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# Congenital syphilis: a sentinel event in antenatal care quality

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## ABSTRACT

**OBJECTIVE:** To evaluate antenatal care in reducing the vertical transmission of syphilis.

**METHODS:** A cross-sectional study was designed to be representative of low-risk pregnancies in women cared for at the Brazilian Unified Health System (SUS) network in the city of Rio de Janeiro, from November 2007 to July 2008. Pregnant women diagnosed with syphilis were identified through interviews, checking their antenatal care card and searching for reported cases in the public health information systems. Cases of congenital syphilis were sought at the disease reporting system (Sinam), the Mortality Information System (SIM) and the SUS's Hospital Information System (SIH).

**RESULTS:** Syphilis was identified in 46 of the pregnancies, and 16 cases of congenital syphilis were identified, resulting in a prevalence of 1.9% (95%CI 1.3;2.6) of syphilis in pregnancy and an incidence of 6/1,000 (95%CI 3;12/1,000) of congenital syphilis. The vertical transmission rate was 34.8% with three cases resulting in death (1 abortion, 1 stillborn and 1 neonatal death) and high proportions of prematurity and low birth weight. The healthcare pathway of those women revealed flaws in the care they received, such as late entry to antenatal care, syphilis remaining undiagnosed during pregnancy and lack of treatment for the partner.

**CONCLUSIONS:** Innovative strategies are needed to improve the outcomes of syphilis in pregnancy, including improving the laboratory network, the quality of care delivered to the pregnant women and their sexual partners and, most important of all, investigating every case of congenital syphilis as a sentinel event in the quality of antenatal care.

**DESCRIPTORS:** Syphilis, Congenital, epidemiology. Syphilis Serodiagnosis, utilization. Infectious Disease Transmission, Vertical, prevention & control. Prenatal Care. Quality of Health Care.

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## INTRODUCTION

Congenital syphilis is an avoidable disease. Routine antenatal care practices are effective in preventing cases.<sup>1,2,4</sup> Deaths due to congenital syphilis in infants under five are considered avoidable with care resources available in the SUS (Brazilian Unified Health System).<sup>7</sup> It is a sentinel event,<sup>9</sup> as it can be avoided through effective health care, and retrospective investigation of cases is obligatory in order to obtain information about the care provided and propose appropriate measures to be taken.<sup>5</sup>

In the city of Rio de Janeiro, Southeastern Brazil, despite the efforts which have been made to control congenital syphilis since the late 1990s, a high incidence of cases and serious forms of the disease persist.<sup>a</sup> Data from monitoring syphilis in pregnancy from 1999 to 2004 show deficiencies in antenatal care, such as problems carrying out the screening exam (VDRL), in appropriate treatment for pregnant women and principally in treatment for their sexual partners.<sup>13</sup>

The aim of this study was to evaluate antenatal care in preventing vertical transmission of syphilis.

## METHODS

Cross-sectional study<sup>b</sup> of 2,422 pregnant women receiving antenatal care in SUS health care units in the city of Rio de Janeiro between 2007 and 2008.

Cluster sampling was carried out in two stages. In the first stage, health centers providing antenatal care to low risk pregnancies were selected, and in the second stage the pregnant women attending the selected health centers were selected.

The health care centers provided were stratified according to their type: primary healthcare centers, hospitals/maternity hospitals, birthing centers and family health centers.

Simple random selection of eligible units for the hospitals/maternity hospitals and primary healthcare centers was carried out in the ten program areas (PAs) of the city. The same proportional distribution was kept in the sample as was found in the city itself at the time of the study. The only birthing centers which exists in the city was included in the study.

The family health centers were selected using a different sampling system, and the units chosen were those in the areas of greatest expansion of family health strategy which best met certain criteria established for the research (not being located in an area with a high

risk of violence, having a larger number of teams and having been established for longer).

The size of the sample was established considering the outcome "adequacy of prenatal care", estimated to be 50.0% and the level of significance to be 5.0%. A bilateral error margin of 2.5% for the primary healthcare centers, hospitals/maternity hospitals and the birthing center and 5.2% for the family health centers was set. Finite population correction and correction for design effect, estimated as 1.5, was carried out, with a final sample of 2, 187 women in the primary healthcare centers, hospitals/maternity hospitals and birthing center and 230 interviews in the family health centers. As the few refusals to participate (fewer than 5.0%) were replaced, the estimated size was achieved and 2,422 pregnant women were interviewed.

