Analysis of congenital syphilis cases notification in a reference hospital of Niterói, Rio de Janeiro State, from 2008 to 2015

Análise dos casos de notificação de sífilis congênita em um hospital de referência de Niterói, 2008-2015

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ABSTRACT

Introduction: Congenital Syphilis (CS) is a serious public health problem in Brazil, causing death and other perinatal complications, and it is a good indicator of the quality of prenatal care as well. **Objective:** To know the frequency of CS notification registered in Hospital Universitário Antonio Pedro (HUAP, a teaching hospital of Universidade Federal Fluminense in Niterói, State of Rio de Janeiro), and to analyze a number of data of the Compulsory Notification of Infection Diseases (CNID) reports. **Methods:** Temporal retrospective study on the frequency of CS notifications in HUAP (Epidemiology Surveillance Department) during the period 2008–2015. **Results:** Fifty-six CNIDs were received. Data of CS diagnosis, treatment, symptoms and signs, among others, were analyzed. Four reports (4/56/7.14%) were not considered, as no minimum data for analysis were found. Fifty-two reports were analyzed for 8 years. Only 9 CNIDs (9/52/17.37%) were fully completed. The numbers of deliveries/CS/% in HUAP are as follows: 2008 (389/8/2.05%); 2009 (373/6/1.60%); 2010 (442/4/0.90%); 2011 (508/0/0%); 2012 (521/1/0.19%); 2013 (640/9/1.40%); 2014 (522/14/2.68%); 2015 (422/10/2.37%). The mother's age: 6 pregnant women (11.5%) between 14 and 18 years, 25 (48.1%) between 19 and 25 years, 18 (34.6%) between 26 and 40 years, and 3 (5.8%) unknown age. Prenatal care: 10 pregnant women (19.2%) assisted in HUAP, 34 (65.4%), in basic health units of Niterói and other cities in the State, and 8 (15.4%) not assisted. The maternal syphilis diagnosis took place during the prenatal period in 37 (71.0%) cases, during delivery in 12 (23.0%) cases, and in the postnatal period in 3 (6.0%) cases. Only 11 partners (21.1%) were treated. Forty-eight (92.3%) neonates were properly treated. Cases evolution: 46 (88.5%) remained alive, 3 (5.8%) stillborn, 2 (3.8%) evolved to postpartum death, and 1 (1.9%) abortion. **Conclusion:** CNIDs notification and fulfilling are extremely important to understand CS cases, pregnant women control and prenatal evaluation. As far as Congenital Syphilis is concerned, we realize that the service notification in HUAP has enough space to move forward.

Keywords: syphilis; syphilis, congenital; notice; Epidemiological Surveillance; epidemiology.

RESUMO

Introdução: Sífilis congênita (SC) é um grave problema de saúde pública no Brasil, sendo causa de óbito fetal e outras complicações perinatais, além de ser um bom indicador de qualidade do pré-natal. **Objetivo:** Conhecer a frequência de notificação de SC no Hospital Universitário Antonio Pedro da Universidade Federal Fluminense (HUAP), Niterói, Rio de Janeiro, e analisar vários dados das fichas de notificação compulsória (FNC) dessa doença. **Métodos:** Estudo retrospectivo temporal sobre a frequência de notificação de SC no HUAP (Departamento de Vigilância Epidemiológica) no período de 2008–2015. **Resultados:** Recebemos 56 FNC. Analisamos dados de diagnóstico, tratamento, sinais e sintomas de SC, entre outros. Excluímos quatro fichas (4/56/7,14%) por não conterem dados mínimos para análise. Assim, trabalhamos com 52 FNC do período de oito anos. Apenas 9 (9/52/17,37%) FNC estavam totalmente preenchidas. Os números de partos/SC/% no HUAP foram: 2008 (389/8/2,05%); 2009 (373/6/1,60%); 2010 (442/4/0,90%); 2011 (508/0/0%); 2012 (521/1/0,19%); 2013 (640/9/1,40%); 2014 (522/14/2,68%); 2015 (422/10/2,37%). A idade materna: 6 gestantes (11,5%) entre 14 e 18 anos, 25 (48,1%) entre 19 e 25 anos, 18 (34,6%) entre 26 e 40 anos e 3 (5,8%) ignorada. Sobre pré-natal: 10 (19,2%) gestantes realizaram no HUAP, 34 (65,4%) em unidades básicas de saúde de Niterói e de outras cidades do estado e 8 (15,4%) não realizaram. O diagnóstico da sífilis materna ocorreu durante o pré-natal em 37 (71,0%) casos, no parto em 12 (23,0%) e após o parto em 3 (6,0%). Apenas 11 parceiros (21,1%) foram tratados. Quarenta e oito (92,3%) recém-nascidos foram tratados adequadamente. Evolução dos casos: 46 (88,5%) continuaram vivos, 3 (5,8%) foram natimortos, 2 (3,8%) evoluíram para óbito pós-parto e 1 (1,9%) foi aborto. **Conclusão:** A notificação e o preenchimento completo das FNC de SC são de crucial importância para entendimento dos casos e controle da SC junto às gestantes e avaliação do pré-natal. No que diz respeito à sífilis congênita, nós percebemos que o serviço de notificação do HUAP tem bom espaço para avançar.

