

# Public health services and their relationship with rapid HIV test utilization and access for key populations in Morelos, Mexico

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Cuadra-Hernández SM, Bernabé-Aranda JI, Conde-González CJ, Sánchez-Domínguez MS, Ortega-Altamirano DV.  
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Salud Publica Mex 2015;57:304-311

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La organización de los servicios de salud y su relación con la utilización y acceso a las pruebas rápidas para la detección del VIH en las poblaciones clave en Morelos, México.  
Salud Publica Mex 2015;57:304-311

## Abstract

**Objective.** In 2009, 4 749 rapid HIV tests were run in Morelos, Mexico, despite lacking evidence on their results. This article seeks to analyze how public health organization relates to utility of rapid HIV test among healthcare users. **Materials and methods.** Joint study: comparison of differences in applied test and positive results for each group with the Bonferroni statistical tool, observational study in 34 health subsystems, and 11 interviews with public healthcare users. **Results.** Each subsystem processes influenced the use and usefulness of screening; for instance, primary care centers test only pregnant women and exclude men who have sex with men (MSM). That group shows significant differences ( $p < 0.007$ ) in the HIV-positive test with respect to other groups. **Conclusions.** Despite the availability of rapid detection tests and epidemiological evidence, the way public health services are organized impedes an efficient diagnosis in the group with higher risk, namely MSM. The distribution of rapid HIV tests was guided by stigmatization.

Key words: diagnosis; HIV; stigmatization; health services; risk groups; Mexico

## Resumen

**Objetivo.** En 2009, 4 749 pruebas rápidas de detección de VIH fueron aplicadas en Morelos, México, sin evidencias de resultados. Se hace necesario analizar la distribución de estas pruebas y las consecuencias que la organización de los servicios de salud tuvo para el diagnóstico del VIH en las poblaciones clave. **Material y métodos.** Estudio mixto: comparación de diferencias en pruebas aplicadas y casos diagnosticados en grupos mediante la técnica de Bonferroni, observaciones en 34 subsistemas de salud y 11 entrevistas a usuarios. **Resultados.** Los procesos de cada subsistema incidieron en la utilización y utilidad del tamizaje: se focalizó en mujeres embarazadas y se excluyó a grupos en mayor riesgo ( $p < 0.007$ ) en hombres que tienen sexo con otros hombres (HSH). **Conclusiones.** A pesar de la disponibilidad de las pruebas y de información epidemiológica, la organización de los servicios impidió una mayor captación de HSH. La estigmatización influyó en las formas de distribuirlas.

Palabras clave: diagnóstico; VIH; estigmatización; servicios de salud; grupos vulnerables; México

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Received on: September 11, 2014 • Accepted on: April 28, 2015

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Although rapid HIV testing was introduced in Mexico in 2007, no studies have explored its utilization by the Mexican public health services by population group. In 2014 in Mexico, 174 564 cumulative cases of AIDS were recorded. In that year, the State of Morelos reported 3 745 cases; that meant 2.1% of the total.<sup>1</sup>

In 2010, Morelos reported 251 cumulative cases since 1983; these cases were concentrated in men (N=206).<sup>1</sup> To help diagnose HIV infection, in 2009, the Morelos State Health Services (MHS) acquired 12 350 rapid tests for HIV with a commercial value of approximately 4 USD per unit.<sup>2</sup> Of these, 9 350 were distributed among various health units, and the rest were saved for 2010; that year, the Morelos Health Plan set an annual rapid test application goal of 3 996 tests.<sup>2</sup>

