

Maternal and congenital syphilis programmes: case studies in Bolivia, Kenya and South Africa

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Abstract Preventing congenital syphilis is not technically difficult, however operational difficulties limit the effectiveness of programmes in many settings. This paper reports on programmes in Bolivia, Kenya, and South Africa. All three countries have established antenatal syphilis control programmes. Early antenatal syphilis screening and management of positive cases were difficult to implement since most women presented for their first antenatal clinic visit after 6 months of pregnancy. Most women had rapid plasma reagin (RPR) testing; results were available on the same day in some clinics but took up to 4 weeks in others. No clinic had a system for tracking RPR-reactive women who did not return for their results. There were no guidelines for providers in Kenya and Bolivia. In all countries, supplies, drugs, notification cards, and other consumables were often unavailable. Health-care providers were unmotivated in Kenya and reported an excessive client load. In South Africa and Kenya some clients reported at their exit interview that they had never heard of syphilis nor had they been informed why blood was collected. Several prevention strategies could be implemented at the clinic level. These include encouraging women to attend for antenatal care before the fourth month of pregnancy, providing point-of-care testing so that results are available immediately and women who test positive can be treated, implementing presumptive treatment of sexual partners of women who test positive, adding a second test later in pregnancy so that incident cases can be managed, and improving the quality of syphilis care during pregnancy, delivery, and the neonatal period.

Keywords Syphilis, Congenital. Syphilis/diagnosis/prevention and control; Pregnancy; Prenatal diagnosis; Prenatal care; National health programs; Delivery of health care, Integrated; Health policy; Health knowledge, attitudes, practice; Case reports; Comparative study; Bolivia; Kenya; South Africa (source: MeSH, NLM).

Mots clés Syphilis congénitale/diagnostic/prévention et contrôle; Grossesse; Diagnostic prénatal; Soins prénatals; Programme national santé; Distribution intégrée soins; Politique sanitaire; Connaissance, attitude, pratique; Etude de cas; Etude comparative; Afrique du Sud; Bolivie; Kenya (source: MeSH, INSERM).

Palabras clave Sífilis congénita/diagnóstico/prevenición y control; Embarazo; Diagnóstico prenatal; Atención prenatal; Programas nacionales de salud; Entrega integrada de atención de salud; Política de salud; Conocimientos, actitudes y práctica sanitarias; Casos clínicos; Estudio comparativo; Bolivia; Kenya; Sudáfrica (fuente: DeCS, BIREME).

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Introduction

Until 1916, maternal and congenital syphilis screening programmes were closely linked to those for the control of syphilis in the general population. Over the past 80 years, throughout the developed world, syphilis control programmes have incorporated various strategies including:

- registering and providing regular medical examinations for prostitutes (1);
- opening specialist venereal disease clinics (using the Wassermann test and Ehrlich's salvarsan treatment, which was discovered in 1909) that provided expert, free, confidential, and accessible services (1);

- training clinic personnel to provide early diagnosis, appropriate treatment and routine follow-up (2);
- introducing syphilis prophylaxis as a population-level measure, which involved hospital confinement of people who were infected (3).

When penicillin became available in 1943, contact tracing was extended to family members and sexual contacts with the aim of controlling both congenital and acquired syphilis. Additionally, case finding was increased by introducing serological testing of blood donors, hospital inpatients, immigrants and prisoners, and by premarital syphilis screening (1, 2, 4). Antenatal syphilis screening was introduced for every pregnancy,

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and expectant mothers who tested positive were treated with penicillin as inpatients. Their babies were declared syphilis-free after testing at 1 month and 3 months of age (2).

In western European countries, antenatal syphilis screening programmes were introduced in the 1940s as part of national strategies for controlling, and even eliminating, syphilis. Currently, the prevalence of syphilis in these countries is very low and congenital syphilis is rare (5, 6), leading some countries to question the need for continuing universal screening in pregnancy.

