HIV testing.

Article summary

Article focus

- How extend testing facilities to reach and test for HIV more MSM, and diagnose HIV-infected MSM earlier?
- The presence of peers and non-clinical staff members who address sexuality more openly and avoid medical jargon during counseling sessions could offset cultural barriers and reduce fears of HIV and associated stigma.
- The article describes an experimental program of community-based HIV testing: the population reached, the quality of the program and the satisfaction of participants.

Key messages

- This community-based HIV testing and counseling program reaches MSM with high-risk sexual behavior, a substantial proportion of whom has not tested for HIV recently.
- Community testers are able to perform rapid HIV test into a comprehensive prevention approach in line with participant's life.
- 2.8% of participants tested positive. Infection was confirmed in all cases, 80% were linked to care. Cases were diagnosed at early stages of disease.

Strengths and limits

- This HIV testing and counseling program is exclusively based on MSM community, and continuing the prevention counseling with the awareness of the HIV serostatus includes testing into a comprehensive prevention approach.
- Community-based HIV testing programs may be attractive and efficient in large urban areas (like Paris), but perhaps less so in smaller cities, where an outreach approach may work better.
- The number of HIV diagnoses was small; the prevalence and median CD4 count among the few HIV-infected participants should therefore be interpreted with caution.

Abstract

Objective: To describe a community-based HIV testing program.

Design and setting: An intervention of HIV voluntary testing conducted in non-medical settings in four French cities.

Participants: Men who have sex with men (MSM)

Intervention: Counseling and rapid HIV testing staffed by trained personnel from an HIV/AIDS community-based organization.

Primary and secondary outcome measures: the population ~~reached~~ that has taken hold of the intervention, ~~the quality of the program,~~ and the satisfaction of participants. Data were collected on demographics, HIV testing history, sexual practices, ~~quality~~ and satisfaction with the testing program.

Results: 532 MSM were tested between 2009/02 and 2010/06, of whom 49 (9%) were tested ≥2 times. 468 MSM (88%) had casual male partners in the previous six months, and 152 (35%) reported having unprotected anal intercourse with risky casual partners (HIV-infected or HIV-serostatus unknown). 159 men (30%) had not been tested in the previous two years, 50 (31%) of whom had unprotected anal intercourse with risky casual partners. ~~Steps of counseling and testing procedure were respected by testers and difficulties in handling tests were rare.~~ Among the 15 patients who tested positive (2.8%), 12 (80%) received confirmation and were linked to care (median CD4 cell count=550/mm^3). Satisfaction was high: 92% reported being "very satisfied" with their experience. Steps of counseling and testing procedure were respected by testers and difficulties in handling tests were rare.

Conclusion: This community-based HIV testing program reached high-risk MSM, of whom a substantial proportion had not ~~never~~ been tested ~~before~~lately. This novel service supplements pre-existing HIV testing services and increases access to HIV testing in high-risk groups.

Introduction

Until very recently in France, only physicians could prescribe, perform, and provide the results of HIV tests. Although current HIV testing rates in France rank second in Europe, [1] roughly 50,000 of an estimated 135,000–170,000 people infected with HIV remain unaware of their infection.[2] Among people the most concerned by HIV, men who have sex with men (MSM) account for half of new HIV infections approximately.[3-4] The HIV incidence in MSM is 60-fold higher than in the overall population.[3] Moreover, a recent study demonstrated that 32% of MSM were diagnosed at advanced stages of disease.[5]

The most significant barrier to early HIV testing is the absence of perception of risk for HIV.[6-8] In an effort to overcome this barrier, the French ministry of health recently recommended that physicians perform one-time routine voluntary HIV tests in the general population, and annually in population groups at high risk of infection such as MSM.[9-10] However, barriers to HIV testing remain at the individual level: fear of the disease, its disclosure and subsequent social stigma, as well as poor access to HIV testing.[6-8] In addition, the gay community highlight inappropriate counseling and some moralistic attitudes face to their sexual practices and testing habits in conventional testing services as barriers to regular HIV testing.[11]

The recent availability and acceptability of rapid HIV tests [12-13] offer an opportunity to implement new HIV testing strategies. A community-based HIV screening program, for instance, may increase access in some populations by offering a more attractive and convenient location than doctor's offices. The presence of peers and non-clinical staff members who address sexuality more openly and avoid medical jargon during counseling sessions could also offset cultural barriers and reduce fears of HIV and associated stigma. Furthermore, some community-based organizations (CBOs) have been engaged in outreach

prevention in which sexual practices, HIV exposures and testing are addressed. Continuing the prevention counseling with the awareness of the HIV serostatus could include testing in a comprehensive strategy of HIV exposure reduction.

In recent years, s~~S~~everal European countries [14-18] have begun implementing community-based HIV testing with rapid tests ~~in recent years~~. They propose rapid testing in CBOs in large urban areas. The principle behind this strategy is the same than the one applied in developing countries where testing is conducted by lay counselors from the community to facilitate access to testing to vulnerable populations [19]. ~~However, all of these programs~~ However, most of the reported programs in developed countries involve medical staff, and although welcoming and support are conducted by community-peers, HIV tests are performed by healthcare workers. ~~involve medical staff, with HIV tests performed by healthcare workers.~~ To our knowledge in Europe, the only ongoing community-based HIV testing programs that do not involve medical staff is Checkpoint in Barcelona, Spain [20] and LASS in Leicester, England (http://www.lass.org.uk). However, d~~D~~ata on these programs (evaluation of an existing program or set up into a study) have not yet been published. ~~settings [20]~~

The hypothesis was that a community-based HIV testing intervention may reach high-risk MSM, a high proportion of whom have not been tested lately; consequently, in addition to other existing HIV testing services, it may increase access to HIV testing in high-risk groups.

The ANRS–COM'TEST study ~~is an intervention study that~~ describes a community-based HIV testing and counseling program performed by peers in non-medical settings that targeted MSM. The purposes were to describe characteristics of the ~~population~~ MSM who has taken

hold of ~~reached by~~ this program~~, the quality of the testing and counseling performed by non-healthcare workers,~~ and the satisfaction of participating MSM.

Methods

Ethics statement

ANRS–COM'TEST study was approved by the French Comité de protection des personnes Nord-Ouest III and the Agence française de sécurité sanitaire des produits de santé (AFSSAPS). All participants were informed of the study and had to sign a consent form to be included. The survey was anonymous.

Intervention (Figure 1)

The community-based HIV testing was managed by *AIDES*, a French community-based organization (CBO) that focuses on outreach and prevention among exposed population and notably MSM. Although not being healthcare workers, trained *AIDES* CBO staff members performed the whole testing procedure including pre- and post-test counseling, rapid HIV tests, as well as delivery of test result. Prior to HIV testing, testers spoke with participants about their sexuality, risk perceptions, and sexual safety. Once the results were available, participants learned their HIV status, as well as strategies to reduce sexual risk-taking.

AIDES CBO staff members were trained specifically in risk assessments, risk-reduction strategies, counseling using published motivational interview methods.[21] They were also trained in performing the rapid HIV test, reading the test and delivering the result, and referral for confirmatory test or other services if needed.

The VIKIA® HIV1/2 BioMérieux rapid HIV test kit (sensitivity: 99.8%; specificity: 99.9% [22]) was used to analyze a self-drawn whole blood sample from the participant's fingertip. Results were available within 30 minutes. Participants who tested positive were referred to HIV clinics for confirmatory blood tests and linkage to care.

The intervention offered HIV tests during three-hour sessions once or twice a week in the evening and/or on the weekend in the *AIDES* CBO locations in the French cities of Montpellier, Lille, Bordeaux and Paris. No appointment was required, and HIV tests were

performed on a first-come first-served basis. We informed the MSM community ~~of~~ about the ~~study~~ intervention ~~through~~ through communication campaigns (posters, flyers, web banners and ads) at commercial and non-commercial gay venues, as well as in gay websites, magazines and organizations. The study sites were the settings of the AIDES CBO. The possibility of performing an HIV test was however not advertized outside the setting to preserve confidentiality. ~~The study began on February 2009 in Montpellier, March in Lille, May in Bordeaux, and July in Paris, and ended in all cities on June 2010.~~

Study population

ANRS–COM'TEST exclusively targeted MSM. Eligibility for the study included age ≥18 years and pursuit of HIV testing at one of the four participating *AIDES* CBO locations. MSM who reported potential exposure ≤48 hours prior to enrollment were not included. Rather, they were immediately referred to medical settings for HIV testing and post-exposure prophylaxis.