Any pregnant woman seen in the selected units was eligible to participate, regardless of age, place of residence or stage of pregnancy.

The pregnant women were interviewed and data taken from their antenatal care cards. A standardized questionnaire was used and data collection was carried out by previously trained health care professionals and students, under the supervision of the researchers, in the health care centers themselves. The cards were copied and the relevant data extracted later by a group of higher level professionals with experience in antenatal care.

The instruments were evaluated and pre-tested in the pilot study. The field work took place between November 2007 and July 2008.

The questionnaires were revised and codified by members of the team and the data stored using the Access program, with the questionnaires entered twice and errors corrected until 100% agreement was obtained.

The quality of antenatal care in order to reduce vertical transmission of syphilis was assessed through looking for cases of congenital syphilis and syphilis in pregnant women in the official information systems: Sinam (Information System for Notifiable Diseases), the SIM (mortality information system) and the SUS's SIH (hospitalization information system). Searching the information systems allowed the evaluation of their coverage in relation to the health problems: "syphilis in pregnancy" and "congenital syphilis".

In Sinam, cases of syphilis in pregnancy between 2007 and 2009 were sought.

<sup>a</sup> Secretaria Municipal de Saúde e Defesa Civil. HIV/AIDS: vigilância epidemiológica. Rio de Janeiro; s.d [cited 2012 Jun 20]. Available from: <http://www.rio.rj.gov.br/web/smsdc/exibeconteudo?article-id=2815370>

<sup>b</sup> Inter-institutional project coordinated by the *Escola Nacional de Saúde Pública Sérgio Arouca/Fiocruz* Department of Epidemiology and Quantitative Methods in Health.

In Sinam, SIM and SIH the search was for cases of congenital syphilis. Reported cases of early congenital syphilis from 2007 to 2009 were selected in Sinam. In SIM, fetal and non-fetal deaths between 2007 and 2009, with syphilis classified as the cause or associated cause, with ICD-10 (International Classification of Diseases) codes varying between A50.0 and A50.9, were selected. In the SIH, cases of hospitalizations or deaths with ICD-10 codes A50.0 to A50.9 as the main or secondary diagnosis/cause and hospitalizations for miscarriages were selected. This search was restricted to 2008 and 2009 as it was not possible to obtain the data for 2007.

The searches in the information systems for cases of syphilis in pregnancy and congenital syphilis were carried using the RECLINK<sup>3</sup> program and the key variable was the name of the pregnant woman interviewed.

The following data were used to aid in identifying the cases correctly: date of birth and/or age, address, due date, date of outcome (delivery or miscarriage) and date reported (in cases of syphilis in pregnancy). Cases were excluded if there was some doubt as to the woman's identity, either because of differences in name, age and/or address, or discrepancies between the outcome date and/or the reporting date and the date on which the woman participated in the study.

A case was considered to be syphilis in pregnancy when: a) the pregnant woman's antenatal care card had a "reactive" result recorded at the time of the interview, except in cases when this referred to a previous bout of syphilis which had been properly treated; b) the pregnant woman reported in the interview that she had been diagnosed with syphilis and the care card did not have a record of this test result; c) the pregnant woman was identified in Sinam as being diagnosed with syphilis and d) the woman's pregnancy outcome was a case of "congenital syphilis", identified in any of the information systems consulted.

Cases of congenital syphilis were defined as all pregnancy outcomes (miscarriage, stillbirth or live birth) identified by any of the information systems (SIM, Sinam or SIH) as "early congenital syphilis".

The Sinasc (information system for live births) was also searched for all cases of "early congenital syphilis" in live births, in order to obtain birth weight and gestational age at birth, as these data were not available on Sinam records. In cases of stillbirth, this data was obtained through SIM itself.

The cases identified in interviews and in each information system were compared and Sinam's coverage was calculated for cases of syphilis in pregnancy and

the coverage of Sinam, SIM and SIH for cases of "congenital syphilis".