Rapid testing contributes to early diagnosis and treatment of HIV infections.<sup>3</sup> These tests use blood or saliva samples and have sensitivities and specificities from 96.9 and 99.9%<sup>6</sup> up to 100%.<sup>4,7</sup> Obtaining a diagnosis is the first step to initiating antiretroviral therapy when CD4 cell counts fall below normal levels, thus significantly improving people's quality of life and life expectancy.<sup>8,9</sup> Tests are applicable *in situ*, and their results can be delivered in less than 30 minutes, or over a period of two hours where counseling is included.<sup>10</sup> They can be utilized even in rugged conditions, and are transportable to the working sites and recreational areas of the key populations.<sup>11,\*</sup> Also they are more cost effective,<sup>12</sup> useful to reach populations that hardly attend conventional health services<sup>13</sup> and could prevent the violation of human rights in marginalized and stigmatized populations.<sup>14</sup> Reactive samples must be confirmed with a Western Blot analysis and complemented with prior counseling as stipulated under technical norms.<sup>15,16</sup>

According to a report published in 2012 by the National Center for the Prevention and Control of HIV/AIDS (Censida, by its initials in Spanish) this agency has not developed any indicators to measure the use of the diagnostic test in Mexico,<sup>17</sup> despite the existence of studies that show a high rate of late HIV diagnosis and its effect on the effectiveness of antiretroviral treatment.<sup>18</sup> Censida merely points out that 75% of the population

attending civil society associations has been HIV tested, but there are no more data.<sup>17</sup>

According to Mendoza and Béria,<sup>19</sup> morbidity and mortality data are insufficient to ascertain whether a population utilizes healthcare services. Therefore, other authors point out that equity/inequity in service delivery or in a health system can be determined only by measuring by sociodemographic group, and tie in other variables with utilization, namely, coverage, accessibility, and organizational factors which act as barriers to services and or the organizational strategies set up by the local healthcare services.<sup>20,21</sup>

The objective of this article is to disseminate the findings of a study conducted in 2009 and 2010 on the distribution of the so-called rapid HIV tests, and the consequences of the internal organization in the Mexican public health services in the usefulness of these tools among key population, specifically in the case of the health services in the State of Morelos.

## Materials and methods

The authors consulted the records of 4 749 rapid HIV test runs, registered in the public health services from the cities Cuernavaca, Cuautla and Anenecuilco, Morelos, México in 2009, to obtain data for a frequency analysis of distribution and results by population group during that year. We used Bonferroni<sup>22</sup> method to analyze the statistical differences between the seven groups with positive HIV test result (table I). The significance level ( $p < 0.007$ ) was estimated by the number of groups with positive HIV test results. To make the estimations, we used Stata version 13.1.

To describe and explain the specific process and notions that guide the distribution of rapid tests by key population groups in Morelos, a qualitative exploration of public health service organization and assistance processes in 2010 was conducted from a user's point of view.<sup>23</sup> Fieldwork included observation at: 27 primary care health centers (HC) (N=202, 10%), the two health services specialized in the attention of persons living with HIV in Mexican states (CAPASITS, by their Spanish initials), the epidemiological surveillance departments at the three sanitary jurisdictions (SJ) of the Morelos State Health Services, and the two Morelos state laboratories (MSL). Lastly, semi-structured interviews with 11 CAPASITS users were recorded and analyzed with software Atlas TI. The qualitative exploration stopped to obtain theoretical saturation.<sup>24</sup> Confidentiality and autonomy of the reports were guaranteed as stipulated under the informed consent<sup>25</sup> and Ethics Commission norms of the National Institute of Public Health.

\* The term key populations is used by the International Alliance against HIV/AIDS to refer to those groups that are key to the dynamics of the HIV epidemic. They are groups of people affected by HIV due to social norms, contextual situations and sexual behaviors, and are more likely to be in situations where they can acquire or transmit HIV because of their practices. The term constructed from vulnerable groups other than the victim, to provide them with the ability to act directly on the prevention and control of HIV transmission place.<sup>14</sup>