The situation in the United States is somewhat different: syphilis continues to be a public health problem with the resurgence of intermittent epidemics, in particular among crack cocaine users, prostitutes and the poor. With an incidence rate for syphilis of 6.3 per 100 000 population, and a congenital syphilis rate of 39 per 100 000 live births (estimates from 1995), the National Syphilis Elimination Plan was launched in 1999 with the goal of reducing primary and secondary syphilis in adults to less than 0.4 cases per 100 000 population. In 2000, 529 cases of congenital syphilis were reported, giving a rate of 13.4 per 100 000 liveborn infants, a decrease of 7.6% from 1999 and 51.8% from 1997 (7).

In Africa, Asia and Latin America syphilis is still endemic, and the incidence is high. In 1999 WHO estimated that there were 4 million cases of syphilis among adults in sub-Saharan Africa, 3 million in Latin America and the Caribbean, and 4 million in south and south-east Asia. In 1994, WHO recommended that all pregnant women be screened at their first antenatal visit using a clinic-based serological test so that results could be available, and treatment provided if necessary, during the visit (8). Five years later, a literature review found little evidence of improvement in coverage of services and in morbidity from sexually transmitted infections and reproductive tract infections (STI/RTI), including syphilis (9). Consequently, WHO, FRONTIERS (the Population Council's research programme in reproductive health) and the joint United Nations Programme on HIV/AIDS (UNAIDS) committed funds to document instances of integration of STI/RTI services into reproductive health programmes; the most common infection identified was congenital syphilis. Funds were available for up to six additional studies on congenital syphilis control with the following aims:

- to report on the development of countries' congenital syphilis programmes with a focus on antenatal care services;
- to understand the successes and failures of maternal syphilis screening programmes;
- to identify factors that facilitate or inhibit these programmes.

The Population Council's Regional Directors asked countries with established syphilis screening programmes to provide descriptions of possible case studies. These concept papers were reviewed by WHO, and Bolivia, Kenya and South Africa were selected as

locations for the studies. The other concept papers were rejected since they were found not relevant to the topic (i.e. not focused on the control of congenital syphilis). Table 1 gives estimates of syphilis rates in pregnant women and of congenital syphilis in Bolivia, Kenya and South Africa.

A summary of the overall findings of the three case studies is presented here. It describes the issues related to programmes to prevent congenital syphilis (10–12) and highlights the similarities between the issues identified.

Case studies method

In each country data for the case studies were collected during 2000 using the methods described below.

Literature review

An inventory of the published materials, policy documents and reports, service providers' guidelines, training manuals, clinic record cards and other documents was taken. These were hand-searched and reviewed.

Key informant interviews

Key informants were interviewed using structured questionnaires. These interviews were conducted with policy-makers and managers of STI/HIV programmes. In all health facilities and reference laboratories, clinic managers, health-care providers and laboratory staff were also interviewed using a semi-structured questionnaire.

Site evaluation

In South Africa, the study was conducted in Umlazi, the second largest township. This study included patients in both the private and public health sectors. In Kenya, all 11 clinics using the piloted, decentralized approach to maternal syphilis screening (13) and seven clinics still applying standard syphilis procedures to a similar population were selected. For the Bolivian study, the 10 hospitals in which the government and the MotherCare Project (which is funded by the United States Agency for International Development) implemented the National Congenital Syphilis Control Programme were included.

At selected clinic sites, information was obtained on the type and quality of services provided to antenatal clients, through:

- interviews and group discussions with providers of antenatal care services at the clinic;
- observation of care provided to antenatal clients on their first visit. All interventions were registered using a pre-tested checklist;
- exit interviews with antenatal or postnatal clients to record their experiences and perceptions of the services they received;

Table 1. Estimates of rates of antenatal and congenital syphilis in South Africa, Bolivia and Kenya

	South Africa	Bolivia	Kenya
Antenatal syphilis (prevalence)	7.3% of antenatal clients (16) 30.7% of pregnant women who had no history of antenatal care before delivery (17)	4.3% of mothers with live births (18) 26% of mothers with stillbirths (18)	3.8% of antenatal clients (19)
Congenital syphilis	10% of stillbirths (20)	15% of births to mothers who test positive (18)	Not available

- an inventory of STI drugs, equipment and reagents available at the clinic;
- an inventory of the facility's infrastructure (transport, water, electricity, etc.).