Palavras-chave: sífilis; sífilis congênita; notificação; Vigilância Epidemiológica; Epidemiologia.

INTRODUCTION

Congenital syphilis (CS) is an important potentially avoidable cause of fetal death and other adverse perinatal consequences. Its incidence is especially higher in the less developed regions of the world[1-3].

It is a sexually transmitted infection caused by the *Treponema pallidum* bacterium, and can be vertically transmitted from mother to fetus during pregnancy[4]. Syphilis is asymptomatic in many women, and screening pregnant women is essential[5].

Since penicillin was introduced for clinical use in 1943, the number of cases was progressively reduced, reaching not worth considering levels. However, a resurgence of the disease was observed during the last years, not only in under developing countries, but also in the developed ones[6]. Pregnant women are more often infected with syphilis than with HIV[7].

The Pan American Health Organization (PAHO) estimates that, every year, approximately 300,000 pregnant women with syphilis in

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Latin America received no treatment for this disease during prenatal period, and two-thirds of cases in pregnant women result from CS[8].

Early diagnosis and accurate syphilis treatment of pregnant women and their partners are simple and effective measures in order to prevent CS[9,10]. However, a series of social, political, economic and individual factors can make difficult for these population to access these measures, which contributes to the incidence of cases in the more vulnerable one[10].

For the purpose of epidemiological surveillance and banishment of CS in Brazil, the disease became a compulsory notification through the federal government Instruction 542 of December 22, 1986[7]. Obligatory notification and investigation include all detected cases, involving stillborn and miscarriage caused by syphilis. However, such notifications are still below the national reality[11].

OBJECTIVE

Analyze the notification reports of CS and quantify the number of cases in *Hospital Universitário Antônio Pedro* (HUAP) of *Universidade Federal Fluminense*, located in the municipality of Niterói, in the state of Rio de Janeiro.

METHODS

This is a temporal retrospective study on the frequency of CS notifications in newborns assisted at HUAP maternity, located in Niterói, Rio de Janeiro, from 2008 to 2015, with about 4,000 deliveries.

A data survey was carried out on 56 filed Compulsory Notification of Infection Diseases of the Notification Information System (*Sistema de Informação de Agravos de Notificação* – SINAN) during the period mentioned.

The following variables were analyzed: gender of the neonate; maternal age; prenatal location; time of syphilis diagnosis in pregnant women; neonate and mother non-treponemal tests results; treatment of the mother, the partner and the neonate; radiological changes in the long bones' tests; signs and symptoms; and place of birth of the newborn.

A database in Epi Info software was developed for the registration and the analysis of the information collected in the Notification reports.

The present study has been approved by the Ethics and Research Committee of the *Universidade Federal Fluminense*.

