Article

Barriers to uptake of antenatal maternal screening tests in Senegal

Winny Koster[a,b,*], Pascale Ondoa[a], Aïcha Marceline Sarr[c], Ahmad Iyane Sow[c],
Constance Schultsz[a], Jean Sakande[d], Souleymane Diallo[e], Robert Pool[b]

[a] Amsterdam Institute for Global Health and Development, Pietersbergweg 17, 1105BM Amsterdam, The Netherlands
[b] Centre for Social Science and Global Health, University of Amsterdam, Nieuwe Achtergracht 166, 1018WV Amsterdam, The Netherlands
[c] Direction des Laboratoires, Ministère de la Santé et de l'Action Sociale, Sacré-Cœur Pyrotechnie no. 88 B, Dakar, Senegal
[d] University of Ouagadougou, Health Department, Laboratory of Biochemistry, 09 BP 863 Ouagadougou, Burkina Faso
[e] Centre d'Infectiologie Charles Mérieux Mali (CICM), Rue du Dr Charles Mérieux, Ex Base Aérienne, BP 2283 Bamako, Mali

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ABSTRACT

Background: Evidence exists that selective antenatal maternal screening tests contribute to the reduction of maternal morbidity and mortality. However, data are lacking on coverage with the complete set of recommended tests. The study aimed to identify barriers to uptake of the complete set of tests recommended by the Ministry of Health in Senegal.
Methods: Data were collected in communities, antenatal care (ANC) clinics and the laboratories of 11 public health care facilities across Senegal. Mixed-methods included ethnography (observations and informal conversations), in-depth interviews and workshops at the health facilities; structured interviews with 283 women receiving antenatal tests ("women in the lab"); in-depth interviews with 81 women in communities who were pregnant or had recently delivered ("community women").
Results: Only 13% of community women and 22% of women in the lab had received the complete set of tests. For various social, financial and antenatal care-related reasons 38% of community women who visited antenatal care facilities did not access a laboratory. The lowest test uptake was in women receiving antenatal care at health posts. Barriers at the laboratory level were the cost of the test, stock-outs of reagents, and broken equipment. Midwives were the main gatekeepers of the laboratory, not requesting (all) tests because of assumptions about women's financial problems and reliance on clinical symptoms.
Conclusion: In Senegal, recommended antenatal maternal screening tests are substantially underutilized. Efforts to increase test uptake should include accessible testing guidelines, reducing the cost of tests, raising awareness about the reasons for tests, and making the complete test set in point-of-care format accessible in peripheral health posts. National and international antenatal care policies and programs should facilitate access to maternal screening tests as a contribution to reducing maternal and infant morbidity and mortality.

1. Introduction

This paper focuses on barriers to the utilization of recommended maternal screening tests, an under-studied aspect of antenatal care. During fieldwork we regularly came across problems that could have been prevented if women had had routine antenatal diagnostic tests. For instance, during her first antenatal care (ANC) visit, a woman told the midwife she had experienced five subsequent miscarriages after having her first child. She was now receiving laboratory tests for the first time and appeared to have Rhesus factor-negative blood – explaining the miscarriages. If she had taken Serum Anti-D injections after her first delivery of a Rhesus positive baby, these miscarriages could have been prevented.

Besides checking the blood group and Rhesus-factor (BGR), other routine antenatal maternal screening tests have been proven to reduce maternal (and child) morbidity and mortality if followed by adequate management of the detected conditions, i.e. testing for proteinuria (PU) for risk of pre-eclampsia, and HIV and syphilis screening to prevent vertical transmission (Carroli, Rooney, & Villar, 2001; Di Mario et al., 2005). The estimated 2013 maternal mortality ratio in Senegal was 320 per 100,000 live births, which is a huge decline from the 530 in 1990, but still far from the millennium development goal of 133 for 2015 (World Health Organization, 2015). The Senegalese national guidelines on antenatal maternal tests adopted the five tests recommended by WHO (screening for PU, syphilis, and HIV, BGR determination, and hemoglo-

bin concentration), and added screening for sickle cell anemia (SC) (Ministère de la Santé de l'Hygiène Publique et de la Prévention, 2014; Partnership for Maternal, Newborn and Child Health, 2006). The national guidelines prescribe that these six tests should be requested during the first ANC visit. Equipment and materials for the full antenatal screening panel are present in the laboratories hosted at health center level and above (as from mid-level) of the public health care system (managed by the Ministry of Health – MoH). Health centers, usually headed by a general physician, comprise hospitalization services and are located in district capitals. Generally, the more numerous lower level health posts that provide outpatient services and take uncomplicated deliveries, do not have laboratories but can perform HIV serology and PU screening as rapid point-of-care (POC) tests during ANC consultations. Hence, women seeking ANC services at health posts need to be referred to a laboratory for the complete set of six screening tests. Most health care services (including ANC) are provided through the public sector; the private and military facilities are concentrated in towns – 85% of which are in Dakar (Barnes, Bishop, & Cuellar, 2009; Tine, Faye, Nakhimovsky, & Hatt, 2014). To increase access to maternal care and improve maternal (and child) health, the Senegalese government implemented the Free Delivery and Cesarean Policy (FDCP) in 2005, entailing that women do not have to pay for delivery in health posts and health centers, and for cesarean sections in health centers and regional hospitals. Health facilities pre-finance these services and are reimbursed at the national level (Witter, Armar-Klemesu, & Dieng, 2008). However, ANC is not free, except for routine malaria prophylaxis, anti-tetanus vaccination and HIV test. In addition to the consultation and registration fee, women have to pay for medicines, laboratory diagnostic tests, and abdominal echography as requested by the ANC providers. Health facility management fixes prices within limits set by the MoH. Health insurance coverage is low in Senegal, although the government has been strategizing increased coverage since 2012. About 11% of the population is covered by mandatory schemes for employees of government or private companies, and 4% by voluntary subscription to community based or private health insurance schemes (Tine et al., 2014).

