



www.figo.org

Contents lists available at ScienceDirect

International Journal of Gynecology and Obstetrics

journal homepage: www.elsevier.com/locate/ijgo

LESSONS FROM THE FIELD

Lessons learned from integrating simultaneous triple point-of-care screening for syphilis, hepatitis B, and HIV in prenatal services through rural outreach teams in Guatemala

Adriana Smith^a, Meritxell Sabidó^{b,c,*}, Elsy Camey^a, Anabelle Batres^d, Jordi Casabona^{c,e,f}^a Fundació Sida i Societat, Escuintla, Guatemala^b TransLab, Department of Medical Sciences, Universitat de Girona, Girona, Catalonia, Spain^c Fundació Sida i Societat, Barcelona, Catalonia, Spain^d Escuintla Health Department, Guatemalan Ministry of Health and Social Assistance, Escuintla, Guatemala^e Center for Epidemiological Studies on HIV/AIDS and STI of Catalonia (CEEISCAT), Institut Català d'Oncologia/Health Department, Generalitat de Catalunya, Badalona, Catalonia, Spain^f CIBER Epidemiología y Salud Pública (CIBERESP), Spain

ARTICLE INFO

Keywords:

Hepatitis B
HIV
Point-of-care testing
Pregnancy
Syphilis

ABSTRACT

Mother-to-child-transmission of HIV, syphilis, and hepatitis B virus (HBV) remains a challenge in Guatemala, especially in rural regions. A triple antenatal screening program for these infections using point-of-care (POC) testing offered through outreach teams was implemented in the municipality of Puerto de San José. One year following program implementation, antenatal care coverage increased to 99.6% (32.5% increase, $P < 0.001$), testing uptake increased to 50.3% for HIV and syphilis (143.9% ($P < 0.001$) and 1.3% ($P = 0.89$) increase, respectively), and HBV testing increased from 0 to 42.2%. Lessons learned showed that, despite the expansion of triple antenatal POC screening in rural Guatemala, a shortage of healthcare workers and poor supply chain management limited screening uptake. Moreover, training is essential to help health workers overcome their fear of communicating positive results and improve partner notification. Engagement of community health workers was essential to build local capacity and facilitate community acceptance.

© 2015 World Health Organization; licensee Elsevier. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Background

In Guatemala, antenatal screening is offered in public health facilities centralized in larger towns. Thus, access to care remains limited for rural communities, challenging the prevention of mother-to-child transmission (MTCT) of HIV and other sexually transmitted infections (STIs) [1]. Only 35% and 47% of pregnant women are tested for HIV and syphilis, respectively, with no testing being currently offered for hepatitis B virus (HBV) [2]. Community screening through outreach teams can be an alternative model to expand antenatal screening for these infections and reach pregnant women unaware of their HIV, syphilis, or HBV status [3]. The use of rapid tests could enhance the effectiveness of outreach screening by increasing testing uptake and the proportion of patients who receive their results [4]. The aim of the present article is to describe the key lessons learned following one year's implementation of triple point-of-care (POC) screening for HIV, syphilis, and HBV through outreach teams in rural Guatemala.

2. Local settings

Guatemala has an HIV prevalence of 0.71% among pregnant women [5] and an estimated rate of MTCT of HIV of 5.1% [2]. Syphilis prevalence among pregnant women is estimated at 0.10%, with a congenital syphilis rate of 0.03 cases per 1000 live births and 71% of syphilis-positive pregnant women receiving appropriate treatment [2]. The low syphilis prevalence and screening and treatment coverage in pregnancy indicates that Guatemala is showing progress but is yet to meet the goal of elimination of MTCT for this infection [2]. Regarding HBV, there are no data available on its prevalence in Guatemala. In response to the need for strengthening the prevention of MTCT of HIV and syphilis, in 2011 the Guatemalan Ministry of Health (MOH) launched a national plan that included the expansion of antenatal care services and screening for both infections [6]. Further, the MOH emphasized the importance of HBV screening during pregnancy, although it was not included in the national plan.

The magnitude of the HIV and syphilis epidemic is particularly evident at the Escuintla Department, which has the second highest prevalence of HIV and other STIs in Guatemala [5]. One of the main cities in the Escuintla Department is Puerto de San José (PSJ), located on the southern coast. PSJ has low literacy, poor maternal and child health

* Corresponding author at: TransLab, Department of Medical Sciences, Universitat de Girona, Plaça Sant Domènec, 3, Edifici Les Àligues, 17071 Girona, Catalonia, Spain. Tel.: +34 972 418 000.

E-mail address: xellsabido@gmail.com (M. Sabidó).

indices, intense seasonal migration, and a widespread illegal drug and sex trade [7]. The Fundació Sida i Societat (FSIS) is a non-profit organization that has been providing technical assistance for the prevention of HIV in Guatemala since 2005. In 2012, FSIS partnered with the National Program of Prevention and Control of HIV/AIDS and STIs and the local department of health to implement a triple antenatal screening program for HIV, syphilis, and HBV using POC testing offered through outreach teams in PSJ. Funding to expand triple antenatal screening in rural Guatemala was provided by Fundació Intervida and CIBER of Epidemiology and Public Health.