RESULTS

Four notifications were excluded from the total of 56 (4/56/7,14%) due to the lack of relevant information in the variables analyzed, such as partner treatment, evolution of the case, maternal and neonate non-treponemal test result, long bone X-rays result and presence of signs and symptoms. All reports were available in the Epidemiological Surveillance Department of HUAP, although these files did not contain enough information for the analysis of the problem.

The study considered 52 reports from 2008 to 2015, after the exclusion of 4 Notifications of SINAN.

Only 9 notifications (9/52/17.37%) were completely filled out; the items "education" and "mother's occupation" were not informed in the remaining reports.

A reduction in the number of notifications from 2008 to 2012 (8 cases reduced to 1, 0 reported cases in 2011) was observed, despite coinciding with a period of increase in births' number at the *Hospital Universitário* (389 deliveries in 2008 and 521 in 2012), followed by an increase of notifications from 2013 (9 cases). The largest number of reported cases occurred in 2014 (26.9%: 14); however, there is a gradual reduction in births in the period (640 births in 2013, 522 in 2014, and 422 in 2015) (**Table 1**).

Concerning maternal data: age ranged from 14 to 40 years old, 6 pregnant women (11.5%) were between 14 and 18 years old, 25 (48.1%) were between 19 and 25 years (34.6%), 18 were between 26 and 40 years, and 3 of them had (5.8%) unknown age. With regard to prenatal care, 10 pregnant women (19.2%) were assisted in HUAP, 34 (65.4%) were treated at other health units, and 8 (15.4%) were not assisted. The diagnosis of maternal syphilis occurred during the prenatal period in 37 (71.0%) cases, during childbirth in 12 (23.0%) cases and after delivery in 3 ones (6.0%).

The result of the non-treponemal testing of pregnant women during childbirth was reagent in 46 cases (88.4%), non-reagent in 2 (4.0%) and ignored in 4 (7.6%). As for treatment, 28 pregnant women (53.8%) were correctly treated and 24 (46.2%) were inappropriately treated (**Table 2**).

Regarding the partner treatment, it was observed that 11 of them (21.1%) were treated and 41 (78.9%) of them were not (**Table 3**).

Concerning the data of newborns: it was noted that 26 (50.0%) of them were male and 26 (50.0%) were female, 42 (80.8%) were born in HUAP and 10 (19.2%) in other health units. As for the result of the non-treponemal test, it was reagent in 43 newborns (82.5%), non-reagent in 6 (11.5%), and 3 (6.0%) of them were not tested. Three (5.8%) neonates did not receive treatment (due to miscarriages and stillbirths), 1 (1.9%) unknown information, 48 (92.3%) were treated properly, and 44 (91.7%) of these used crystalline penicillin and 4 (8.3%) penicillin G procaine; penicillin G benzathine was not used in any neonate (**Table 4**). After verifying the presence of signs and symptoms, it was observed that 36 newborns (69.5%) were asymptomatic, 7 (13.4%) manifested icterus and 3 (5.7%) osteochondrosis, 2 (3.8%) of them had skin lesions, 2 (3.8%) had splenomegaly, 1 (1.9%) of them had anemia, and 1 (1.9%) of them had bloody mucus rhinitis. Regarding long bone X-rays, 5 newborns (9.6%) showed changes, 36 (69.0%) did not show alterations, 4 (8.0%) were not submitted to X-rays, and results were unknown for 7 (13.4%) of them (**Table 5**).

Table 1 – Number of deliveries x cases per year (2008 to 2015).

Year	Number of deliveries	Number of cases (%)	Number of cases
	In HUAP*	HUAP	Niterói
2008	389	8 (2.056)	45
2009	373	6 (1.60)	63
2010	442	4 (0.90)	46
2011	508	0 (0.00)	56
2012	521	1 (0.19)	67
2013	640	9 (1.40)	74
2014	522	14 (2.68)	90
2015	422	10 (2.37)	135
Total	3,817	52 (1.40)	576

*HUAP: Hospital Universitário Antônio Pedro.