**Table I**  
**KEY POPULATIONS AND RAPID TESTING BY THE MORELOS STATE HEALTH SERVICES. MEXICO, 2009\***

Population groups considered key	Rapid tests conducted	Rapid tests with HIV-positive results	HIV-positive results confirmed with Western Blot	Percentage of rapid tests conducted by population group	Percentage of HIV-positive tests confirmed by population group	Share of HIV-positive diagnoses obtained through rapid testing in key populations in Morelos (diagnoses in Morelos in 2009:127) %	National prevalence in 2008 (cumulative infected individuals: 220 000) %
Men:	2120	13	11	44.64	0.52	8.66	82.3
In prison	679	1	1	14.30	0.15*	0.79	1
Youth aged 18 to 22	604	0	0	12.72	0.00*	0	S/D
Heterosexuals with multiple sexual partners	567	4	2	11.94	0.35*	1.57	0.5
Users of other non-injection, non-regulated drugs	118	2	2	2.48	1.69*	1.57	S/D
Migrants	48	1	1	1.01	2.08	0.79	S/D
Men who have sex with other men	47	4	4	0.99	8.51	3.15	11
Engaging in sex work networks	26	1	1	0.55	3.85	0.79	15
With tuberculosis	19	0	0	0.40	0.00	0	S/D
Injecting drug users	12	0	0	0.25	0.00	0	5
Women:	2629	2	0	55.36	0.00	0	17.7
Heterosexuals with multiple sexual partners	997	2	0	20.99	0.00	0	0.2
Engaging in sex work networks	553	0	0	11.64	0.00	0	2
In prison	329	0	0	6.93	0.00	0	2
Youth aged 18 to 22	650	0	0	13.69	0.00	0	S/D
Migrants	50	0	0	1.05	0.00	0	S/D
With tuberculosis	23	0	0	0.48	0.00	0	S/D
Other non-injection non-regulated drug users	20	0	0	0.42	0.00	0	S/D
Suffering from sexual violence	3	0	0	0.06	0.00	0	S/D
Injecting drug users	2	0	0	0.04	0.00	0	S/D
Street children	1	0	0	0.02	0.00	0	S/D
Bisexuals	1	0	0	0.02	0.00	0	S/D
Total for both sexes	4 749	15	11	100	0.23	17.32	0.37

\*  $p < 0.007$ ; the reference value is the proportion of HIV-positive tests in the MSM group

Source: Servicios de Salud del Estado de Morelos, Internal records. Cuernavaca, SSM, 2009-2010

## Results

From 2009-2010, 4 749 tests were applied; the goal of 3 996 tests raised in the state plan was surpassed and several groups were screened (table I).

In 2009, rapid testing by MHS accounted for 8.66% of the HIV-positive diagnoses in the state ( $n=127$ );<sup>3</sup> in other words, 0.23% of positive diagnoses were obtained through *rapid testing* ( $n=4 749$ ). The statistical test demonstrated ( $p < 0.007$ ) that the MSM was the group with more HIV positive cases but it was the group with fewer rapid tests applied (table I).

At least one out of every four tests was performed on youth aged 18 to 22, contacted mainly in schools, while other population groups approached to a lesser extent yielded higher epidemic concentration levels (MSM, engaging in sex work networks, injecting drug users and migrants). This shows that the distribution of rapid tests in groups that are not at increased risk of infection in Mexico misses the opportunity to attract more positive people in the MSM groups, people in sex work and/or migrants.

The qualitative study explains the interaction between users and public health service organizations; it

was found that rapid tests are run in five MHS subsystems: HC, SJ, regional hospitals (RH), MSL and CAPASITS. HC depend on SJ, which serve as liaison with MHS state-level management. Working closely with the HC and SJ, the Morelos HIV/AIDS and STI Program Coordinator conducts core HIV control/prevention activities in the state and oversees the CAPASITS, but there is no direct articulation with either the HC or the SJ (figure 1).

HC in Morelos offer and perform HIV diagnoses through rapid testing only for pregnant women, referring other asymptomatic individuals who seek diagnoses to the SJ, CAPASITS and MSL. SJ focus on testing in their facilities, health fairs and universities, prison visits and community events (figures 1 and 2).