Results

The antenatal syphilis screening programme policy

The South African syphilis screening programme was funded and started 20 years ago by the National Department of Health. It is designed to screen women attending for antenatal care in the public health sector. The programme aims to test all antenatal clients for syphilis using the rapid plasma reagin (RPR) at their first visit and to treat women who test positive with three doses of 2.4 million units of benzathine penicillin G at weekly intervals. Clients seen for antenatal care are expected to keep a card recording the test result and their treatment; women who test positive are expected to receive a partner notification card.

In Bolivia, the Ministry of Health and Social Welfare, with the support of MotherCare, implemented a national programme of prevention and control of maternal and congenital syphilis between 1996 and 1998. The programme was expected to offer free RPR testing to all pregnant women attending public health facilities for their first antenatal care visit and to adapt training materials and modules for health-care providers. At the time of the case study, the programme had been implemented in 10 facilities in La Paz, El Alto and Cochabamba, all of which were included in this study.

In Kenya, integration of syphilis control into antenatal care services was made one of the highest priorities by the National Ministry of Health in 1989. Between 1992 and 1994, the Nairobi City Council (NCC), with technical and financial assistance from international organizations, adopted a pilot control programme. Basic elements of the programme included on-site RPR testing, treatment of seroreactive pregnant women by nurses at antenatal clinics, and active partner notification with presumptive treatment of partners of positive women (13, 14). The pilot programme was implemented at 14 of the 54 clinics

operated by the NCC. In the remaining NCC clinics (standard clinics), women were referred to the nearest pilot-programme clinic for testing. Those who tested positive were treated either at the pilot clinic or at the referring clinic.

Population and data collection

Several different groups of people were included in the case studies (Table 2), and various methods were used to collect the data. For instance, observations of the interaction between health providers and clients was observed during the first visit of antenatal clients among 329 Kenyans, 52 South Africans and 110 Bolivians.

In Kenya, information about the programme's development, implementation, achievement and sustainability were obtained from the NCC Medical Officer of Health, three assistant doctors and three nurses. In South Africa, the data were collected from staff at the national and provincial maternal and child health directorates, the STI directorate, antenatal clinic supervisors, clinic nurses and laboratory personnel. In Bolivia, interviews were held with the two directors of the STI/AIDS departments of La Paz and Cochabamba; 10 hospital directors; and 33 clinic doctors, nurses and laboratory staff.

Exit interviews were conducted with all Kenyan clients whose consultations had been observed, with 22 postnatal clients in South Africa, and with all clients in Bolivia. In Kenya, focus groups were held with service providers to gather information on their experiences and perceptions of providing antenatal services; in South Africa, primigravidae were questioned to assess their knowledge and perceptions of syphilis. No such discussions took place in Bolivia.

Coverage of antenatal syphilis screening

An important finding of this study is that many facilities lacked guidelines on providing the necessary screening and treatment for maternal and congenital syphilis. No guidelines were found in the clinics in Bolivia or Kenya. The exception was South Africa, where a variety of different guidelines was used for syphilis screening and testing during pregnancy. In Bolivia and Kenya, service

Table 2. Setting of case study and clients included

	South Africa	Bolivia	Kenya
City	Umlazi	Cochabamba El Alto La Paz	Nairobi
No. and type of facilities	5 Urban clinics 2 Rural clinics 2 Referral hospitals	7 Hospitals 3 Maternity units 8 Laboratories	11 Decentralized clinics 7 Standard clinics
Key informant interviews	6 Directors, STI ^a programmes 3 Supervisors, antenatal clinics 3 Laboratory staff (clinic-based) 1 Laboratory staff member (hospital-based) 1 Laboratory staff member (laboratory-based)	2 Directors of STI/AIDS ^b Department 10 Directors of hospitals 33 Doctors and nurses	1 Doctor 2 Assistant doctors 1 Nurse supervisor 1 Assistant doctor (treatment) 2 Nurse supervisors (treatment)
No. and type of clients	52 first antenatal visit clients 60 follow-up visit antenatal clients 22 postnatal clients	110 first antenatal visit clients 263 follow-up visit antenatal clients	329 first antenatal visit clients 282 follow-up visit antenatal clients

^a STI = sexually transmitted infection.