In relation to the evolution of cases, 46 newborns (88.5%) remained alive, 3 (5.8%) were stillborn, 2 (3.8%) evolved to death, and 1 (1.9%) resulted in abortion due to the disease in question.

DISCUSSION

In Brazil, from 1998 to 2014, 104,853 cases of CS in children under one year of age were notified to SINAN, most of them located in the Southeast and Northeast. There has been a progressive increase in the incidence rate of the disease in the last 10 years: in 2004 the infection rate was of 1.7 case for every 1,000 live births. In 2013, this rate reached 4.7 cases, *i.e.*, an increase in 100% [12].

Table 2 – Epidemiologic analysis of maternal data.

Maternal data	Frequency	
	Relative (%)	Absolute
Age (years)		
14-18	11.5	6
19-25	48.1	25
26-40	34.5	18
Unknown	5.8	3
Prenatal		
Not performed	15.4	8
In HUAP	19.2	10
Other health unit	65.4	34
Time of diagnosis		
Prenatal	71.0	37
Delivery	23.0	12
Postpartum	6.0	3
VDRL at delivery		
Reagent	88.4	46
Non-reagent	4.0	2
Unknown	7.6	4
Treatment		
Appropriate	53.8	28
Inappropriate	46.2	24

HUAP: Hospital Universitário Antônio Pedro; VDRL: Venereal Disease Research Laboratory.

Table 3 – Comparative analysis of data across prenatal locations.

Maternal/ partners data	Prenatal location			
	In HUAP		Other Health Unit	
	Relative (%)	Absolute	Relative (%)	Absolute
Maternal syphilis diagnosis				
Prenatal	100.0	10	79.4	27
Delivery	0.0	0	17.6	6
Postpartum	0.0	0	3	1
Maternal treatment				
Appropriate	40.0	4	58.8	20
Inappropriate	60.0	6	41.2	14
Partner treatment				
Yes	20.0	2	23.5	8
No	80.0	8	76.5	26

HUAP: Hospital Universitário Antônio Pedro.

The present study also observed a growth of the notification cases in the last years, but it could not determine the reason of the reduction of cases notified from 2008 to 2012, which shows rates of 0.00% (2011) and 0.19% (2012). This fact does not match the reality of the city of Niterói, since there were cases of morbidity reductions in the studied years. The numbers concerning HUAP represent 9.0% of the total reported cases for that city.

The increasing number of these notifications does not occur only in Brazil, but all over the world, since syphilis affects 12 million people annually, and 90.0% of these new adult cases occur in

Table 4 – Epidemiologic analysis of neonate data.

Neonate data	Frequency	
	Relative (%)	Absolute
Sex		
Male	50.0	26
Female	50.0	26
Place of birth		
HUAP	88.8	42
Other health unit	19.2	10
VDRL		
Reagent	82.5	43
Non-reagent	11.5	6
Not performed	6.0	3
Treatment		
Not performed	5.8	3
Performed	92.3	48
Unknown	1.9	1
Medication		
Crystalline penicillin	91.7	44
Penicillin G procaine	8.3	4
Penicillin G benzathine	0	0

HUAP: Hospital Universitário Antônio Pedro; VDRL: Venereal Disease Research Laboratory.

Table 5 – Analysis of neonates' signs and symptoms.

Neonates' data	Frequency	
	Relative (%)	Absolute
Asymptomatic	69.5	36
Icterus	13.4	7
Osteochondritis	5.7	3
Splenomegaly	3.8	2
Skin lesions	3.8	2
Anemia	1.9	1
Bloody mucus rhinitis	1.9	1
Long bones X-rays		
Alterations	9.6	5
No alteration	69.0	36
Not performed	8.0	4
Unknown	13.4	7
Evolution		
Alive	88.5	46
Stillborn	5.8	3
Death	3.8	2
Abortion	1.9	1

developing countries. In Brazil, we estimate that the prevalence of syphilis in pregnant women varies between 1.4 and 2.8%, with a vertical transmission rate of 25.0%[13].