In the third subsystem, that is, the two CAPASITS in Morelos, user access was observed through the following four channels: voluntary visits, referrals by other subsystems, requests from municipal councilors for social welfare where diagnoses were sought as an official requirement by women engaging in sex work networks and, lastly, private clinics and hospitals.

The Cuernavaca and Anenecuilco CAPASITS displayed different testing requirements. For instance, the former required fasting as an indispensable condition for obtaining results, something in fact unnecessary in the case of rapid tests: users who had ingested any food during the day were rejected. Testing was finally provided to those who had fasted appropriately, and results were delivered the following work day at the center's psychology department. The process stretched over five to seven days.

The Anenecuilco CAPASITS required none of the above conditions, and delivered results on the same day tests were run. Here, the laboratory, nursing, social work, dental and psychology staff assisted personnel at the Social Rehabilitation Facilities (Ceresos, in Spanish) and nearby municipal capitals in running rapid HIV/AIDS tests for sex workers in the region (figure 3).

The interviews on user experience with the Morelos State Health Services revealed a number of access barriers to rapid testing and treatment as a consequence of physicians who were uninformed about the procedures, benefits, and rapidity offered by rapid tests with regard to samples, results and interpretation. Unacquainted with rapid testing, HC personnel invariably referred individuals seeking a diagnosis to a CAPASITS or sent them on a long journey through different facilities:

I went to the HC, there they sent me to the hospital, but then the doctor at the hospital had to leave and sent me to the doctor at the CAPASITS [interview 12: gay male].

Another access barrier was an inadequate application protocol involving epidemiological facts, clinical data and the pathological/non-pathological history of the patient. As a result, diagnoses were flawed, time was wasted in initiating treatment, and users were discouraged from seeking the test:

[...] I went to a *Dr. Simi* [a pharmacy and doctor's office] because I had dots in my mouth. He looked at me, said: it's candidiasis, and prescribed a treatment that lasted almost a year. Many of the dots disappeared but a few remained, so I went back to the doctor, and he said: I suggest that you get tested for HIV. That's how I went to the public health services to have the test done [interview 11: gay male].

I started having stomach problems. I went to a private doctor and he put me on a diet. Later I went to another doctor. This one gave me a treatment and also put me on a diet. The thing is that I saw about 10 doctors and all of them made me go on a diet, until I went to see a private specialist. He told me: 'I'm going to run some tests, I think you may have HIV' [interview 6: migrant male].