^b AIDS = acquired immunodeficiency syndrome.

Table 3. Coverage of antenatal syphilis screening in South Africa, Bolivia and Kenya

	South Africa	Bolivia	Kenya
Guidelines available at the clinic	Yes (several types)	No	No
Timing of syphilis screening during pregnancy	6 months	7–9 months	6 months
% of women screened for syphilis	100%	88%	16% in standard clinics 40% in pilot clinics
Test used	Off-site RPR ^a	Off-site RPR	On-site RPR
Time from test to result from laboratory	Several days to 4 weeks	2–4 days	Immediately to 24 hours (if power rationing in effect)
% of results returned from laboratory	Not estimated	Around 50%	100%

^a RPR = rapid plasma reagin.

providers and key informants indicated that because syphilis is an STI, syphilis screening is considered part of STI prevention and control and is therefore covered in the syndromic case management flowcharts. (This practice, of course, is not appropriate for the management of asymptomatic syphilis.)

Early testing for syphilis and treatment of those who test positive were difficult to implement in all three countries. Indeed, women usually did not present for their first antenatal visit until late in pregnancy, making timely detection and treatment difficult. Additionally, some laboratory results were available on the same day but others were not available for up to 4 weeks, depending on whether RPR testing was done on-site or in an external laboratory (Table 3).

Quality of care at clinic level: provider issues

In all three countries a number of problems affected the quality of care. These included: rotation of staff that resulted in the majority of staff who had been trained in syphilis management not working at the clinics where their skills were needed; service providers being unaware of the high prevalence of syphilis in their own clinics or at national level (in South Africa, for example, nurses thought that 2% of syphilis tests were positive while the laboratory found 20% (15)); drugs, notification cards and other consumables being out of stock frequently.

The following were specifically reported from South Africa but not mentioned in either the Kenyan or Bolivian reports.

- There was little knowledge of the desensitization protocol for women allergic to penicillin.
- There was no implementation of the notification system for syphilis and congenital syphilis.
- There was no guidance available on tracing women who tested positive but did not return for their results or who did not complete the treatment.
- There was no clear guidance on the presumptive treatment of partners.
- There was no system for monitoring the number of partners attending for treatment.

Quality of care: laboratory and related issues

Frequent problems were also detected at the laboratory level. Providers of laboratory services reported that there were often no vehicles available to transport blood specimens to the laboratory, and this caused many samples to arrive in an unsuitable condition for analysis. They also reported that supplies were not shipped regularly by the programme, and, consequently, essential

supplies, such as needles, syringes, disinfectant and swabs, were frequently unavailable in many clinics. In Kenya, this led to nurses asking clients to purchase the necessary items themselves in order to undergo syphilis screening and treatment. Policy-makers and programme managers decided to formalize these purchases as part of a cost-sharing strategy. Additionally, the study found that there was a high turnover of laboratory staff, and yet there were no regular retraining programmes; most of the personnel interviewed had not received adequate laboratory training; and blood samples were often mislabelled. It was also found that no confirmatory tests were performed to act as quality control for the RPR test, and that the RPR dilution titres used to identify cases for treatment had different cut-off points within the same country.

Treatment of women, their partners and babies

Syphilis treatment was always available in South Africa and Kenya. In South Africa, the recommended treatment was three doses of 2.4 million units of benzathine penicillin at weekly intervals. In Kenya, the recommended treatment was a single dose of 2.4 million units of benzathine penicillin. Erythromycin was used if penicillin allergy was suspected. However, the dosage, frequency and duration of erythromycin treatment was often incorrect.