Since the consequences of CS are extremely serious, such as miscarriage, stillbirth, premature birth, low weight, blindness, deafness, mental retardation, hydrocephalus, the adequate prenatal care is of vital importance to the early diagnosis of maternal syphilis and its proper treatment[4,11-15].

The present study also observed that, although most mothers have received prenatal care, this treatment was not considered fully effective, since the disease and many of its serious consequences were diagnosed, though not avoided. It should be noted that most of these pregnant women are from the city of Niterói, which has a Human Development Index (HDI) of 0.837 — the highest HDI in the state of Rio de Janeiro —, and a Family Health Strategy (FHS) that ranged from 25.8 to 26.1% of the population involved, in 2008 and 2014, respectively[16,17].

The Centers for Disease Control and Prevention (CDCP) of the United States of America recommends serological screening in early pregnancy. In populations in which the prevalence of syphilis is high or in high-risk patients, screening should be repeated in the third quarter and at the time of delivery.[14,18,19] According to the Ministry of Health of Brazil, screening should be carried out in the first prenatal appointment, preferentially in the first trimester of pregnancy, in the beginning of the third trimester (28 weeks) and at the time of delivery, regardless of previous examinations' results[20,21]. In some populations, syphilis detection at the time of delivery is quite common, especially if the woman was not properly assisted during the prenatal period[14,18,19]. In cases studied in HUAP, 23.0% (12 cases) of diagnosis at the time of delivery were observed, showing the need for an improvement in the monitoring of pregnant women, since 50.0% of them (6 pregnant women) were not assisted during prenatal care in HUAP and 50.0% (6 pregnant women) did not receive prenatal care.

The effectiveness of treatment and the manifestations of CS are dependent on many variables, including maternal syphilis stage, gestational age at time of infection, fetal infection severity (degree of maternal spirocheatemia), adequacy and timing of maternal treatment and fetal immune response[22].

The therapeutic failure is usually associated with the use of inadequate doses of penicillin to the clinical stage, when treatment is done in the later stages of pregnancy, with the disuse of penicillin or when the partner is not treated, and pregnant women is considered inappropriately treated[5,18].

The present study evidences therapeutic failure, since most partners did not receive any treatment (41/52/78.9%) and a relevant amount of pregnant women were inadequately treated (24/52/46.2%), including those held in prenatal HUAP. It is essential that pregnant women with syphilis are orientated regarding the illness and its serious consequences, and the importance of an adequate treatment. It is also of utmost importance the inclusion of the partner's treatment, once that despite the correct treatment of women during pregnancy, they may suffer reinfection and then perpetuate the risk of new cases of CS[15].

The study showed another very serious character affecting a significant portion of the population of the metropolitan region II of Niterói, which covers the cities of Niterói, Itaboraí, Maricá, Rio Bonito, São Gonçalo, Silva Jardim, and Tanguá: the occurrence of a disturbing rate (11.5%) of the worst outcomes caused by the disease — abortion, stillbirths and neonatal death. During this period the occurrence of 40 cases of miscarriage and 29 stillbirths by the disease was observed in Niterói[23]. These cases and their mentioned consequences, reported in HUAP, correspond to 2.5 and 10.3%, respectively, of cases occurred throughout the municipality.

Limitations

This retrospective design of this study is one of its limitations, as it makes difficult the analysis of some of its factors, such as maternal behavioral characteristics, data of some mothers and their partners' treatment, and reasons for non-adherence to treatment. The fact that the reports are often filled out when the mother has already been released from the hospital and her data are sought in her medical record (which does not contain all the information) was an additional limitation, since some forms were not completely filled out.

CONCLUSION

The notification and the completion of the records need to be improved, as only a few forms were completely filled out and some did not contain enough data for a minimal analysis. An adequate completion is fundamental to identify gaps in the monitoring of pregnant women and their partners, aiming to reduce the incidence of the disease.