The prevalence of syphilis in pregnancy, the incidence of congenital syphilis and the rate of vertical transmission were calculated based on the cases identified.

The prevalence of syphilis in pregnancy and the ratio of prevalence were calculated according to demographic, socio-economic and reproductive characteristics and according to access to health care services

Women who were unaware of their diagnosis were excluded from this analysis.

Each element of the sample was weighted by the inverse of its probability of selection and was calibrated in order to restore the known distribution of antenatal consultations in the statistical analysis. The birthing center was included in the family health center strata as it has similar characteristics and to allow the inclusion of design effect.<sup>14</sup>

Based on the information obtained from the interviews and the various systems, the care pathways of those women whose pregnancy outcome was identified as a case of "early congenital syphilis" were described and deficiencies in any of the procedures recommended by the Ministry of Health in preventing vertical transmission of syphilis<sup>c</sup> identified.

This project was approved by the ENSP/Fiocruz Ethical Research Committee (Report n° 142/06). The data were collected after consent forms had been signed. Every care was taken to ensure the confidentiality of the data.

## RESULTS

There were forty six pregnant women identified as having syphilis and 16 cases of pregnancy outcomes of congenital syphilis.

Of the 46 pregnant women with syphilis, 34 were identified in the interview (29 through the data on their antenatal care cards and in five cases the woman herself reported it) and 12 identified through searches in the information systems.

All of the cases of congenital syphilis were identified through the information systems: 14 in Sinam, two in SIM and seven in SIH. Two cases identified in Sinam were not included in the sample as there were insufficient data to enable a classification of congenital syphilis. One case identified in SIH, a hospitalization for a miscarriage, was classified as a case of congenital syphilis, although there was no record of ICD for syphilis, as the woman's care had begun less than 30 days before the outcome<sup>c</sup> (Tables 1 and 2).

<sup>c</sup> Ministério da Saúde, Programa Nacional de Controle de Doenças Sexualmente Transmissíveis e AIDS. Protocolo para a prevenção da transmissão vertical de HIV e sífilis: manual de bolso. Brasília (DF); 2007.

**Table 1.** Identified cases of syphilis in pregnancy according to source of information. Rio de Janeiro, Southeastern Brazil, 2007-2008.

Source of information	n	%
One source <sup>a,b</sup>		
Research		
Reported by woman herself	4	8.7
Data on the antenatal care card	20	43.5
Sinam Syphilis in Pregnancy (SP)	3	6.5
SIM	1	2.2
Sinam Congenital Syphilis (CS)	2	4.3
SIH Congenital Syphilis (CS)	1	2.2
More than one source <sup>a,b</sup>		
Reported by woman + SIH CS	1	2.2
Data on the antenatal care card + Sinam SP	3	6.5
Data on the antenatal care card + SIM + Sinam CS	1	2.2
Data on the antenatal care card + Sinam SP + SIH CS	2	4.3
Data on the antenatal care card + Sinam SP + Sinam CS	3	6.5
Sinam CS + SIH CS	3	6.5
Sinam CS + Sinam SP	1	2.2
Sinam SP + SIH miscarriage	1	2.2
<b>Total</b>	<b>46</b>	<b>100.0</b>

Sinam: Information System for Notifiable Diseases; SIM: the mortality information system; SIH: hospitalization information system

<sup>a</sup> Data from Sinam SP, Sinam CS and SIM for 2007 to 2009

<sup>b</sup> Data from SIH (CS and miscarriage) for 2008 and 2009

**Table 2.** Cases of congenital syphilis according to sources of information. Rio de Janeiro, Southeastern Brazil, 2007-2008.