3. Approach

Triple antenatal screening using POC testing was introduced through the existing public network of health services and outreach health teams. PSJ is equipped with a district primary healthcare center, two health posts with fixed healthcare workers, and 22 convergence centers, which are community spaces utilized for gatherings and events. Three mobile health outreach teams, each composed of two nurses and seven health promoters, rotated between convergence centers offering basic primary care services. These outreach teams also coordinated with a network of over 200 traditional midwives. Health promoters and traditional midwives identified pregnant women and referred them for testing.

Nurses or nurse practitioners collected written informed consent and offered pre-test counseling. They also collected a single finger-prick sample to perform HIV testing using the Determine HIV-1/2 rapid test (Abbott Laboratories, Tokyo, Japan), syphilis testing using the SD Biotec Syphilis 3.0 (Standard Diagnostics, Kyonggi-do, Korea), and HBV testing using the Determine HBsAg tests (Alere Inc., MA, USA). Women received their results within 15 minutes and those with a reactive test result were referred for confirmatory testing and treatment following national guidelines [8].

4. Relevant changes

4.1. Start-up process

Overall, 14 healthcare workers (nurse or nurse practitioners), 21 health promoters, and 200 traditional midwives were trained in POC testing promotion and use, counseling, referral, stock management, and record keeping. Healthcare workers involved in testing were additionally trained on how to perform the tests and interpret results using standard operational procedures and quality assurance using proficiency panels. FSIS staff performed regular field supervision visits using checklists. All tests, reagents, and treatments were supplied through the MOH's routine channels. POC triple screening was promoted through a campaign using radio advertisement and leaflets.

4.2. Triple screening coverage and characteristics of pregnant women

From May 2012 to April 2013, 1793 pregnant women sought antenatal care either at the district health center or health posts, or through mobile outreach teams. Of those, 901 (50.3%) were screened for HIV and syphilis and 756 (42.2%) for HBV owing to unavailability of the HBV test during the first two months. Women not tested either did not accept testing because of fear of a positive result, additional waiting time, or partner disapproval, or testing was not available because of staff turnover, absenteeism, or stockouts at the district health center. The women's mean age was 24 ± 14.5 years and 28.3% were 18 years or younger. The median time point in gestation at which women were tested was 16 weeks. Only 9.2% had been previously tested.

4.3. Prenatal care and testing uptake

Before the introduction of the outreach screening program, antenatal care coverage in public healthcare services in PSJ was 73.7%, increasing to 99.6% following its introduction and resulting in a significant increase of 32.5% ($P < 0.001$). Before the introduction of triple POC screening, antenatal testing in PSJ was reported at 20.6% and 49.6% for HIV and syphilis, respectively, and no testing was available for HBV. Following its introduction, testing uptake was 50.3% for HIV and syphilis, and 42.2% for HBV. For HIV and syphilis, this corresponded to an increase of testing uptake of 143.9% ($P < 0.001$) and of 1.3% ($P = 0.87$), respectively. Overall, 51.3% of pregnant women (462/901) were screened in health posts or by outreach teams and 48.7% at the district healthcare center.

4.4. Case detection and management

Of the 901 women screened, eight tested positive for syphilis (0.89%) and three for HIV (0.33%). No cases of HBV were detected. All positive cases were identified in the health posts or by the outreach teams. All syphilis cases were confirmed, treated, and their partners notified, although only two partners were tested. Two out of three HIV positive cases accepted referral to the department hospital for HIV treatment. Although notified, none of these partners were tested.

5. Lessons learned

This outreach program allowed the municipality of PSJ to expand triple POC screening for pregnant women in rural Guatemala. One of the key lessons learned was the importance of establishing a collaborative partnership with local and national authorities and early involvement of community healthcare workers. Overall, this program was successful in increasing antenatal care coverage, considering that 99.6% of pregnant women presented at the healthcare services, representing an increase of 32.5% from before its introduction. The promotional efforts of traditional midwives and health promoters, coupled with delivering screening closer to the community, might have removed barriers for testing and contributed to the observed increase [9]. Nevertheless, approximately half of the women that presented to the healthcare services did not receive any of the tests, mainly owing to staff turnover and absenteeism, as well as poor supply chain management. This low testing coverage threatens the cost-effectiveness and sustainability of the triple screening program, especially for HBV. The low screening of pregnant women for HBV might be due, in part, to logistic problems with supply chain and that HBV testing is not included in national guidelines, despite it being a recognized effective strategy to reduce MTCT of this infection [10]. After only one year and the low number of positive cases identified, it is not possible to comment on the success of the program regarding the treatment and referral of cases.

Partner notification is an important step in case management to help interrupt transmission and prevent re-infections and complications [11]. Nurses and health promoters reported difficulties in partner notification as many women feared communicating positive results to their partners. Gender inequity and the economic vulnerability of women in Guatemala hinder their ability to make decisions regarding their sexual and reproductive health [12].