It is also possible to verify that prenatal of pregnant women in the region assisted by HUAP has to be analyzed, as a considerable number of these women were diagnosed with maternal syphilis during the prenatal period and the Congenital Syphilis (CS) and its consequences were not avoided. Such data is extremely alarming and shows the need for improvements in maternal health care.

It is necessary that all hospital teams become aware of the relevance of this assistance in order to create more accurate mechanisms to control the CS notifications, and carry out specific training for the involved people, such as doctors and nurses. The use of the information derived from the surveillance can benefit and help the actions of health care programs and improve the rate of CS.

Conflict of interests

The authors declare no conflict of interests.

REFERENCES

1. Nascimento MI, Cunha AA, Guimarães EV, Alvarez FS, Oliveira SRSM, Bôas ELV [Internet]. Gestações complicadas por sífilis materna e óbito fetal. Rev Bras Ginecol Obstet. 2012[cited 2016 Dec 1];34(2):56-62. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0100-72032012000200003&lng=en&nrm=iso
2. Domingues RMSM, Saracen V, Hartz ZMA, Leal MC [Internet]. Sífilis congênita: evento sentinela da qualidade da assistência pré-natal. Rev Saúde Pública. 2013 [cited 2016 Jun 1];47(1):147-57. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0034-89102013000100019&lng=en&nrm=iso
3. Serafim AS, Moretti GP, Serafim GS, Niero CV, Rosa MI, Pires MMS, et al [Internet]. Incidence of congenital syphilis in the South Region of Brazil. Rev Soc Bras Med Trop. 2014 [cited 2016 Dec 2];47(2):170-8. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0037-86822014000200170&lng=en&nrm=iso