Source of information <sup>a,b</sup>	n	%
Sinam	6	37.5
SIM	1	6.3
SIH <sup>c</sup>	3	18.8
Sinam + SIM	1	6.3
Sinam + SIH	5	31.3
<b>Total</b>	<b>16</b>	<b>100.0</b>

Sinam: Information System for Notifiable Diseases ; SIM: the mortality information system; SIH: hospitalization information system

<sup>a</sup> Data from Sinam and SIM for the years 2007 to 2009

<sup>b</sup> Data from SIH (CS and miscarriage) for the years 2008 to 2009

<sup>c</sup> One case of miscarriage without record of ICD of congenital syphilis, considered case as mother treated for syphilis less than 30 days before the outcome

Sinam coverage for cases of syphilis in pregnancy was 23.9%, and 75.0% for congenital syphilis. One serious case of fetal death was not found in Sinam, nor were three cases of hospitalization for congenital

syphilis, located in the SIH, one being a miscarriage. The two cases of congenital syphilis which resulted in death were registered in SIM. In SIH, eight cases were identified (53.3%), counting the miscarriage which was not recorded as syphilis and excluding the case of fetal death. The prevalence of syphilis in pregnancy was 1.9% (95%CI 1.3;2.6).

Higher prevalence of syphilis in pregnancy was observed in women with black skin, from less well-off backgrounds and lower levels of education, those who had an obstetric history of risk, those who received antenatal care in primary healthcare centers, those whose antenatal care started later and who had an inadequate number of appointments (Table 3).

The incidence of congenital syphilis was six per 1,000 (95%CI 3;12 per 1,000) and the rate of vertical transmission was 34.8%.

Of the 16 cases of congenital syphilis, three were serious forms of the disease: one miscarriage, one still-birth and one premature neonatal death. Four newborns were asymptomatic at birth and in seven cases there were no records of clinical diagnosis or of signs or symptoms of the illness in their records or in the AIH (Hospitalization Authorization).

Gestational age was available in the Sinasc and the SIM for 14 cases: 14.3% were premature and 20.0% had low birth weight.

It was not possible to reconstruct the care pathway of one pregnant woman who did not present a diagnosis of syphilis at the time of the interview and whose baby was identified in the SIH, which contained no data on antenatal care.

Of the 15 care pathways analyzed, five of the pregnant women had started receiving antenatal care late and five had moved health care center during antenatal care.

Four of the women had not had an adequate number of appointments up to the time of the interview, all of them having started receiving antenatal care late.

Thirteen women reported the request of the first VDRL test and, of the nine who were in the third trimester, four reported the request of the second test.

Nine of the women presented a diagnosis of syphilis in pregnancy, four received this diagnosis when admitted for the birth and this information was not available for two of the women.

Some discrepancies were observed between what was reported by the women and the data registered on the care card: four women who did not know the VDRL test result or who reported a non-reactive result, presented a “reactive” result on their card: one woman who reported testing positive had no result registered on her card.

**Table 3.** Prevalence of syphilis in pregnancy and ratio of prevalence according to demographic, socio-economic and reproductive characteristics and access to health care for the pregnant women interviewed.<sup>a</sup> Rio de Janeiro, Southeastern Brazil, 2007-2008.

Characteristics of the pregnant woman	n	Prevalence of syphilis	Ratio of prevalence	95%CI
Age (years)				
≤ 19	257	5.9	1.90	0.97;3.73
20 to 34	774	3.1	1	
≥ 35	93	6.2	1.99	0.85;4.63
Skin color				
White	309	2.0	1	
Mixed race	543	3.7	1.83	0.75;4.47
Black	238	6.9	3.41	1.43;8.15
Schooling				
High school	410	1.1	1	
Finished 1 <sup>st</sup> grade	352	5.3	4.83	1.56;14.92
Did not finish 1 <sup>st</sup> grade	363	6.1	5.54	1.48;20.72
Socio-economic class <sup>b</sup>				
B	94	0.5	1	
C	785	3.2	5.97	0.69;51.37
D	197	6.0	11.38	1.11;117.09
E	48	16.6	31.50	2.98;333.46
In paid work				
Yes	414	2.9	1	
No	710	4.7	1.59	0.87;2.92
Cohabiting with partner				
Yes	877	4.2	1	
No	247	3.3	0.77	0.31;1.93
First pregnancy				
Yes	442	3.3	1	
No	682	4.4	1.33	0.63;2.78
Obstetric history of risk <sup>c</sup>				
No	499	3.3	1	
Yes	164	9.3	2.82	1.19;6.72
Type of health center				
Hospital	480	1.9	1	
Primary care center	540	6.2	3.19	1.23;8.26
FHC/ birthing center	104	2.2	1.13	0.16;8.23
Antenatal care started early <sup>d</sup>				
Yes	904	3.3	1	
No	213	7.3	2.22	1.20;4.11
Adequate no of appointments <sup>e</sup>				
Yes	975	3.0	1	
No	142	11.0	3.63	2.10;6.30