One of the most important goals of the intervention evaluated in this study was to target MSM who are not regularly tested for HIV (or never tested). In the French 2004 Gay Press survey -a survey investigating lifestyle and sexual behaviors in MSM who read the gay press- 17% of MSM stated that they have never been tested for HIV in their life. Among those with at least a history of one HIV test, 27% stated that they were not tested in the previous two years. Based on these results we therefore anticipated that 30% of MSM enrolled in our study would not have a history of HIV testing in the previous two years. We calculated the number of patients to be enrolled in this study to have a precision of 4% around this estimated point. The calculated sample size was 504 MSM; given the highest number of participants that could be tested by session in each center, the enrollment time was estimated at approximately one year.

Study outcomes

The population that has taken hold of the intervention ~~reached through the program~~ was described, in particular its demographic characteristics, HIV testing habits, and sexual practices.

~~The quality of the HIV testing program performed by peers was described by checking whether every step of counseling and testing procedures was respected, but also by assessing difficulties occurred in handling rapid tests, and the proportion of participants tested positive who were linked to care.~~

The satisfaction of the participants with the program was collected just after the testing.

The difficulties occurred in handling rapid tests, the respect of counseling and testing procedures, and the proportion of participants tested positive who were linked to care were also assessed.

Data collection

Participants completed one questionnaire before and one after the test. The pre-test questionnaire assessed demographic characteristics, previous HIV testing history, STIs diagnosis in the previous six months, and sexual practices in the previous six months. Using a four-point Likert scale, the post-test questionnaire assessed satisfaction with the testing experience, i.e. satisfaction globally and with each step of counseling and testing procedure. It also assessed satisfaction during the interviews with counselors, satisfaction with words used, items addressed, and information learned. Finally, it addressed stress and comfort of an HIV testing performed by peers in non-medical settings.

Staff members used a form that outlined every step of the intervention: welcome and description of the study, participant's signature of the consent form, major concerns to address during pre- and post-test interviews, and difficulties faced at each step of HIV testing

procedure. For every participant, staff members marked the completion of each step (done or addressed: yes/no/partially) and mentioned any comments. This form was in particular used to identify problems faced during testing and counseling ~~procedures to evaluate the quality of testing by non-healthcare community peers~~.

AIDES CBO staff members conducted face-to-face interviews with patients who were tested positive three months later to evaluate their linkage to care.

Data analysis

The main analysis was descriptive: medians and interquartile ranges (IQR) were used to describe quantitative data, and numbers and proportions were used to describe qualitative data.

Some comparisons were performed between participants tested negative and positive, and participants retested during the study period at study sites and those were not retested. For this purpose, the Fisher exact test was used to compare proportions.

Statistical analyses were performed with SAS 9.2 software (SAS Institute Inc., Cary, NC, USA).

Results

Overall, 598 men sought voluntary HIV testing at *AIDES* CBO involving locations. We excluded 66 participants. The three main reasons to not be included were~~, mainly because~~: 1) ~~they~~ reported sex exclusively with women (n=25), 2) ~~were~~ women (n=14), ~~or~~ and 3) refused to participate due to the amount of time they should have spent for testing and research procedures (around two hours, n=10). Among the 17 remaining men not enrolled in the study, 10 refused for different reasons (afraid of lack of confidentiality, no need to be tested for HIV, need time to think a possible participation), the seven other were excluded because of age <18 years, a risk exposure <48 hours, or they did not understand French speaking. ~~One~~ The man who reported a potential HIV exposure ~~in the previous~~< ~~48~~ hours ~~and~~ was referred to a post-exposure prophylaxis service.

We enrolled 532 MSM in the study and performed 592 tests; 49 participants (9%) were tested ≥2 times throughout the study period. More than half of the tests were performed in Paris (285/592, 54%).

Sociodemographic characteristics of participating men were shown in Table 1. Although 94% of men defined themselves as MSM, 128 (25%) stated that their sexual identity was unknown to their family, and 64 (13%) that they had not revealed it to anyone.

~~Median age was 31 years (IQR, 25-38; Table 1). Most men were single (69%), educated (71% above high school level), and employed (64%). Although 432 participants (82%) defined themselves as homosexual and 66 (12%) as bisexual, 128 of these (25%) stated that their sexual identity was not known to their family, and 64 (13%) said that they had not revealed it to anyone.~~

Of the 527 MSM who answered questions regarding their HIV testing habits, 368 (70%) reported having been tested in the previous two years. Among these men, the median number of tests in the previous two years was two (IQR, 1-4) and the last test was performed a median of eight months (IQR, 4-14) prior to enrollment (Table 2). Among the 159 MSM (30%) who had not been tested in the previous two years, the last test was conducted a median of 46 months (IQR, 34-62) before enrollment.

Nearly all participants (96%) reported having had at least one male partner in the previous six months; 92% said these were casual partners. The median number of casual partners within the last six months was 12 (IQR, 6-25). Overall, 152 (35%) men reported having unprotected anal intercourse with casual male partners who were HIV-infected or whose serostatus was unknown. Among MSM who were tested in the previous two years, 100 (27%) had unprotected anal intercourse with casual ~~male~~ partners who were HIV-infected or whose serostatus was unknown (Table 2). This proportion was 31% among participants who had not been tested in the last two years. During the prior six months, 415 men (78%) stated using at least once recreational drugs before or during sex, and 205 men (39%) reported regular use of them ~~(Table 2)~~. The recreational drugs the most used here were alcohol (336; 65%), poppers (236; 46%) and cannabis (140; 27%).

The most frequent reasons for participating in ANRS-COM'TEST and seeking HIV testing were: 1) reassurance (86%), 2) routine testing (42%), and 3) recent risky sexual exposures (41%). Forty-nine men (9%) returned to ANRS-COM'TEST study sites to be retested. Of these, seven (14%) returned more than twice. The median time between two tests among these participants was four months (IQR, 2.5-6.7). MSM who returned did not differ

demographically from those who came only once, but a larger proportion of returners had tested for HIV within the previous two years (94% vs. 68%; p<0.0001).

~~The quality of the 592 community based HIV tests performed was assessed. The different steps of testing and counseling procedures were respected (more than 90% of completion for every step). Difficulties in handling tests were rarely reported by testers. The highest difficulty rates concerned self drawn blood samples (19%), and blood collection by testers (14%). A second test had to be performed for eight of the 592 tests (1.5%), most often because an insufficient amount of blood had been collected. The results of each of these second tests were negative. No other adverse or unexpected events were reported. During pre-test counseling, major concerns were not addressed rarely: risk perception in 4% of interviews, information about HIV transmission routes in 7% and the anticipation of test results in 8%. During post test counseling, the test result was not explained in 6% of cases, strategies for a better prevention was not discussed in 8% and information about STIs testing was not given in 10% of cases.~~

Of the 532 participants, 15 (2.8%; 95% CI, 1.4-4.2) were tested positive. Among these, 12 (80%) received confirmatory test results and linked to care, and three (20%) lost to follow-up. Their median CD4 count at diagnosis was 550/mm^3 (IQR, 484-571). Among the 15 men with positive results, eight (57%) had not been tested for HIV in the previous two years (vs. 30% among HIV-negative men; p=0.03).

We collected 514 post-test satisfaction questionnaires; 92% of participants who tested negative (464/504) and 70% of those who tested positive (7/10) reported being "very satisfied" with the intervention. Three-quarter would recommend "certainly" community-

based HIV testing and counseling to a friend and 54% of those who tested negative stated that they would choose "certainly" the same venue in the future. The main reasons for which some patients were not "very satisfied" (43; 8%) were the amount of time spent at the testing facility (median, two hours, including a 45-minute explanation of the study and questionnaires completion) and the hours during which testing was available. Among the 440 MSM who had reported to have performed HIV tests in the past, 55% found community-based HIV testing less stressful than traditional HIV testing, while only 5% found it more stressful. 88% found that testing in non medical settings offers a best welfare. More than 98% of participants attested they could address sexuality openly with peers and no one reported feeling judged.