In South Africa and Kenya, patients were counselled about informing their partners and issued a partner notification slip. The Kenyan service statistics, based on records from nine pilot clinics during the previous 12 months, indicated that 70% of the partners of clients who tested positive returned to the same facility and were treated. In South Africa, health providers reported that babies born to women who tested positive were sent to hospital to receive 10 doses of penicillin, though this was not verified by the researchers. The treatment of babies born to mothers who tested positive was not assessed in Kenya. The Bolivian investigators did not report on current practices for managing syphilis in the mother, the neonate or the partner.

Knowledge and perception of syphilis

Exit interviews and focus groups were used to assess the clients' knowledge and perception of syphilis. In South Africa, most women reported that they had never heard the word syphilis ("ugconsula") and that the health-care provider had not explained why blood had been drawn. When the test results came back to the clinic, the result was marked on the patient's card, and those who tested positive were treated, all without any explanation to the client. In Kenya, less than half of the women attending

pilot clinics or standard clinics received what is considered to be essential information on syphilis for pregnant women. Some providers indicated that this was due to a lack of motivation and to having a large client load. This information was not reported in Bolivia.

Discussion

The aims of this article are to demonstrate:

- the weakness of antenatal screening and treatment programmes for syphilis;
- the lack of awareness and understanding of the importance of the problem by health care decision-makers and by maternal, child health and HIV/STI programme staff;
- the perceived division between STIs and reproductive health, resulting in issues such as maternal and congenital syphilis being overlooked.

Technically, it is not difficult to prevent congenital syphilis. The testing and treatment of pregnant women and neonates for syphilis could be improved by implementing the following activities at clinic level: (1) promoting timely attendance at antenatal care (prior to the fourth month of pregnancy) and informing pregnant women of the importance of syphilis testing and treatment; (2) implementing decentralized testing (i.e. at the point of antenatal care) with results and treatment of women who test positive available immediately and combining this with subsequent presumptive treatment of their sexual partners; (3) adding a second test in late pregnancy to manage incident cases; (4) improving the continuity and quality of syphilis care during pregnancy, delivery and the neonatal period.

In terms of implementation, adequate stocks of tests and medicine should be available at all facilities. In some countries reducing the costs of testing and treatment should be considered by stakeholders and policy-makers. Pre-service and in-service training, training in laboratory services (such as the better use of available rapid serological tests) and supervision of syphilis screening should all be offered regularly. Communication skills should also be a priority in training programmes. As

seen in the case studies, staff working in maternal and child health often took blood without telling patients why.

Screening programmes must be evaluated using clearly stated indicators; mechanisms for monitoring these indicators at health facility level should be implemented. The development or enhancement of surveillance activities must be considered a priority in order to assess the impact of the programme and its progress towards the eradication of syphilis. The importance of an established monitoring and evaluation system is even more critical when new technologies, such as rapid simple diagnostic tests, must be introduced and assessed.

Although this article focuses on the challenges of controlling and preventing maternal and congenital syphilis, they cannot be seen in isolation from programmes designed to control and treat syphilis and other STIs in the community. By improving antenatal care, countries with high syphilis rates would gain important collateral benefits in STI control programmes and HIV prevention programmes. Therefore, strong partnerships must be built between those health professionals working in reproductive health, STI and HIV prevention; this will generate recognition by governments, by donor agencies and by the medical community of the importance of preventing adverse outcomes of pregnancy caused by syphilis. ■

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Résumé

Programmes de lutte contre la syphilis maternelle et congénitale : études de cas en Afrique du Sud, en Bolivie et au Kenya