<sup>a</sup> Excluding women unaware of their diagnosis of syphilis

<sup>b</sup> Economic classification according to the *Associação Brasileira de Empresas de Pesquisa* (Associação Brasileira de Empresas de Pesquisa. Criteria of Economic Classification, Brazil. São Paulo; s.d [cited 2010 Jun 30]. Available from: <http://www.abep.org/novo/Content.aspx?ContentID=302>)

<sup>c</sup> Only for women with prior pregnancies. Obstetric history of risk = any of the following: three or more miscarriages, four or more births, two or more cesareans, obstetric complications (high blood pressure, gestational diabetes) or negative outcomes (stillbirth, neonatal deaths, premature, low birth weight)

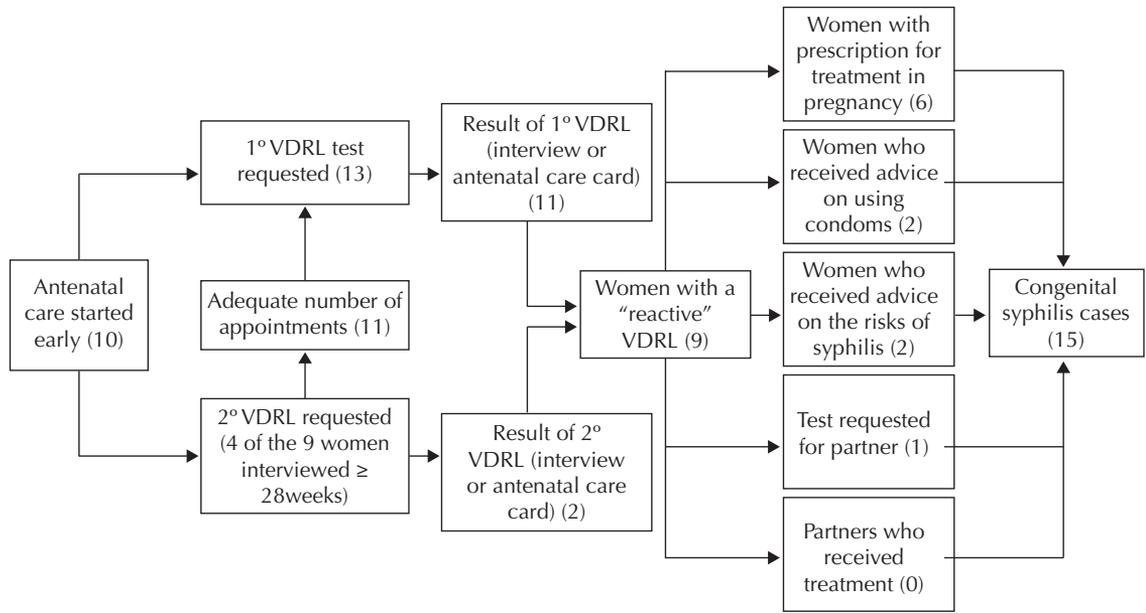
<sup>d</sup> Early start =starting antenatal care before 16th week

<sup>e</sup> Adequate number of appointments = at least one in the first trimester, two in the second and three in the third

**Table 4.** Data on antenatal care and managing syphilis in pregnancy of women whose pregnancy outcomes were recorded as cases of congenital syphilis. Rio de Janeiro, Southeastern Brazil, 2007-2008.