From the testers' point of view, peers were satisfied from their new activities. The different steps of the 592 testing and counseling procedures performed were respected (more than 90% of completion for every step). Difficulties in handling tests were rarely reported (<2%) by testers, except concerning self-drawn blood samples (19%), and blood collection by testers (14%). A second test had to be performed for eight of the 592 tests (1.5%), because an insufficient amount of blood had been collected. The results of each of these second tests were negative. No other adverse or unexpected events were reported. During pre-test counseling, major concerns were not addressed rarely: risk perception in 4% of interviews, information about HIV transmission routes in 7% and the anticipation of test results in 8%. During post-test counseling, the test result was not explained in 6% of cases, strategies for a better prevention was not discussed in 8% and information about STIs testing was not given in 10% of cases.

Discussion

ANRS–COM'TEST was an HIV testing program that targeted MSM and studied community-based HIV testing using rapid HIV tests. Counseling and testing were performed by community members who were not healthcare workers. The program reached MSM who reported high rates of risky sexual behavior known to be risk factors of seroconversion for HIV.[23-25] Sexual behaviors in this population is similar to that of MSM who attend commercial gay venues in Paris in whom HIV prevalence was estimated recently at 18%.[26]

A substantial proportion of men enrolled in this study had not been tested for HIV recently even though they were at high risk of HIV infection. These results may suggest that community-based HIV testing programs may be attractive and convenient for population groups that have not been reachable with traditional HIV testing methods as it has been shown recently by a community-based HIV testing program in the United Kingdom.[17] The authors demonstrated that MSM at the community-based program were less likely to have been tested previously, compared to people who were seen at genitourinary medicine clinics.

The program also reached MSM regularly tested. Moreover, although our study lasted only 12-17 months according to the city, almost 10% of participating men were tested twice or more. A community-based voluntary counseling and testing program for MSM in Geneva has shown that the proportion of MSM who return for testing is likely to increase over time.[15] The MSM who returned for testing in the COM'TEST program were also tested significantly more often for HIV than men who came once. Increased availability and selection of HIV testing services may therefore encourage even those who already test regularly in traditional programs to test more often, thereby moving HIV diagnoses to earlier in infection. In addition to community-based HIV testing, other HIV testing strategies such as home tests or tests available in pharmacies may also be interesting to supplements pre-existing HIV testing

services and increases access to HIV testing in high-risk groups. [27-28] However, additional data are needed on benefits and harms of these strategies.

Counseling and testing were performed by community members who are considered as peers. Although they were not healthcare workers, they were able to handle tests correctly, deliver test results, refer men according to their test result, and respect counseling and testing procedures along the whole study period. They added testing and awareness of HIV serostatus to comprehensive prevention counseling in line with participants' lives that is one of the added values in comparison with HIV testing in the health care system. The high rate of satisfaction in MSM who participated in this study also shows that community-based HIV testing and counseling was largely acceptable. Overall, participants reported feeling more comfortable with testing and counseling with peers. The Barcelona Checkpoint in Spain that is completely staffed by peers as ANRS-COM'TEST, drawn the same conclusions.[20] Reasons for not being satisfied of the program were linked to the study part that was too long and imposed tight opening sessions. The study part may curb some men to come for testing; attendance may be higher in the real life.

In France, the HIV prevalence was 1.6% among MSM who attended voluntary counseling and testing clinics [29] and 2.2% in a community-based testing in Paris both run by medical staff [18] ~~was 1.6%.[25]~~ In our study, 2.8% of men tested positive for HIV, and all of those who underwent confirmatory testing were found to be HIV-infected. The HIV prevalence was high, and consistent with rates seen in other recent community-based HIV testing programs in Europe. During the first year of implementation, these programs found MSM prevalence rates of 2.4% in Geneva, Switzerland,[15] 3.2% in Brighton, United Kingdom,[17] 3.2% in Barcelona, Spain,[20] and 5.2% in Amsterdam, Netherlands.[14] These results suggest again

that community-based HIV testing programs like ANRS–COM'TEST could reach MSM who are at high risk of HIV infection. MSM with an HIV positive test have been tested less often in the previous two years than men with a negative test; this result suggests also this program could reach MSM at high-risk who were not tested recently in other testing services.

A large proportion of those men who tested positive for HIV at *AIDES* CBO were referred and linked to care. They were diagnosed at early stages of the disease, with median CD4 counts of 550/mm^3 – higher than previously seen in traditional testing programs. Data from the French HIV surveillance system in 2009 demonstrate that 20% of MSM were diagnosed with CD4 counts <200/mm^3 and 62% had CD4 counts <500/mm^3.[2, 4] These results are consistent with the British study, which found a median CD4 count of 431/mm^3 among MSM who were diagnosed in community-based programs compared to 311/mm^3 among those who were diagnosed in genitourinary medicine clinics.[17] When HIV testing is performed by peers at CBOs, MSM who show evidence of repeated risky sexual behavior may feel less judged than in a traditional HIV testing program run by healthcare workers. This difference in attitude may lead MSM to check their serostatus more frequently and sooner after exposure, resulting in earlier diagnoses.

This study has several limitations. First, ANRS-COM'TEST was conducted in four French cities, but more than half of the participants enrolled in Paris. Community-based HIV testing programs may be attractive and efficient in large urban areas, but perhaps less so in smaller cities, where an outreach approach may work better. Second, we certainly underestimated the proportion of MSM who would return for regular testing at CBOs, since the study duration was short and many participants found the time spent completing questionnaires too lengthy. Third, the quality was assessed with a form completed by the community staff. The

completion rates of different steps of the testing and counseling procedure may be overestimated. Finally, the number of HIV diagnoses was small. The prevalence and median CD4 count among the few HIV-infected participants should therefore be interpreted with caution.

The ANRS-COM'TEST study was an HIV testing and counseling program exclusively based on MSM community. It showed first, that this type of program could reach high-risk MSM, of whom a substantial proportion had not been tested recently; second, peers testers involved in such programs may have the capacity to perform the test into a comprehensive prevention approach; third, participants tested positive are at early stages of disease and that a high proportion of them are linked to care. The program demonstrated that community-based HIV testing delivered by non-medical staff could increase access to and choice of HIV testing facilities, supplementing existing HIV testing programs. Based on this study results, French ministry of health recently authorized community-based HIV testing by non-healthcare CBO workers [30] as a complementary HIV testing service in France. Community-based HIV testing programs should also be assessed in other populations at high risk for HIV infection and late presentation to care, such as sub-Saharan African immigrants.[31-32]

Table 1: Participant characteristics

Participant characteristics	median	IQR
Age	31	25-38
Participant characteristics	**n**	**%[a]**
Sexual identity		
Homosexual	432	82
Bisexual	66	12
Heterosexual or did not want to define themselves	32	6
Homo/bisexual identity is		
Accepted by everyone	140	28
Unknown to everyone	64	13
Unknown to family[b]	128	25
Ever insulted because of sexuality	106	20
Matrimonial status		
Single	367	69
In a free union with a man	124	23
Married or in a free union with a woman	26	5
Other[c]	13	3
Educational level		
Above high school	372	71
High school or below	155	29

Table 1 (continued)

Participant characteristics	n	%[a]
Professional status		
Employed	337	64
Unemployed	92	17
Student	99	19
Sex worker	16	3

IQR: interquartile range

[a] The study enrolled 532 men who have sex with men (MSM). Percentages are calculated based on the number of respondents to each question. ~~There were~~For each question, there were less than 5 missing data points (<1%) ~~527 532 respondents to each question, except~~; ~~-~~for questions regarding acceptance of homosexuality and bisexuality, there were ~~to which~~ between 22 (4%) ~~497~~and ~~-510~~35 (7%) ~~participants responded~~missing data points according to the question.~~.~~