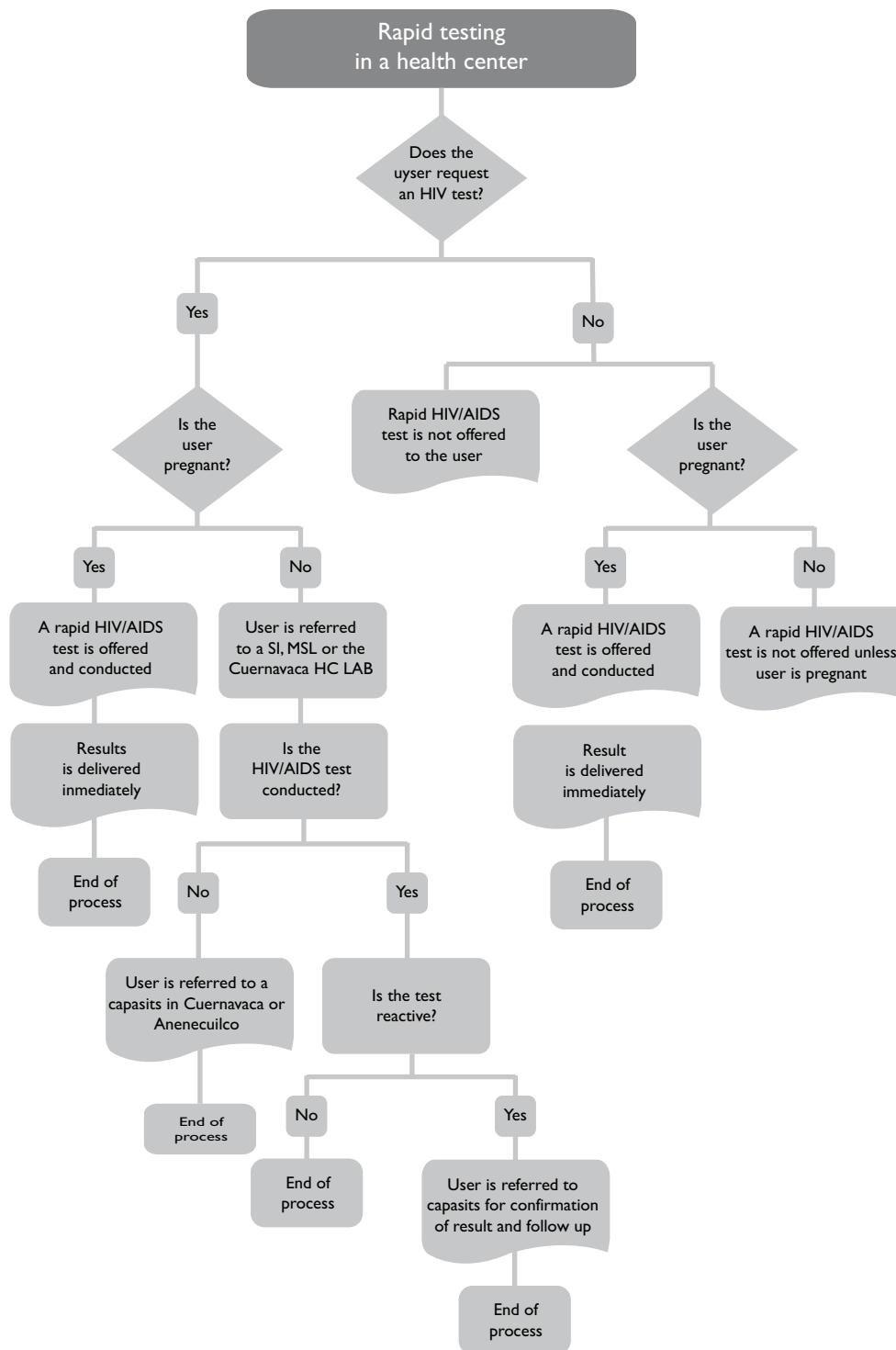
The refusal of MHS personnel to serve users who requested *rapid testing*, even where tests were available, was another testimony of inaccessibility. This is particularly common in the case of MSM *vs* pregnant women:

I went to the health center [...] and was curious to know how my blood was doing for HIV. I spoke with a nurse and explained my concern [...] She said that she had tests but they were reserved for some pregnant women. Then she asked me to go to the Morelos state laboratory [...] for information [interview 11: gay male].

An additional barrier was observed in the long waiting times for test results delivery by health personnel:

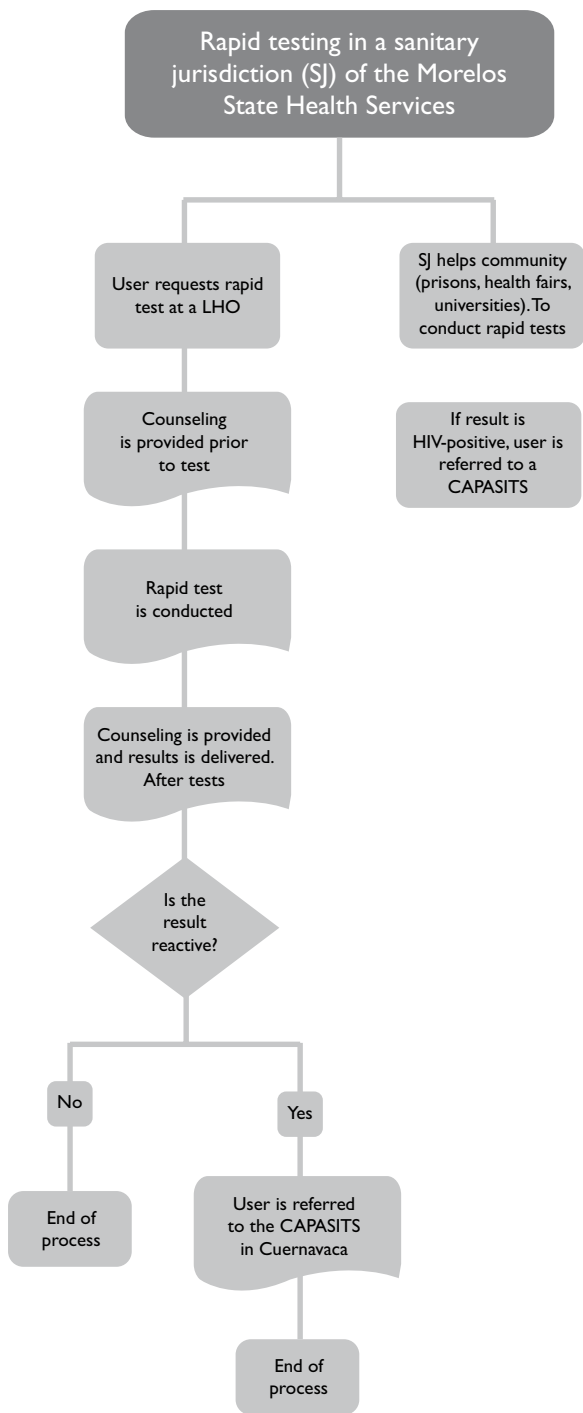
I used to work in a bar. Nurses from the Cuernavaca MHS local office came with people from the municipality. They asked for volunteers, gave me the rapid test and took my personal information. They were in a hurry, so they took the test and said they would return the next day. Several days went by. I even asked where I could reach them, but no one knew (said). They came back after 20 days, asked directly for me, and handed me an HIV-positive result [interview 12: gay male].

Providing general, non-specific, information without counseling also posed a barrier to rapid HIV detection:



Source: field observation and interviews with users in 27 health centers

**FIGURE 1. THE PROCESS OF SEEKING AN HIV DIAGNOSIS IN HEALTH CENTERS. MORELOS, 2009**



Source: field observation at MHS sanitary jurisdictions (N=3)

**FIGURE 2. HIV/AIDS RAPID TESTING PROCESS IN SANITARY JURISDICTIONS OF THE MORELOS STATE HEALTH SERVICES. MORELOS, MEXICO, 2009**

When they gave me the result at the laboratory I didn't understand anything. They only handed me a sealed envelope. When I left, I opened the envelope and it said positive. At that time I didn't know if that meant the result was good or bad. I assumed I had HIV, judging from the expression on the face of the person who gave me the envelope, but I didn't know how much time I had; I thought I was going to die very soon [interview 1: female sex worker].

Access barriers were also heightened by geographical remoteness and economic constraints related to the cost of transportation and the loss of work opportunities in contexts marked by poverty:

I live in a small town. It's hard for me to get to my appointments at the CAPASITS, because of the distance and my health. I have to transfer buses and, now, for example, I'm not working, spending money is a problem for me. There have been times where I've missed my appointments because I couldn't get there in time. I think it's necessary to have other clinics like the CAPASITS nearby, because the health center in my locality doesn't have the medicine I need [interview 12: gay man].