Case	GA at start of ANC	N° of appointments	GA at interview	1° VDRL requested		2° VDRL requested		Result 1° VDRL			Result 2° VDRL			VDRL reactive after interview	Woman prescribed treatment	Counseling on risks of the disease and on using condoms	Prescription for the partner's treatment	Outcome	Source of data on syphilis in pregnancy <sup>a</sup>
				Woman herself	Card	Woman herself	Card	Woman herself	Card	Woman herself	Card								
1	12	2	17	yes	na	no result	no result	no result	no result	yes	yes	don't know	don't know	don't know	miscarriage	2,5			
2	14	3	20	yes	na	no result	no result	no result	no result	yes	don't know	don't know	don't know	don't know	stillbirth, LW, PMT	4			
3	24	2	26	yes	na	reactive	1/8	reactive	1/8	yes	yes	yes	na	na	neonatal death, LW, PMT	1,3,4			
4	12	1	12	no	na	no result	no result	no result	no result	yes	don't know	don't know	don't know	don't know	live birth, LW	3			
5	16	6	32	yes	don't know	nd	no result	no result	no result	yes	don't know	don't know	no	no	live birth	3,5			
6	9	5	30	yes	yes	no result	1/4	non-reactive	1/16	yes	yes /no <sup>b</sup>	don't know	no	no	live birth	1,3,5			
7	17	5	36	yes	no	reactive	reactive	reactive	reactive	no	no/yes/ don't know <sup>c</sup>	diag.birth	no	no	live birth	1,2,3			
8	11	7	33	yes	yes	non-reactive	non-reactive	non-reactive	no result	no result	no result	diag.birth	diag.birth	don't know	live birth	3,5			
9	26	5	38	yes	no	non-reactive	non-reactive	non-reactive	non-reactive	yes	diag.birth	diag.birth	no	no	live birth	3			
10	16	2	20	don't know	na	don't know	1/4	reactive	1/4	no	don't know	don't know	no	no	live birth	1,3,5			
11	12	4	31	yes	yes	non-reactive	1/16	reactive	no result	no result	yes/no <sup>d</sup>	diag.birth	no	no	live birth	1,2,3			
12	17	4	34	yes	no	non-reactive	non-reactive	non-reactive	non-reactive	no	diag.birth	diag.birth	no	no	live birth	3,5			
13	25	3	37	yes	no	non-reactive	no result	reactive	no result	no	diag.birth	diag.birth	don't know	don't know	live birth	2,3			
14	10	3	23	yes	na	reactive	no result	reactive	no result	yes	yes	yes	na	na	live birth	1,5			
15	13	5	32	yes	yes	non-reactive	1/2	reactive	1/2	nd	no	don't know	no	no	live birth	1,2,3			

GA: gestational age; ANC: antenatal care; VDRL: Venereal Disease Research Laboratory; na: not applicable (request for 2° VDRL in women less than 28 weeks pregnant or prescription for partner in women who reported not having a partner); nd: not done; LW: low birth weight (< 2,500 g); PMT: premature (gestational age < 37 weeks); diag.birth: diagnosis of syphilis at time of birth  
<sup>a</sup> 1: data from research; 2: Sinam syphilis in pregnancy; 3: Sinam congenital syphilis; 4: SIM; 5: SIH  
<sup>b</sup> Adequate treatment recorded on antenatal care card. Inadequate treatment recorded in the congenital syphilis investigation record  
<sup>c</sup> Woman denied being prescribed treatment in interview; record of adequate treatment prescribed in the report of syphilis in pregnancy on the same day as the interview;  
<sup>d</sup> congenital syphilis investigation recorded unaware of treatment  
<sup>e</sup> Treatment completed according to antenatal care card and report of syphilis in pregnancy; treatment not carried out according to congenital syphilis investigation



**Figure 1.** Care pathway of the 15 pregnant women with cases of congenital syphilis as their pregnancy outcomes. Rio de Janeiro, Southeastern Brazil, 2007-2008.

Of the nine women diagnosed with syphilis in pregnancy, information on the clinical form of the disease was available for one of them. For four women recorded as having syphilis in pregnancy in Sinam (which contained a field for this information), the clinical form recorded was ‘unknown’.

There was information on prescribed treatment for six of the women. In the only case in which the clinical form was recorded, the treatment prescribed was not appropriate, being of incorrect dosage. In two other cases, treatment started fewer than 30 days before the birth or miscarriage. Discrepancies were identified in relation to the women’s treatment in three cases, with the congenital syphilis investigation generally indicating deficiencies in how it was carried out.

Of the three women aware of their diagnosis of syphilis in pregnancy at the time of the interview, two reported having been given information about the risks to the baby and on the use of condoms and one reported the request for a VDRL test for her sexual partner.