The objectives of the SociaLab study[1] were to gauge the uptake of the six recommended antenatal maternal screening tests and to identify and explain barriers to testing. ANC test uptake was defined as: (i) women's access to the laboratory; (ii) ANC providers' test requests and implementation in the case of POC tests; (iii) the laboratory carrying out the assays. The approach was interdisciplinary, and the study had a biomedical and an anthropological arm. This paper presents findings from the anthropological arm that focused on barriers on three different levels: community, ANC clinic and laboratory. We aimed to explain these barriers from the perspectives, living and working conditions of the main actors: the pregnant women, the ANC providers, and the laboratory staff. In the discussion we group the identified barriers in the health systems building blocks to guide our recommendations for interventions (World Health Organization, 2010).

1.1. Literature review

In our literature search on barriers to ANC test uptake – in Google Scholar, Cochrane library, and PubMed, using search words access, barriers, utilization, uptake, blood, antenatal care, tests, laboratory, and diagnostic – we did not find any papers addressing the complete set of recommended tests, only studies focusing on antenatal HIV or syphilis serology tests. For instance, identified barriers to uptake of syphilis testing at provider level are low motivation to request tests and poor organization of services. At community level barriers were found to be high cost, distance to the laboratory and low awareness of the seriousness of the health risks (Bocoum, Kouanda, & Zarowsky, 2014; Gloyd, Chai, & Mercer, 2001). The main barriers to ANC HIV testing identified relate to

health staff not proposing the test, women's fear of being seropositive, and having to obtain husband's permission to be tested (Kwapong, Boateng, Agyei-Baffour, & Addy, 2014; Larsson et al., 2012). Demographic and Household Surveys (DHS) usually measure uptake of urine and blood sampling – not specifying whether and which tests were carried out on the specimens. The Senegal DHS 2010–2011 report gives 85% for urine- and 76% for blood sampling among women attending ANC (Agence Nationale de la Statistique et ICF International, 2012).

We suspected that findings from anthropological studies on barriers to giving blood and accessing ANC in sub-Saharan Africa may be relevant to barriers to antenatal test uptake. Several studies on barriers to giving blood found that people object because they believe that it takes away life essence, or that the blood is sold or used for witchcraft (Fairhead, Leach, & Small, 2006; Geissler, 2005; Geissler & Pool, 2006; Stadler & Saethre, 2010). Fairhead et al. (2006) note that these beliefs arise especially around medical research requiring blood collection, and may apply less to routine screening tests. Commonly identified barriers for women to access ANC are distance to health facilities, disrespectful and abusive staff, financial hardship (Finlayson & Downe, 2013; Pell et al., 2013), high indirect costs for transportation, physical burden of travel, and difficulty accessing cash from husbands or family members (Pell et al., 2013). Studies in two of our rural study sites show that the cost of prescriptions and transportation and husband's lack of support are major reasons for women not completing the recommended four ANC visits (Harlow, 2007; Ndiaye, Tal, Diediou, Dieye, & Dione, 2005). Other studies in Senegal report that unequal gender relations have important influence on women's health-seeking behaviors, with women having to be submissive to male authority and husbands not always prioritizing health care (Foley, 2001, 2010; Franckel & Lalou, 2009; Forsyth, 2015; Guerin, 2008).

We also suspected that non-referral by ANC providers might be a barrier to women's access to laboratory services. Public-health studies in sub-Saharan Africa blame the general underutilization of laboratory services partly to clinical decisions unsupported by laboratory testing. These studies found that not using laboratory services may be due to clinicians' high workload leaving no time to wait for test results, and clinicians' lack of trust in the reliability and validity of test results (Petti, Polage, Quinn, Ronald, & Sande, 2006; Okeke, 2011).

2. Material and methods

2.1. Sampling of study sites and study populations

Study sites were located in and around three hospitals and eight health centers across Senegal; three sites in Dakar and eight outside Dakar ("in the region"). Eleven of a total of 96 public health facilities hosting a laboratory (the intermediate tiers of the health care delivery system), were purposefully sampled to cover the 14 administrative regions.

At the health facilities, study populations included all ANC and laboratory personnel, and other relevant staff (including directors and social workers). At community/client level the two study populations comprised (i) in communities: pregnant women and women who had delivered in the previous six months – later referred as 'community women' and (ii) in the laboratory: pregnant women who came for testing – later referred as 'women in the lab'. Community women (81) were recruited by the local interpreters from across the facilities' catchment areas. In the laboratories, we recruited as many women as possible coming for testing to the laboratory totaling 283 women in the lab (Table 1).

2.2. Data collection and methods

Data were collected from February 2013 to July 2014. During the initial Phase One in four facilities, the fieldwork took six weeks to explore the factors influencing utilization and non-utilization of