[b] Parents and/or siblings

[c] Divorced or separated from partner

Table 2: Risk profile of the 532 ANRS–COM'TEST participants

	Value
History of HIV testing in the previous two years [a]	
No test in the previous two years, n (%)	159 (30%)
Months since previous test, median (IQR)	46 (34-62)
At least one test in the previous two years, n (%)	368 (70%)
Months since previous test, median (IQR)	8 (4-14)
Number of tests in the previous two years, median (IQR)	2 (1-4)
Casual male partners and sexual behavior six months prior to testing	
No test in the previous two years (n=159), n (%)	132 (83%)
Number of casual partners, median (IQR)	11 (5-20)
Partners were HIV-infected or serostatus was unknown, n (%)	123 (77%)
Number of casual partners who were HIV-infected or whose serostatus was unknown, median (IQR)	8 (3-13)
Unprotected anal intercourse with partners who were HIV-infected or whose serostatus was unknown, n (%)	50 (31%)
At least one test in the previous two years (n=368), n (%)	333 (90%)
Number of casual partners, median (IQR)	14 (6-30)
Partners were HIV-infected or serostatus was unknown, n (%)	307 (83%)
Number of casual partners who were HIV-infected or whose serostatus was unknown, median (IQR)	10 (4-20)
Unprotected anal intercourse with partners who were HIV-infected or whose serostatus was unknown, n (%)	100 (27%)

HIV test in the previous two years?	No test n=159	≥1 test n=368

History of HIV testing in the previous two years [a]		
Months since previous test, median (IQR)	46 (34-62)	8 (4-14)
Number of tests in the previous two years, median (IQR)	0	2 (1-4)
Casual male partners and sexual behavior six months prior to testing	132 (83%)	333 (90%)
Number of casual partners, median (IQR)	11 (5-20)	14 (6-30)
Partners were HIV-infected or serostatus was unknown, n (%)	123 (77%)	307 (83%)
Number of casual partners who were HIV-infected or whose serostatus was unknown, median (IQR)	8 (3-13)	10 (4-20)
Unprotected anal intercourse with partners who were HIV-infected or whose serostatus was unknown, n (%)	50 (31%)	100 (27%)
History of STIs in the previous two years, n (%) [b]	8 (5%)	44 (12%)

~~Table 2 (continued)~~

	~~Value~~
~~History of STIs in the previous two years, n (%) [b]~~	~~54 (10%)~~
~~No test in the previous two years (n=159)~~	~~8 (5%)~~
~~At least one test in the previous two years (n=368)~~	~~44 (12%)~~
~~Occasional or regular consumption of recreational drugs before or during sex, n (%) [e]~~	
~~Alcohol~~	~~336 (65%)~~
~~Poppers~~	~~236 (46%)~~
~~Cannabis~~	~~140 (27%)~~
~~Crack or cocaine~~	~~48 (9%)~~

~~Erectile dysfunction drugs~~	~~25 (5%)~~

IQR: interquartile range; STI: sexually transmitted infection

[a] 5 missing data points (<1%)

[b] 1 missing data point (<0.2%)

[e] ~~17-26 missing data points (3-5%)~~

Table 3: Clinical characteristics of men who have sex with men who tested positive for HIV

Positive rapid HIV test, n (%)	15 (2.8%)
Loss to follow-up, n (%)	3 (20%)
Confirmation of positive rapid HIV test, n (%)	12 (80%)
Linkage to care, n (%)	12 (80%)
CD4 count at diagnosis (cells/mm^3), median (IQR)	550 (484-571)

IQR: interquartile range

Figure 1: ANRS–COM'TEST study diagram

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There is no additional data are available.

Potential conflicts of interest

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Authorship

KC, JMLG, SJ, CM, LR, OB, FL, BS and YY contributed substantially to conception, design and feasibility of the study. KC and JMLG wrote the protocol of the study and coordinated the study. SJ, CM, LR, OB contributed to acquisition of data, and CJ and SV were responsible of the management of the data. KC performed the statistical analysis, and presented results. All authors participated to interpretation of results. KC and YY draft the article. All authors

revised the manuscript critically for important intellectual content and approved the final version to be published.

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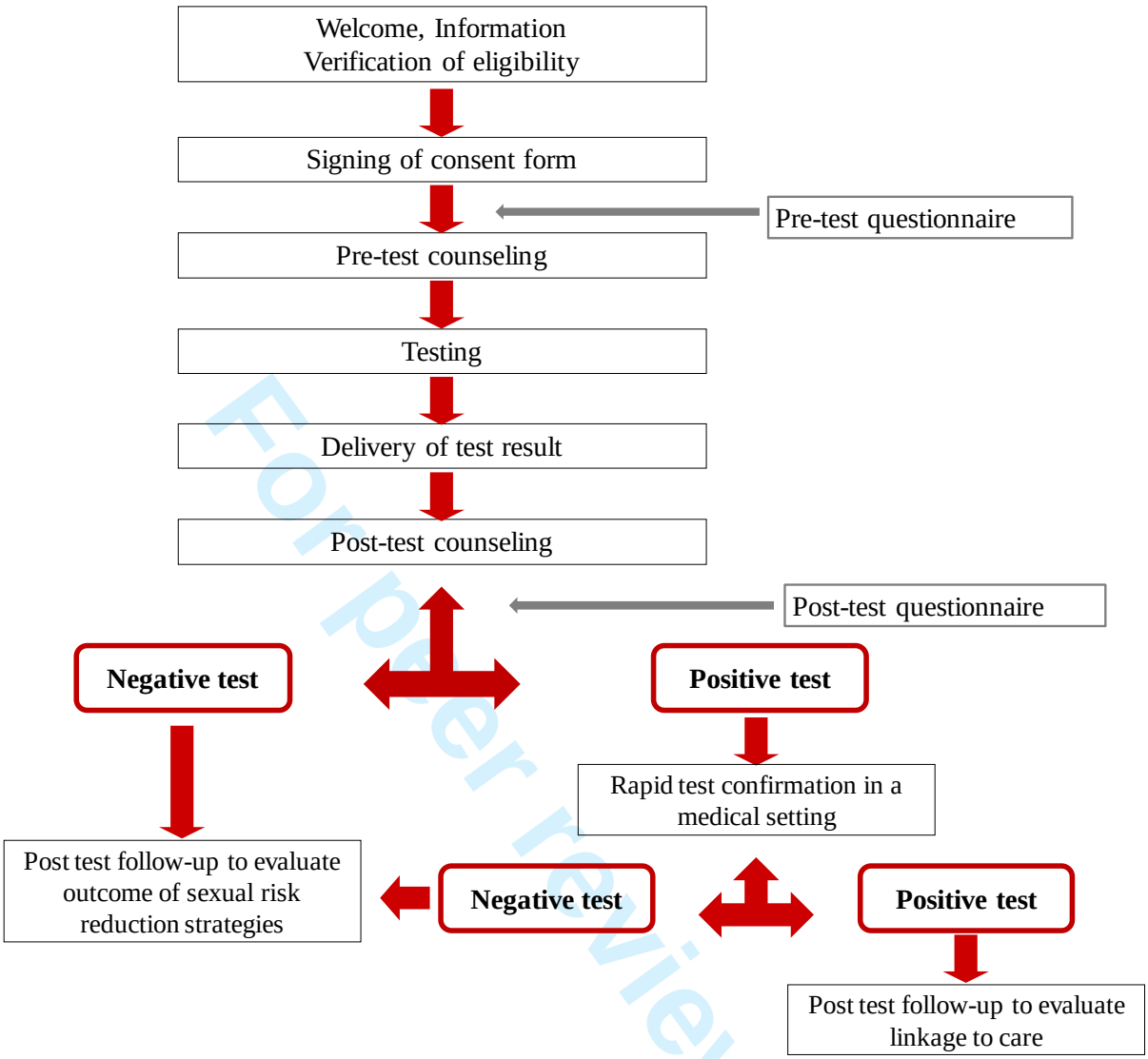

STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cross-sectional studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1; 3
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	3
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4-5
Objectives	3	State specific objectives, including any prespecified hypotheses	5
Methods			
Study design	4	Present key elements of study design early in the paper	5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	6-7
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	7
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	7
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	7-8
Bias	9	Describe any efforts to address potential sources of bias	*NA*
Study size	10	Explain how the study size was arrived at	NA
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	8
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	8
		(*b*) Describe any methods used to examine subgroups and interactions	NA
		(*c*) Explain how missing data were addressed	-
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	NA
		(*e*) Describe any sensitivity analyses	NA
Results			

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	9
		(b) Give reasons for non-participation at each stage	9
		(c) Consider use of a flow diagram	Not used
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	9-11 + Tables
		(b) Indicate number of participants with missing data for each variable of interest	9-11 + Tables
Outcome data	15*	Report numbers of outcome events or summary measures	9-11 + Tables
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	NA
		(*b*) Report category boundaries when continuous variables were categorized	NA
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	NA
Discussion			
Key results	18	Summarise key results with reference to study objectives	12
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	14
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	12-15
Generalisability	21	Discuss the generalisability (external validity) of the study results	13
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	21

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

ANRS–COM'TEST: Description of a community-based HIV testing intervention in non-medical settings for men who have sex with men

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ANRS–COM'TEST: Description of a community-based HIV testing intervention in non-medical settings for men who have sex with men

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Short title: Community-based HIV testing for MSM

Key words: MSM, community, rapid HIV testing.