There were no records of treatment for the partner in the pregnancy and birth records. Three of the women no longer lived with their partners, in seven cases there was a record that treatment was not carried out and in five cases there was no record of this information.

Table 4 and the Figure show a summary of the care pathway of these 15 women whose pregnancies

resulted in cases of congenital syphilis and the missed opportunities due to not following the recommended care protocol.

## DISCUSSION

The prevalence of syphilis in pregnancy (1.9%) was lower than that reported by Leal et al<sup>6</sup> (2.4%) in their 1999-2000 study carried out in public health service maternity hospitals in Rio de Janeiro. It was also lower than that found in the data from epidemiological monitoring between 1999 and 2004, during which the rate presented fell from 4.7% to 2.8%<sup>13</sup> It is, however, similar to that observed in a study carried out in maternity hospitals registered in the National Program for STD/AIDS in 1999-2000 (1.7%)<sup>8</sup> and to the results of a sentinel study carried out in 2004 (1.6%).<sup>4</sup> The data found suggest the prevalence of syphilis in pregnancy in Rio de Janeiro is declining, growing closer to values observed in other parts of the country. Increasing work on preventing STDs/AIDS and greater access to treatment for syphilis may be possible explanations for the data observed.

The incidence of congenital syphilis (6/1,000 births) is high and is six times higher than the Ministry of Health’s goal to eliminate the disease.<sup>9</sup>

The rate of transmission found, higher than 30%; the serious form of the disease in cases of congenital

<sup>4</sup> Ministério da Saúde. Estimativa da prevalência de HIV na população brasileira de 15 a 49 anos, 2004. *Bol Epidemiol AIDS DST.* 2006;III(1):11-15 [cited 2011 Sep 18]. Available from: <http://www.aids.gov.br/publicacao/boletim-epidemiologico-aids-2006>

<sup>9</sup> Ministério da Saúde, Programa Nacional de DST/Aids. Diretrizes para controle da sífilis congênita: manual de bolso. Brasília (DF); 2006.

syphilis, with three cases proving fatal and the high levels of premature births and low birth weight; allied to the deficiencies in care observed, such as starting antenatal care late, breaks in the continuity of the care due to changing health care centers, difficulties in diagnosing syphilis in pregnancy (absent in 25% of the congenital syphilis cases), deficiencies in treatment and, especially in treatment for sexual partners, and lack of counselling and information about the disease and about using condoms, indicate that the quality and effectiveness of antenatal care in reducing vertical transmission is low. It is noteworthy that the number of newborns born premature or with low birth weights was much higher than that observed in a set of newborns born in the city of RJ in 2007, with values of 8.9% and 9.7% respectively.<sup>f,g</sup>

The lack of counselling resulted in some women not even knowing the results of the test, even those women with positive results. Syphilis requires treatment by injection, changes in behavior and a series of tests to control the cure, which may well culminate in the woman not following the treatment, especially if she is unaware of what disease she has.

Studies carried out in other contexts indicate deficiencies in managing cases of syphilis in pregnancy, with the majority of cases of congenital syphilis considered to be avoidable.<sup>15</sup> However, cases which are unavoidable regardless of the good antenatal care provided by health care professionals, due to treatment failure, delayed infection or reinfection,<sup>15</sup> were reported, something which was not observed in this study.

After the 1999/2000 campaign to eliminate syphilis in the city of Rio de Janeiro, there was a 29% reduction in the number of deaths from congenital syphilis in 2000 and 2001, explained by the effects of the campaign.<sup>11</sup> However, the following years saw a return to the previous situation with an annual incidence of above 10/1,000 between 2004 and 2006<sup>a</sup> and perinatal deaths due to congenital syphilis at a steady rate of 1/1,000. Similar data were found in this study, showing that the epidemiological situation of congenital syphilis was practically unaltered in the last few years.

Although syphilis is a disease for which simple and low cost diagnostic and therapeutic resources exist, controlling it in pregnancy has proven to be a challenge for health professionals and managers. This is because of the limited interval of the pregnancy in which to carry out diagnosis and treatment; to the difficulty of approaching sexually transmitted diseases, especially during pregnancy; and probably due to the lack of awareness on the part of both the

population and health professionals of the magnitude of this health problem and the damage it can cause to the health of mother and child.