Site visits revealed that nursing staff feared delivering a positive result; thus, in cases of indeterminate or ambiguous results, they were more likely to report these as negative. Nevertheless, a refresher training on post-counseling for positive results and an intensification of field visits dissuaded some of this behavior.

6. Conclusions

The outreach program was able to expand triple POC screening for pregnant women in rural Guatemala. Following this pilot program,

FSIS assisted the local department of health in Escuintla to train healthcare workers in a further 22 municipalities of the Department on the same strategy that was used in PSJ. Importantly, the program guided the development of the integrated HIV and congenital syphilis elimination plan published in 2013, which included POC screening using rapid tests for syphilis and HIV [13]. Scale-up is currently underway in departments across the country.

The experiences reported herein reflect the challenges of working in resource-limited settings. Shortage of healthcare workers and supply chain management problems limited antenatal screening uptake. In the context of these realities, involvement of community healthcare workers through the outreach teams enabled the building of local capacity and the provision of triple POC screening to pregnant women in rural Guatemala.

Acknowledgments

Funding was provided by Fundació Intervida and CIBER de Epidemiología y Salud Pública (CIBERESP).

Conflict of interest

The authors have no conflicts of interest.

References

- [1] Cohen J. HIV/AIDS: Latin America & Caribbean. Guatemala: struggling to deliver on promises and assess HIV's spread. *Science* 2006;313:480–1.
- [2] Pan American Health Organization. 2014 Update: elimination of mother-to-child transmission of HIV and syphilis in the Americas. Washington, DC: PAHO; 2014. http://www.paho.org/hq/index.php?option=com_docman&task=doc_view&gid=28350+&Itemid=999999&lang=en.
- [3] Guenter D, Greer J, Barbara A, Robinson G, Roberts J, Browne G. Rapid point-of-care HIV testing in community-based anonymous testing program: a valuable alternative to conventional testing. *AIDS Patient Care STDS* 2008;22:195–204.
- [4] Lahuerta M, Sabido M, Giardina F, Hernandez G, Palacios JF, Ortiz R, et al. Comparison of users of an HIV/syphilis screening community-based mobile van and traditional voluntary counselling and testing sites in Guatemala. *Sex Transm Infect* 2011;87:136–40.
- [5] Ministry of Public Health and Social Assistance of Guatemala (MSPAS). National Program of Prevention and Control of HIV/AIDS and STIs. National report on the progress achieved in the fight against HIV and AIDS. Guatemala City: MSPAS; 2014. http://www.unaids.org/sites/default/files/country/documents/GTM_narrative_report_2014.pdf. [In Spanish].
- [6] Ministry of Public Health and Social Assistance of Guatemala (MSPAS). National strategic plan for the prevention, attention and control of STIs, HIV and AIDS: Guatemala 2011–2015. Guatemala City: MSPAS; 2011 <http://www.onusida.org.gt/documentos/pen20112015.pdf>. [In Spanish].
- [7] Sabido M, Giardina F, Hernandez G, Fernandez VH, Monzon JE, Ortiz R, et al. The UALE Project: decline in the incidence of HIV and sexually transmitted infections and increase in the use of condoms among sex workers in Guatemala. *J Acquir Immune Defic Syndr* 2009;51:S35–41.
- [8] Ministry of Public Health and Social Assistance of Guatemala (MSPAS). Protocols for integrated health care in the primary and secondary levels of attention. Guatemala City: MSPAS; 2012. [http://mepas.gob.gt/libreacceso/images/stories/datos/2012/diciembre/Manual%20de%20Normas%20de%20Atenci%C3%B3n%20\(numeral%206\).pdf](http://mepas.gob.gt/libreacceso/images/stories/datos/2012/diciembre/Manual%20de%20Normas%20de%20Atenci%C3%B3n%20(numeral%206).pdf). [In Spanish].
- [9] Mabey DC, Sollis KA, Kelly HA, Benzaken AS, Bitarakwate E, Changalucha J, et al. Point-of-care tests to strengthen health systems and save newborn lives: the case of syphilis. *PLoS Med* 2012;9:e1001233.
- [10] Nelson NP, Jamieson DJ, Murphy TV. Prevention of perinatal hepatitis B virus transmission. *J Pediatr Infect Dis Soc* 2014;3(Suppl 1):S7–S12.
- [11] Alam N, Chamot E, Vermund SH, Streatfield K, Kristensen S. Partner notification for sexually transmitted infections in developing countries: a systematic review. *BMC Public Health* 2010;10:19.
- [12] Becker S, Fonseca-Becker F, Schenck-Yglesias C. Husbands' and wives' reports of women's decision-making power in Western Guatemala and their effects on preventive health behaviors. *Soc Sci Med* 2006;62:2313–26.
- [13] Ministry of Public Health and Social Assistance of Guatemala (MSPAS). National Plan for the Elimination of Mother-to-Child Transmission of HIV and Congenital Syphilis 2013–2016, Guatemala. Guatemala City: MSPAS; 2013. <http://www.mcr-comisca.org/sites/all/modules/ckeditor/ckfinder/userfiles/files/Plan%20Nacional%20PTMI%202013-%202016%20GUA.pdf>. [In Spanish].