Article summary

Article focus

- How extend testing facilities to reach and test for HIV more MSM, and diagnose HIV-infected MSM earlier?
- The presence of peers and non-clinical staff members who address sexuality more openly and avoid medical jargon during counseling sessions could offset cultural barriers and reduce fears of HIV and associated stigma.
- The article describes an experimental program of community-based HIV testing: the population reached, the quality of the program and the satisfaction of participants.

Key messages

- This community-based HIV testing and counseling program reaches MSM with high-risk sexual behavior, a substantial proportion of whom has not tested for HIV recently.
- Community testers are able to perform rapid HIV test into a comprehensive prevention approach in line with participant's life.
- 2.8% of participants tested positive. Infection was confirmed in all cases, 80% were linked to care. Cases were diagnosed at early stages of disease.

Strengths and limits

- This HIV testing and counseling program is exclusively based on MSM community, and continuing the prevention counseling with the awareness of the HIV serostatus includes testing into a comprehensive prevention approach.
- Community-based HIV testing programs may be attractive and efficient in large urban areas (like Paris), but perhaps less so in smaller cities, where an outreach approach may work better.
- The number of HIV diagnoses was small; the prevalence and median CD4 count among the few HIV-infected participants should therefore be interpreted with caution.

Abstract

Objective: To describe a community-based HIV testing program.

Design and setting: An intervention of HIV voluntary testing conducted in non-medical settings in four French cities.

Participants: Men who have sex with men (MSM)

Intervention: Counseling and rapid HIV testing staffed by trained personnel from an HIV/AIDS community-based organization.

Primary and secondary outcome measures: the population that has taken hold of the intervention and the satisfaction of participants. Data were collected on demographics, HIV testing history, sexual practices, and satisfaction with the testing program.

Results: 532 MSM were tested between 2009/02 and 2010/06, of whom 49 (9%) were tested ≥2 times. 468 MSM (88%) had casual male partners in the previous six months, and 152 (35%) reported having unprotected anal intercourse with risky casual partners (HIV-infected or HIV-serostatus unknown). 159 men (30%) had not been tested in the previous two years, 50 (31%) of whom had unprotected anal intercourse with risky casual partners. Among the 15 patients who tested positive (2.8%), 12 (80%) received confirmation and were linked to care (median CD4 cell count=550/mm^3). Satisfaction was high: 92% reported being "very satisfied" with their experience. Steps of counseling and testing procedure were respected by testers and difficulties in handling tests were rare.

Conclusion: This community-based HIV testing program reached high-risk MSM, of whom a substantial proportion had not been tested lately. This novel service supplements pre-existing HIV testing services and increases access to HIV testing in high-risk groups.

Introduction

Until very recently in France, only physicians could prescribe, perform, and provide the results of HIV tests. Although current HIV testing rates in France rank second in Europe, [1] roughly 50,000 of an estimated 135,000–170,000 people infected with HIV remain unaware of their infection.[2] Among people the most concerned by HIV, men who have sex with men (MSM) account for half of new HIV infections approximately.[3-4] The HIV incidence in MSM is 60-fold higher than in the overall population.[3] Moreover, a recent study demonstrated that 32% of MSM were diagnosed at advanced stages of disease.[5]

The most significant barrier to early HIV testing is the absence of perception of risk for HIV.[6-8] In an effort to overcome this barrier, the French ministry of health recently recommended that physicians perform one-time routine voluntary HIV tests in the general population, and annually in population groups at high risk of infection such as MSM.[9-10] However, barriers to HIV testing remain at the individual level: fear of the disease, its disclosure and subsequent social stigma, as well as poor access to HIV testing.[6-8] In addition, the gay community highlight inappropriate counseling and some moralistic attitudes face to their sexual practices and testing habits in conventional testing services as barriers to regular HIV testing.[11]

The recent availability and acceptability of rapid HIV tests [12-13] offer an opportunity to implement new HIV testing strategies. A community-based HIV screening program, for instance, may increase access in some populations by offering a more attractive and convenient location than doctor's offices. The presence of peers and non-clinical staff members who address sexuality more openly and avoid medical jargon during counseling sessions could also offset cultural barriers and reduce fears of HIV and associated stigma. Furthermore, some community-based organizations (CBOs) have been engaged in outreach

prevention in which sexual practices, HIV exposures and testing are addressed. Continuing the prevention counseling with the awareness of the HIV serostatus could include testing in a comprehensive strategy of HIV exposure reduction.

In recent years, several European countries [14-18] have begun implementing community-based HIV testing with rapid tests. They propose rapid testing in CBOs in large urban areas. The principle behind this strategy is the same than the one applied in developing countries where testing is conducted by lay counselors from the community to facilitate access to testing to vulnerable populations [19]. However, most of the reported programs in developed countries involve medical staff, and although welcoming and support are conducted by community-peers, HIV tests are performed by healthcare workers. To our knowledge in Europe, the only ongoing community-based HIV testing programs that do not involve medical staff is Checkpoint in Barcelona, Spain [20] and LASS in Leicester, England (http://www.lass.org.uk). However, data on these programs (evaluation of an existing program or set up into a study) have not yet been published.

The hypothesis was that a community-based HIV testing intervention may reach high-risk MSM, a high proportion of whom have not been tested lately; consequently, in addition to other existing HIV testing services, it may increase access to HIV testing in high-risk groups. The ANRS–COM'TEST study describes a community-based HIV testing and counseling program performed by peers in non-medical settings that targeted MSM. The purposes were to describe characteristics of the MSM who has taken hold of this program and the satisfaction of participating MSM.

Methods

Ethics statement

ANRS–COM'TEST study was approved by the French Comité de protection des personnes Nord-Ouest III and the Agence française de sécurité sanitaire des produits de santé (AFSSAPS). All participants were informed of the study and had to sign a consent form to be included. The survey was anonymous.

Intervention (Figure 1)

The community-based HIV testing was managed by *AIDES*, a French community-based organization (CBO) that focuses on outreach and prevention among exposed population and notably MSM. Although not being healthcare workers, trained *AIDES* CBO staff members performed the whole testing procedure including pre- and post-test counseling, rapid HIV tests, as well as delivery of test result. Prior to HIV testing, testers spoke with participants about their sexuality, risk perceptions, and sexual safety. Once the results were available, participants learned their HIV status, as well as strategies to reduce sexual risk-taking.

AIDES CBO staff members were trained specifically in risk assessments, risk-reduction strategies, counseling using published motivational interview methods.[21] They were also trained in performing the rapid HIV test, reading the test and delivering the result, and referral for confirmatory test or other services if needed.

The VIKIA® HIV1/2 BioMérieux rapid HIV test kit (sensitivity: 99.8%; specificity: 99.9% [22]) was used to analyze a self-drawn whole blood sample from the participant's fingertip. Results were available within 30 minutes. Participants who tested positive were referred to HIV clinics for confirmatory blood tests and linkage to care.

The intervention offered HIV tests during three-hour sessions once or twice a week in the evening and/or on the weekend in the *AIDES* CBO locations in the French cities of Montpellier, Lille, Bordeaux and Paris. No appointment was required, and HIV tests were

performed on a first-come first-served basis. We informed the MSM community about the intervention through communication campaigns (posters, flyers, web banners and ads) at commercial and non-commercial gay venues, as well as in gay websites, magazines and organizations. The study sites were the settings of the AIDES CBO. The possibility of performing an HIV test was however not advertized outside the setting to preserve confidentiality.