Techniquement, la prévention de la syphilis congénitale n'est pas difficile. Cependant, des problèmes opérationnels limitent l'efficacité des programmes dans de nombreux contextes. Le présent article présente les programmes conduits en Afrique du Sud, en Bolivie et au Kenya. Ces trois pays ont mis en œuvre des programmes de lutte anténatale contre la syphilis. Le dépistage anténatal précoce de la syphilis et la prise en charge des cas positifs étaient difficiles à appliquer car la plupart des femmes ne venaient au dispensaire pour leur première visite anténatale qu'après 6 mois de grossesse. Le test RPR (*rapid plasma reagin*) de dépistage de la syphilis a été pratiqué sur la plupart des femmes ; le résultat était obtenu le jour même dans certains dispensaires mais jusqu'à 4 semaines plus tard dans d'autres. Aucun dispensaire ne disposait d'un système permettant de retrouver les femmes dont le test était positif et qui ne revenaient pas chercher leurs résultats. En Bolivie et au Kenya, il n'existait pas de directives pour les prestataires de services. Dans les trois pays, les fournitures, médicaments, fiches de notification des cas et autres consommables faisaient

souvent défaut. Au Kenya, les prestataires de soins n'étaient pas motivés et indiquaient avoir trop de clientes à voir. En Afrique du Sud, certaines clientes ont indiqué dans leur entretien de sortie qu'elles n'avaient jamais entendu parler de la syphilis et qu'elles n'avaient pas été informées de la raison du prélèvement de sang. Plusieurs stratégies de prévention pourraient être appliquées au niveau du dispensaire. On pourrait par exemple : encourager les femmes à venir pour leur première visite anténatale avant le quatrième mois de grossesse ; informer les femmes enceintes de l'importance du dépistage et du traitement de la syphilis ; mettre en œuvre un dépistage sur les lieux de soins de façon à pouvoir lire immédiatement le résultat, à traiter rapidement les femmes dont le résultat est positif et à administrer un traitement présomptif à leur partenaire ; ajouter un deuxième test plus tard au cours de la grossesse afin de pouvoir prendre en charge les incidents cas ; et enfin améliorer la qualité du traitement de la syphilis pendant la grossesse, l'accouchement et la période néonatale.

Resumen

Programas contra la sífilis materna y congénita: estudios de casos en Bolivia, Kenya y Sudáfrica

La prevención de la sífilis congénita no plantea dificultades técnicas especiales, pero en muchos lugares existen problemas operativos que limitan la eficacia de dichos programas. En este artículo se informa de programas emprendidos en Bolivia, Kenya y Sudáfrica. Estos tres países han establecido programas de control de la sífilis prenatal. El pesquisaje temprano de la sífilis prenatal y el tratamiento de los casos positivos fueron difíciles de llevar a la práctica debido a que la mayoría de las mujeres efectuaban su primera visita al consultorio prenatal pasados los 6 meses de gestación. Se sometió a la mayoría de las mujeres a una prueba de reagina rápida en plasma (RRP), cuyos resultados estuvieron disponibles el mismo día en algunos consultorios, pero tardaron hasta 4 semanas en otros. Ningún consultorio disponía de un sistema de rastreo de las mujeres RRP-reativas que no volvían por sus resultados. Kenya y Bolivia carecían de directrices para los proveedores de servicios. En todos los países era frecuente que faltasen suministros, medicamentos, fichas de notificación y

otros materiales. Los proveedores de asistencia médica estaban desmotivados en Kenya y decían que tenían una carga excesiva de clientas. En Sudáfrica algunas de éstas declararon a quienes les entrevistaron a la salida del centro que nunca habían oído hablar de la sífilis y que nadie les había explicado el motivo por el cual les habían extraído sangre. Se podrían aplicar varias estrategias a nivel de los consultorios, como por ejemplo alentar a las mujeres a buscar atención prenatal antes del cuarto mes de gestación; informar a las mujeres embarazadas de la importancia de las pruebas y sobre el tratamiento de la sífilis; realizar los análisis en el lugar de consulta para poder disponer inmediatamente de los resultados y para tratar rápidamente a las mujeres que den positivo y administrar también tratamiento preventivo a sus parejas; añadir una segunda prueba en un periodo más avanzado del embarazo a fin de tratar los casos incidentes, y, por último, mejorar la calidad de la asistencia contra la sífilis durante el embarazo, el parto y el periodo neonatal.

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