The possibility of obtaining an early diagnosis is hampered by the referral of users to CAPASITS—albeit the availability of tests at all HCs and public hospitals; the bureaucratic barriers characterizing public health organization, and the lack of information among health workers:

I had an intestinal problem. I got sick on a Friday. I went to the general public hospital and they put me under observation. A few hours later I felt better and got released. Then I told them I wanted to have an HIV test done because I had been intending to do it for a long time. The doctor told me to go to the CAPASITS in Cuernavaca. I went that same day, it was about 5 pm, but they were already closed. I went back Saturday, but they were closed again. I insisted the following Monday and was able to get in [...] CAPASITS have short service hours. It seemed strange that the hospital was open every day but the CAPASITS wasn't. Why don't they change their hours so that people like me can get help? [interview 10, gay man].

## Discussion

The results for rapid test utilization in Morelos in 2009-2010 indicate that, while the majority of tests were administered to heterosexual youth and prisoners of

both sexes, HIV-positive diagnoses predominated, as they generally do, among the key populations, MSM specially.<sup>26,27</sup> This trend is also evidenced in the official data obtained from the national population and health systems—except in the case of migrants, for whom no reliable prevalence rates are available as yet.

Why, if it has been demonstrated that the infection is concentrated in MSM<sup>26-28</sup> and that if rapid tests are targeted to vulnerable population better results are obtained, in Morelos health services prefer to apply this tests to pregnant women? This selection can be explained as a mixture between the fragmented health system, the evidence that antiretroviral therapy to a pregnant woman protects the unborn child, an idea about the sacrality of maternity—a question related to gender inequalities—and the stigmatization to MSM,<sup>29,30</sup> i.e.: a gay male is usually considered a victim-offender,<sup>31,32</sup> he is perceived as responsible for his “deviant” behavior,<sup>33,34</sup> whereas a woman is considered an innocent victim<sup>32</sup> having contracted the infection while fulfilling a social role that is accepted, especially if she’s going to be a mother. Exceptions occur when women are into a sex worker’s circuit, which is perceived as a “deviant” role.<sup>35</sup>

The discrepancy among utilization figures, diagnostic results and users’ qualitative assessment of public health services is a clear sign that the actions observed in rapid testing were guided, not by scientific evidence on the distribution of the epidemic in Mexico, but by a fragmented<sup>36</sup> and ineffective organization of services, characterized by subjective conceptions and stigmatization against historically excluded groups, conceptions which have been incorporated and institutionalized into the healthcare organization processes.

For 2015, the policy of rapid testing distribution has not changed: Ads official in the state of Morelos realize a screening to uninsured population, not a search among key populations.<sup>37-39</sup> The foregoing has had a direct impact on equity<sup>40</sup> in rapid test utilization. According to analyses in the study, on one hand, the opportunity for rapid test utilization in certain social groups was nonexistent, while on the other, distribution and utilization were minimal in the groups that were most affected and therefore most in need of testing, but highest (coupled with HIV-negative results) in groups with no evidence of need. As a result, resources were wasted and opportunities were forfeited for diagnosing, treating and offering a better quality of life to those in need. If rapid test utilization had accorded priority to the key populations with high concentration of the epidemic, a greater number of HIV cases could have been detected.

Finally, even though a regulatory framework has been in place since 1993,<sup>15</sup> the results suggest that

procedures for screening and detecting new HIV cases do not follow standardized criteria. For instance, in Morelos, it was found that users requesting a test received contradictory instructions as to whether or not they were required to fast, and to which facility (a HC, a CAPASITS or a hospital) they were required to go for testing. Additionally, in none of the cases observed was counseling provided prior or subsequent to tests, as specified under NOM 010.<sup>15</sup>

Research limitations pertained mainly to the short-term study period, and the small population selected under convenience sampling given the relatively low prevalence of HIV/AIDS in Mexico. The study was further limited in that detected cases are generally under-reported given their association with groups that are historically stigmatized and discriminated against. In addition, specific information about the distribution is only possible if access is granted to the internal records of each health service system for official information. However, even with small utilization numbers, the study contributes to the debate on an important field of study and intervention for public health.

*Declaration of conflict of interests.* The authors declare that they have no conflict of interests.

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