Study population

ANRS–COM'TEST exclusively targeted MSM. Eligibility for the study included age ≥18 years and pursuit of HIV testing at one of the four participating *AIDES* CBO locations. MSM who reported potential exposure ≤48 hours prior to enrollment were not included. Rather, they were immediately referred to medical settings for HIV testing and post-exposure prophylaxis.

One of the most important goals of the intervention evaluated in this study was to target MSM who are not regularly tested for HIV (or never tested). In the French 2004 Gay Press survey -a survey investigating lifestyle and sexual behaviors in MSM who read the gay press- 17% of MSM stated that they have never been tested for HIV in their life. Among those with at least a history of one HIV test, 27% stated that they were not tested in the previous two years. Based on these results we therefore anticipated that 30% of MSM enrolled in our study would not have a history of HIV testing in the previous two years. We calculated the number of patients to be enrolled in this study to have a precision of 4% around this estimated point. The calculated sample size was 504 MSM; given the highest number of participants that could be tested by session in each center, the enrollment time was estimated at approximately one year.

Study outcomes

The population that has taken hold of the intervention was described, in particular its demographic characteristics, HIV testing habits, and sexual practices.

The satisfaction of the participants with the program was collected just after the testing. The difficulties occurred in handling rapid tests, the respect of counseling and testing procedures, and the proportion of participants tested positive who were linked to care were also assessed.

Data collection

Participants completed one questionnaire before and one after the test. The pre-test questionnaire assessed demographic characteristics, previous HIV testing history, STIs diagnosis in the previous six months, and sexual practices in the previous six months. Using a four-point Likert scale, the post-test questionnaire assessed satisfaction with the testing experience, i.e. satisfaction globally and with each step of counseling and testing procedure. It also assessed satisfaction during the interviews with counselors, satisfaction with words used, items addressed, and information learned. Finally, it addressed stress and comfort of an HIV testing performed by peers in non-medical settings.

Staff members used a form that outlined every step of the intervention: welcome and description of the study, participant's signature of the consent form, major concerns to address during pre- and post-test interviews, and difficulties faced at each step of HIV testing procedure. For every participant, staff members marked the completion of each step (done or addressed: yes/no/partially) and mentioned any comments. This form was in particular used to identify problems faced during testing and counseling.

AIDES CBO staff members conducted face-to-face interviews with patients who were tested positive three months later to evaluate their linkage to care.

Data analysis

The main analysis was descriptive: medians and interquartile ranges (IQR) were used to describe quantitative data, and numbers and proportions were used to describe qualitative data.

Some comparisons were performed between participants tested negative and positive, and participants retested during the study period at study sites and those were not retested. For this purpose, the Fisher exact test was used to compare proportions.

Statistical analyses were performed with SAS 9.2 software (SAS Institute Inc., Cary, NC, USA).

Results

Overall, 598 men sought voluntary HIV testing at *AIDES* CBO involving locations. We excluded 66 participants. The three main reasons to not be included were: 1) reported sex exclusively with women (n=25), 2) women (n=14), and 3) refused to participate due to the amount of time they should have spent for testing and research procedures (around two hours, n=10). Among the 17 remaining men not enrolled in the study, 10 refused for different reasons (afraid of lack of confidentiality, no need to be tested for HIV, need time to think a possible participation), the seven other were excluded because of age <18 years, a risk exposure <48 hours, or they did not understand French speaking. The man who reported a potential HIV exposure <48 hours was referred to a post-exposure prophylaxis service.

We enrolled 532 MSM in the study and performed 592 tests; 49 participants (9%) were tested ≥2 times throughout the study period. More than half of the tests were performed in Paris (285/592, 54%). Sociodemographic characteristics of participating men were shown in Table 1. Although 94% of men defined themselves as MSM, 128 (25%) stated that their sexual identity was unknown to their family, and 64 (13%) that they had not revealed it to anyone.

Of the 527 MSM who answered questions regarding their HIV testing habits, 368 (70%) reported having been tested in the previous two years. Among these men, the median number of tests in the previous two years was two (IQR, 1-4) and the last test was performed a median of eight months (IQR, 4-14) prior to enrollment (Table 2). Among the 159 MSM (30%) who had not been tested in the previous two years, the last test was conducted a median of 46 months (IQR, 34-62) before enrollment.

Nearly all participants (96%) reported having had at least one male partner in the previous six months; 92% said these were casual partners. The median number of casual partners within the last six months was 12 (IQR, 6-25). Overall, 152 (35%) men reported having unprotected anal intercourse with casual male partners who were HIV-infected or whose serostatus was unknown. Among MSM who were tested in the previous two years, 100 (27%) had unprotected anal intercourse with casual partners who were HIV-infected or whose serostatus was unknown (Table 2). This proportion was 31% among participants who had not been tested in the last two years. During the prior six months, 415 men (78%) stated using at least once recreational drugs before or during sex, and 205 men (39%) reported regular use of them. The recreational drugs the most used here were alcohol (336; 65%), poppers (236; 46%) and cannabis (140; 27%).

The most frequent reasons for participating in ANRS-COM'TEST and seeking HIV testing were: 1) reassurance (86%), 2) routine testing (42%), and 3) recent risky sexual exposures (41%). Forty-nine men (9%) returned to ANRS-COM'TEST study sites to be retested. Of these, seven (14%) returned more than twice. The median time between two tests among these participants was four months (IQR, 2.5-6.7). MSM who returned did not differ demographically from those who came only once, but a larger proportion of returners had tested for HIV within the previous two years (94% vs. 68%; $p<0.0001$).

Of the 532 participants, 15 (2.8%; 95% CI, 1.4-4.2) were tested positive. Among these, 12 (80%) received confirmatory test results and linked to care, and three (20%) lost to follow-up. Their median CD4 count at diagnosis was 550/mm^3 (IQR, 484-571). Among the 15 men with

positive results, eight (57%) had not been tested for HIV in the previous two years (vs. 30% among HIV-negative men; p=0.03).

We collected 514 post-test satisfaction questionnaires; 92% of participants who tested negative (464/504) and 70% of those who tested positive (7/10) reported being "very satisfied" with the intervention. Three-quarter would recommend "certainly" community-based HIV testing and counseling to a friend and 54% of those who tested negative stated that they would choose "certainly" the same venue in the future. The main reasons for which some patients were not "very satisfied" (43; 8%) were the amount of time spent at the testing facility (median, two hours, including a 45-minute explanation of the study and questionnaires completion) and the hours during which testing was available. Among the 440 MSM who had reported to have performed HIV tests in the past, 55% found community-based HIV testing less stressful than traditional HIV testing, while only 5% found it more stressful. 88% found that testing in non medical settings offers a best welfare. More than 98% of participants attested they could address sexuality openly with peers and no one reported feeling judged.

From the testers' point of view, peers were satisfied from their new activities. The different steps of the 592 testing and counseling procedures performed were respected (more than 90% of completion for every step). Difficulties in handling tests were rarely reported (<2%) by testers, except concerning self-drawn blood samples (19%), and blood collection by testers (14%). A second test had to be performed for eight of the 592 tests (1.5%), because an insufficient amount of blood had been collected. The results of each of these second tests were negative. No other adverse or unexpected events were reported. During pre-test counseling, major concerns were not addressed rarely: risk perception in 4% of interviews, information about HIV transmission routes in 7% and the anticipation of test results in 8%.

During post-test counseling, the test result was not explained in 6% of cases, strategies for a better prevention was not discussed in 8% and information about STIs testing was not given in 10% of cases.

Discussion

ANRS–COM'TEST was an HIV testing program that targeted MSM and studied community-based HIV testing using rapid HIV tests. Counseling and testing were performed by community members who were not healthcare workers. The program reached MSM who reported high rates of risky sexual behavior known to be risk factors of seroconversion for HIV.[23-25] Sexual behaviors in this population is similar to that of MSM who attend commercial gay venues in Paris in whom HIV prevalence was estimated recently at 18%.[26]

A substantial proportion of men enrolled in this study had not been tested for HIV recently even though they were at high risk of HIV infection. These results may suggest that community-based HIV testing programs may be attractive and convenient for population groups that have not been reachable with traditional HIV testing methods as it has been shown recently by a community-based HIV testing program in the United Kingdom.[17] The authors demonstrated that MSM at the community-based program were less likely to have been tested previously, compared to people who were seen at genitourinary medicine clinics.