The fact that the highest prevalence of syphilis in pregnancy was found in women from poor socio-economic conditions, those with an obstetric history of risk and those with worse access to health services highlights the greater social and reproductive vulnerability of these women, results also found in other studies,<sup>8,10,11,15</sup> and which make the challenge of controlling syphilis in this population more complex.

The attempt to reconstruct the care pathways of the women diagnosed with syphilis in pregnancy based on the data of a cross-sectional study and from data sought in the SUS information systems is a limitation of this study. By their very nature, cross-sectional studies capture the information available at the moment in which the research is carried out. Interviewing women at the start of their pregnancies may have led to the loss of important data on antenatal care. On the other hand, the records in the information systems consulted did not contain all of the data relevant to the objective of this study, as well as the quality with which they were filled out varying, often being incomplete, as has been described in previous studies.<sup>10,12</sup>

The limits for calculating the prevalence of syphilis in pregnancy and the incidence of congenital syphilis are related to problems in the coverage of the information systems, SIH being the system which performed worst for congenital syphilis. Moreover, it was not possible to obtain SIH data for 2007, which may have meant the loss of cases of congenital syphilis not reported in other systems for this year. The criteria used to identify cases, excluding any in which a doubt existed, may also have resulted in the search being less sensitive. For these reasons, the results should be viewed as conservative, the possibility exists that they underestimate the true seriousness of the situation of incidence of congenital syphilis, rate of vertical transmission and cases of death found.

Innovative strategies are necessary to: ensure pregnant women are caught early so antenatal care can begin in the first trimester; guarantee diagnosis of the disease during the pregnancy as early as possible, so treatment can begin before the 24<sup>th</sup>-28<sup>th</sup> week, when it is most effective for the fetus;<sup>2</sup> and the adequate clinical management of the woman and her sexual partner(s), including counselling and information on the disease and forms of prevention. Thus, treatment may be more likely to be followed and the vulnerability of the women and their partners to this STD reduced.

<sup>f</sup> Secretaria Municipal de Saúde e Defesa Civil. Nascidos vivos no município do Rio de Janeiro, segundo estabelecimento e duração de gestação. Rio de Janeiro; 2007 [cited 2012 Jun 20]. Available from: <http://200.141.78.79/dlstatic/10112/1351630/DLFE-213926.pdf/gestacao2007.pdf>

<sup>g</sup> Secretaria Municipal de Saúde e Defesa Civil. Nascidos vivos no município do Rio de Janeiro, segundo estabelecimento e peso ao nascer. Rio de Janeiro; 2007 [cited 2012 Jun 20]. Available from: <http://200.141.78.79/dlstatic/10112/1351630/DLFE-213929.pdf/peso2007.pdf>

If the disease is to be better controlled, it is fundamental to broaden the reporting of cases of syphilis in pregnancy in Sinam, to search systematically for cases of congenital syphilis in all of the information systems and to improve the completion of the reporting records.

Obligatory investigation of congenital syphilis as a sentinel event, foreseen since the first list drawn up by Rutstein in 1976<sup>9</sup> and established by the Ministry of Health in 1986, seems to us to be an integral part of epidemiological monitoring

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## EDITOR'S COMMENT

Correctly diagnosed and treated, congenital syphilis is an avoidable condition. The persistently high incidence of the disease and the high rates of vertical transmission, even after the considerable increase in coverage of antenatal care and average number of appointments with the establishment of the SUS, indicate the unsatisfactory quality of care.

This study presents useful data for orienting initiatives by health care professionals and managers aimed at improving quality and eliminating congenital syphilis.

Syphilis in pregnancy is associated with skin color, low levels of education, poor socio-economic conditions, obstetric history of risk, starting to receive antenatal care late and an insufficient number of appointments.

Congenital syphilis is associated with inadequate care management, with missed opportunities for both diagnosis and treatment, lack of advice and counselling, lack of treatment for sexual partners and incorrect treatment of diagnosed cases.

The study shows the need for an urgent revision of the procedures adopted and health care professionals taking more responsibility for an avoidable problem.

Profa. Rita de Cássia Barradas Barata  
Scientific editor