The program also reached MSM regularly tested. Moreover, although our study lasted only 12-17 months according to the city, almost 10% of participating men were tested twice or more. A community-based voluntary counseling and testing program for MSM in Geneva has shown that the proportion of MSM who return for testing is likely to increase over time.[15] The MSM who returned for testing in the COM'TEST program were also tested significantly more often for HIV than men who came once. Increased availability and selection of HIV testing services may therefore encourage even those who already test regularly in traditional programs to test more often, thereby moving HIV diagnoses to earlier in infection. In addition to community-based HIV testing, other HIV testing strategies such as home tests or tests available in pharmacies may also be interesting to supplements pre-existing HIV testing

services and increases access to HIV testing in high-risk groups. [27-28] However, additional data are needed on benefits and harms of these strategies.

Counseling and testing were performed by community members who are considered as peers. Although they were not healthcare workers, they were able to handle tests correctly, deliver test results, refer men according to their test result, and respect counseling and testing procedures along the whole study period. They added testing and awareness of HIV serostatus to comprehensive prevention counseling in line with participants' lives that is one of the added values in comparison with HIV testing in the health care system. The high rate of satisfaction in MSM who participated in this study also shows that community-based HIV testing and counseling was largely acceptable. Overall, participants reported feeling more comfortable with testing and counseling with peers. The Barcelona Checkpoint in Spain that is completely staffed by peers as ANRS-COM'TEST, drawn the same conclusions.[20] Reasons for not being satisfied of the program were linked to the study part that was too long and imposed tight opening sessions. The study part may curb some men to come for testing; attendance may be higher in the real life.

In France, the HIV prevalence was 1.6% among MSM who attended voluntary counseling and testing clinics [29] and 2.2% in a community-based testing in Paris both run by medical staff [18]. In our study, 2.8% of men tested positive for HIV, and all of those who underwent confirmatory testing were found to be HIV-infected. The HIV prevalence was high, and consistent with rates seen in other recent community-based HIV testing programs in Europe. During the first year of implementation, these programs found MSM prevalence rates of 2.4% in Geneva, Switzerland,[15] 3.2% in Brighton, United Kingdom,[17] 3.2% in Barcelona, Spain,[20] and 5.2% in Amsterdam, Netherlands.[14] These results suggest again that

community-based HIV testing programs like ANRS–COM'TEST could reach MSM who are at high risk of HIV infection. MSM with an HIV positive test have been tested less often in the previous two years than men with a negative test; this result suggests also this program could reach MSM at high-risk who were not tested recently in other testing services.

A large proportion of those men who tested positive for HIV at *AIDES* CBO were referred and linked to care. They were diagnosed at early stages of the disease, with median CD4 counts of 550/mm^3 – higher than previously seen in traditional testing programs. Data from the French HIV surveillance system in 2009 demonstrate that 20% of MSM were diagnosed with CD4 counts <200/mm^3 and 62% had CD4 counts <500/mm^3.[2, 4] These results are consistent with the British study, which found a median CD4 count of 431/mm^3 among MSM who were diagnosed in community-based programs compared to 311/mm^3 among those who were diagnosed in genitourinary medicine clinics.[17] When HIV testing is performed by peers at CBOs, MSM who show evidence of repeated risky sexual behavior may feel less judged than in a traditional HIV testing program run by healthcare workers. This difference in attitude may lead MSM to check their serostatus more frequently and sooner after exposure, resulting in earlier diagnoses.

This study has several limitations. First, ANRS-COM'TEST was conducted in four French cities, but more than half of the participants enrolled in Paris. Community-based HIV testing programs may be attractive and efficient in large urban areas, but perhaps less so in smaller cities, where an outreach approach may work better. Second, we certainly underestimated the proportion of MSM who would return for regular testing at CBOs, since the study duration was short and many participants found the time spent completing questionnaires too lengthy. Third, the quality was assessed with a form completed by the community staff. The

completion rates of different steps of the testing and counseling procedure may be overestimated. Finally, the number of HIV diagnoses was small. The prevalence and median CD4 count among the few HIV-infected participants should therefore be interpreted with caution.

The ANRS-COM'TEST study was an HIV testing and counseling program exclusively based on MSM community. It showed first, that this type of program could reach high-risk MSM, of whom a substantial proportion had not been tested recently; second, peers testers involved in such programs may have the capacity to perform the test into a comprehensive prevention approach; third, participants tested positive are at early stages of disease and that a high proportion of them are linked to care. The program demonstrated that community-based HIV testing delivered by non-medical staff could increase access to and choice of HIV testing facilities, supplementing existing HIV testing programs. Based on this study results, French ministry of health recently authorized community-based HIV testing by non-healthcare CBO workers [30] as a complementary HIV testing service in France. Community-based HIV testing programs should also be assessed in other populations at high risk for HIV infection and late presentation to care, such as sub-Saharan African immigrants.[31-32]

Table 1: Participant characteristics

Participant characteristics	median	IQR
Age	31	25-38
Participant characteristics	**n**	**%[a]**
Sexual identity		
Homosexual	432	82
Bisexual	66	12
Heterosexual or did not want to define themselves	32	6
Homo/bisexual identity is		
Accepted by everyone	140	28
Unknown to everyone	64	13
Unknown to family[b]	128	25
Ever insulted because of sexuality	106	20
Matrimonial status		
Single	367	69
In a free union with a man	124	23
Married or in a free union with a woman	26	5
Other[c]	13	3
Educational level		
Above high school	372	71
High school or below	155	29

Table 1 (continued)

Participant characteristics	n	%[a]
Professional status		
Employed	337	64
Unemployed	92	17
Student	99	19
Sex worker	16	3

IQR: interquartile range

[a] The study enrolled 532 men who have sex with men (MSM). Percentages are calculated based on the number of respondents to each question. For each question, there were less than 5 missing data points (<1%); for questions regarding acceptance of homosexuality and bisexuality, there were between 22 (4%) and 35 (7%) missing data points according to the question.

[b] Parents and/or siblings

[c] Divorced or separated from partner

Table 2: Risk profile of the 532 ANRS–COM'TEST participants

HIV test in the previous two years?	No test n=159	≥1 test n=368
History of HIV testing in the previous two years [a]		
Months since previous test, median (IQR)	46 (34-62)	8 (4-14)
Number of tests in the previous two years, median (IQR)	0	2 (1-4)
Casual male partners and sexual behavior six months prior to testing	132 (83%)	333 (90%)
Number of casual partners, median (IQR)	11 (5-20)	14 (6-30)
Partners were HIV-infected or serostatus was unknown, n (%)	123 (77%)	307 (83%)
Number of casual partners who were HIV-infected or whose serostatus was unknown, median (IQR)	8 (3-13)	10 (4-20)
Unprotected anal intercourse with partners who were HIV-infected or whose serostatus was unknown [b], n (%)	50 (31%)	100 (27%)
History of STIs in the previous two years, n (%) [c]	8 (5%)	44 (12%)

IQR: interquartile range; STI: sexually transmitted infection

[a] 5 missing data points (<1%)

[b] Overall, 152 men reported having unprotected anal intercourse with partners with HIV serostatus unknown or positive, but for two of them, the information about the last test was missing.

[c] 1 missing data point (<0.2%)

Except for history of STIs in the previous two years, the differences between MSM tested or not tested for HIV in the previous two years were not statistically significant (p>0.05).

Table 3: Clinical characteristics of men who have sex with men who tested positive for HIV

Positive rapid HIV test, n (%)	15 (2.8%)
Loss to follow-up, n (%)	3 (20%)
Confirmation of positive rapid HIV test, n (%)	12 (80%)
Linkage to care, n (%)	12 (80%)
CD4 count at diagnosis (cells/mm^3), median (IQR)	550 (484-571)

IQR: interquartile range

Figure 1: ANRS–COM'TEST study diagram

Acknowledgment

We gratefully acknowledge all of the community counselors who participated in ANRS-COM'TEST. Neither the intervention nor the study would have been possible without them. We also thank Véronique Doré for her support in all stages of the study.

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There is no additional data are available.

Potential conflicts of interest

With the exception of YY, none of the authors report any association that might pose a conflict of interest. YY has received travel grants, honoraria for presentation at workshops and consultancy honoraria from Bristol-Myers Squibb, Gilead, Glaxo-SmithKline, Merck, Pfizer, Roche and Tibotec.

Authorship

KC, JMLG, SJ, CM, LR, OB, FL, BS and YY contributed substantially to conception, design and feasibility of the study. KC and JMLG wrote the protocol of the study and coordinated the study. SJ, CM, LR, OB contributed to acquisition of data, and CJ and SV were responsible of the management of the data. KC performed the statistical analysis, and presented results. All authors participated to interpretation of results. KC and YY draft the article. All authors

revised the manuscript critically for important intellectual content and approved the final version to be published.

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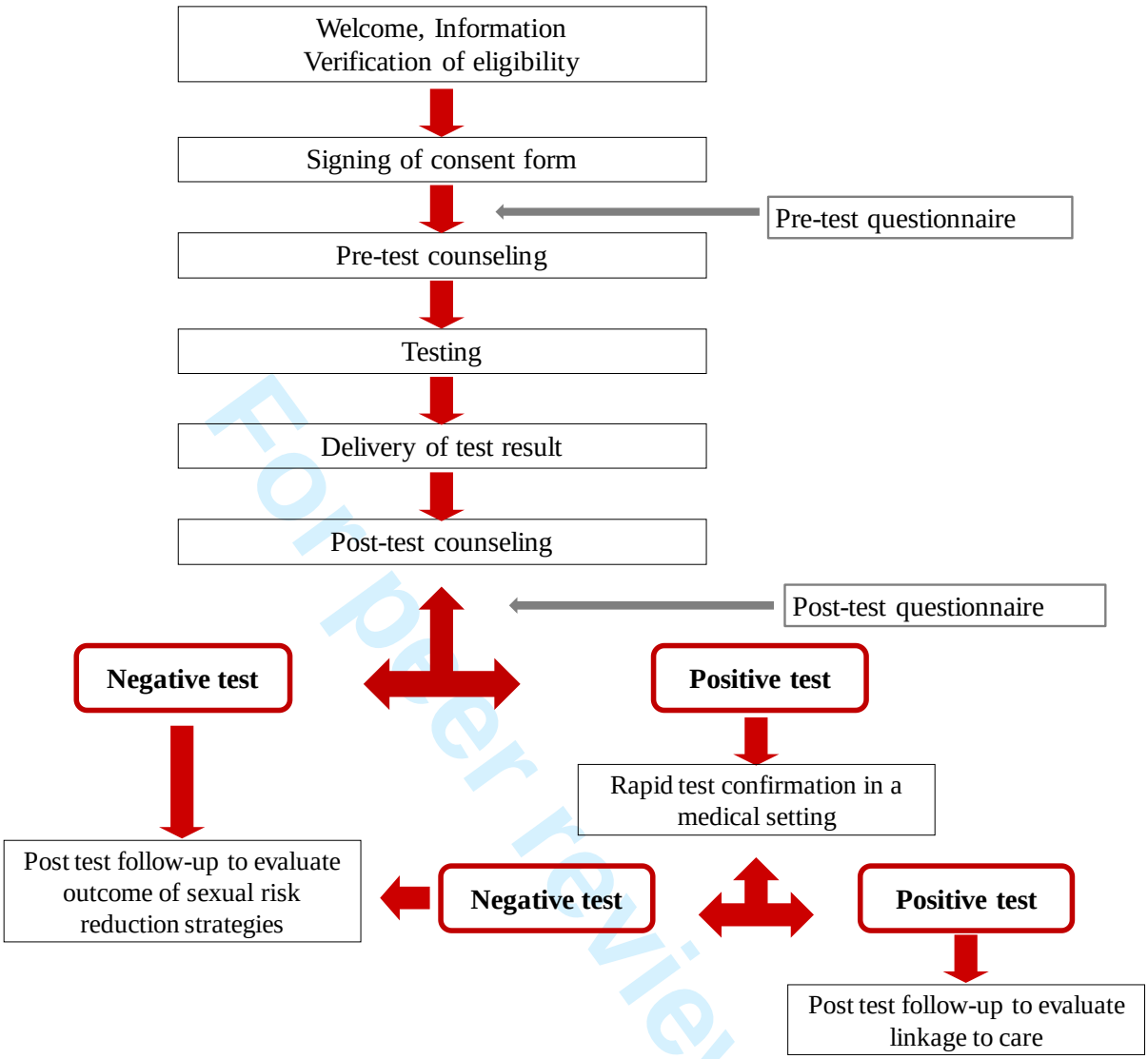

RE: ANRS–COM'TEST: Community-based HIV testing in non-medical settings for men who have sex with men
ID bmjopen-2011-000693

Reviewer(s)' Comments to Author:

Reviewer: Juan E. Losa
Chief of Infectious Diseases Department
Professor of Medicine
Hospital Universitario Fundación Alcorcón
Universidad Rey Juan Carlos

Spain

In my modest opinion, I think this issued should be revised [standard of written English].

1) In table 2 (page 23), the sum of 50 plus 100 establishes 150 participants with unprotected anal intercourse with partners who were HIV-, BUT in the text (page 13) they refer 152.

→ Results in Table 2 are presented according to having or not a history of HIV test in the previous two years. The information about "a history of HIV test in the previous two years" is missing for five participants (cf. footnotes a) including two men who stated having unprotected anal intercourse with partners with HIV serostatus unknown or positive.
We agree with the reviewer that it is not clear and we added this precision in the Table 2 footnotes: "Overall, 152 men reported having unprotected anal intercourse with partners with HIV serostatus unknown or positive, but for two of them, the information about the last test was missing."

2) I suppose that none of the differences between the two groups in the variables shown in table 2 are statistically significant.

→ The reviewer is right; in Table 2, the differences between the two groups (i.e. those with and those without a history of HIV test in the previous two years) were not statistically significant except for having a history of STI $p<0.05$.
We added this precision in the Table 2 footnotes:
"With the exception of the history of STIs in the previous two years, the differences between MSM tested or not tested for HIV in the previous two years were not statistically significant ($p>0.05$)."

3) I think table 3 is expendable, because identical results are expressed in a paragraph in page 14

→ We agree with the reviewer. However, we think these results are important and should be presented clearly in a table.

4) In the Discussion, the authors do a repetition. In page 16 the affirm "The MSM who returned for testing in the COM'TEST program were also tested significantly more often for HIV than men who came once." and in page 18 they say "MSM with an HIV positive test have been tested less often in the previous two years than men with a negative test; this result suggests also this program could reach MSM at high-risk who were not tested recently in other testing services."

→ We think the two ideas are important. The first sentence ("The MSM who returned for testing in the COM'TEST program were also tested significantly more often for HIV than men who came once.") refers to MSM who have been tested twice or more in the program, all except one were tested HIV-negative. This sentence suggests the HIV testing proposed is convenient for repeated testing.

The second sentence ("MSM with an HIV positive test have been tested less often in the previous two years than men with a negative test; this result suggests also this program could reach MSM at high-risk who were not tested recently in other testing services.") refers to MSM who were tested HIV-positive in the COM'TEST intervention and suggests the HIV testing proposed is convenient for MSM who have not been tested for HIV (never or not lately).

STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cross-sectional studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1; 3
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	3
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4-5
Objectives	3	State specific objectives, including any prespecified hypotheses	5
Methods			
Study design	4	Present key elements of study design early in the paper	5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	6-7
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	7
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	7
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	7-8
Bias	9	Describe any efforts to address potential sources of bias	*NA*
Study size	10	Explain how the study size was arrived at	NA
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	8
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	8
		(*b*) Describe any methods used to examine subgroups and interactions	NA
		(*c*) Explain how missing data were addressed	-
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	NA
		(*e*) Describe any sensitivity analyses	NA
Results			

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	9
		(b) Give reasons for non-participation at each stage	9
		(c) Consider use of a flow diagram	Not used
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	9-11 + Tables
		(b) Indicate number of participants with missing data for each variable of interest	9-11 + Tables
Outcome data	15*	Report numbers of outcome events or summary measures	9-11 + Tables
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	NA
		(*b*) Report category boundaries when continuous variables were categorized	NA
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	NA
Discussion			
Key results	18	Summarise key results with reference to study objectives	12
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	14
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	12-15
Generalisability	21	Discuss the generalisability (external validity) of the study results	13
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	21

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.