4. Domingues RMSM, Szwarcwalds CL, Junior PRBS, Leal MC [Internet]. Prevalence of syphilis in pregnancy and prenatal syphilis testing in Brazil: Birth in Brazil study. Rev Saúde Pública. 2014 [cited 2016 Dec 2];48(5):766-74. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0034-89102014000500766&lng=en
5. Guinsburg R, Santos AMN [Internet]. Critérios Diagnósticos e Tratamento da Sífilis Congênita. Documento Científico. 2010 [cited 2016 Oct 24]. Available from: http://www.sbp.com.br/pdfs/tratamento_sifilis.pdf
6. Araujo EC, Costa KSG, Silva RS, Azevedo VNG, Lima faz [Internet]. Importância do pré-natal na prevenção da Sífilis Congênita. Rev Para Med. 2006 [cited 2016 Dec 2];20(1):47-51. Available from: http://scielo.iec.pa.gov.br/scielo.php?script=sci_arttext&pid=S0101-59072006000100008&lng=pt
7. Galvão TF, Pereira MG, Silva MT, Fescina R, Serruya S, Newman LM, et al [Internet]. Safety of Benzathine Penicillin for Preventing Congenital Syphilis: A Systematic Review. PLoS One. 2013 [cited 2016 Dec 2];8(2):e56463. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3578834/
8. Nonato SM, Melo APS, Guimaraes MDC [Internet]. Sífilis na gestação e fatores associados à sífilis congênita em Belo Horizonte-MG, 2010-2013. Epidemiol Serv Saúde. 2015 [cited 2016 Dec 2];24(4):681-94. Available from: http://scielo.iec.pa.gov.br/scielo.php?script=sci_arttext&pid=S1679-49742015000400010&lng=pt
9. Azuma MA, Kubota M, Hosokawa S, Kaneshige M, Yasuda N, Sato N, et al [Internet]. Republication: Two Premature Neonates of Congenital Syphilis with Severe Clinical Manifestations. Tropical Medicine and Health. 2015 [cited 2016 Dec 2];43(3):165-70. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4593778/
10. Brasil [Internet] Ministério da Saúde. Protocolo de Investigação de Transmissão Vertical, Brasil. 2014 [cited 2016 Nov 20]. Available from: http://www.aids.gov.br/publicacao/2014/protocolo-de-investigacao-de-transmissao-vertical
11. Bowen V, Su J, Torrone E, Kidd S, Weinstock H [Internet]. Increase in incidence of congenital syphilis. 2015 [cited 2016 Dec 2];64(44):1241-5. Available from: https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6444a3.htm
12. Brasil [Internet]. Ministério da Saúde. Boletim epidemiológico HIV Aids 2015. 2015 [cited 2016 Nov 25]. Available from: http://www.aids.gov.br/sites/default/files/anexos/publicacao/2015/58534/boletim_aids_11_2015_web_pdf_19105.pdf
13. França ISX, Batista JDL, Coura AS, Oliveira CF, Araújo AKF, Sousa FS [Internet]. Fatores Associados a Notificação da Sífilis Congênita: um indicador de qualidade da assistência pré-natal. Rev Rene. 2015 [cited 2015 Dec 2];16(3):374-81. Available from: http://www.periodicos.ufc.br/index.php/rene/article/view/2805/2174
14. Ensari T, Kirbas A, Erdinc ASO, Saygan SG, Erkaya S, Uygur D, et al [Internet]. An eight-year retrospective analysis of antenatal screening results for syphilis: is it still cost effective. J Infect Dev Ctries. 2015 [cited 2016 Dec 2];9(9):1011-5. Available from: https://www.ncbi.nlm.nih.gov/pubmed/26409743
15. Albuquerque GMA, Chaves EMC, Sampaio RLR, Dias KCF, Patrocínio MCA, Vasconcelos SMM [Internet]. Complicações da Sífilis congênita: Uma revisão da literatura. 2014 [cited 2016 Dec 2];50(6):254-8. Available from: http://www.moreirajr.com.br/revistas.asp?fase=r003&id_materia=5822
16. Instituto Brasileiro de Geografia e Estatística [Internet]. Índice de Desenvolvimento Humano Municipal. [cited 2017 Jan 10]. Available from: http://www.cidades.ibge.gov.br/xtras/temas.php?lang=&codmun=330330&idtema=118&search=rio-de-janeiro|niteroi|%C3%8Dndice-de-desenvolvimento-humano-municipal-idhm
17. Sousa CMB. A trajetória de implementação do Programa Médico de Família em Niterói: Continuidades e Mudanças nos anos 2000. Rio de Janeiro. Dissertação [mestrado em Ciências na Área de Saúde Pública]. Rio de Janeiro: Escola Nacional de Saúde Pública Sérgio Arouca; 2015.
18. Romanelli RMC, Carellos EVM, Souza HCS, Paula AT, Rodrigues LV, Oliveira WM, et al [Internet]. Management of Syphilis in pregnant women and their newborns: is still a problem. J Bras Doenças Sex Transm. 2015 [cited 2016 Dec 2];27(1-2):35-9. Available from: http://www.dst.uff.br/revista27-1-2-2015/DST_v27n1-2_35-39_IN.pdf
19. Lago EG [Internet]. Current Perspectives on Prevention of Mother-to-Child Transmission of Syphilis. Cureus. 2016 [cited 2016 Dec 2];8(3):e525. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4829408/pdf/cureus-0008-000000000525.pdf
20. Brasil [Internet]. Ministério da Saúde. Secretaria de Vigilância em Saúde. Departamento de DST, Aids e Hepatites Virais. Protocolo clínico e diretrizes terapêuticas para prevenção da transmissão vertical de HIV, sífilis e hepatites virais. Brasília: Ministério da Saúde; 2015. [cited 2016 Dec 11]. Available from: http://www.aids.gov.br/sites/default/files/anexos/publicacao/2015/58572/pcdt_transmissao_vertical_miolo_10_08_pdf_5557e.pdf
21. Lorenzi DRS, Fiaminghi LC, Artico GR [Internet]. Transmissão vertical da sífilis: Prevenção, diagnóstico e tratamento. Femina. 2009 [cited 2016 Dec 11];37(2):83-90. Available from: http://www.febrasgo.org.br/site/wp-content/uploads/2013/05/Feminav37n2p83-90.pdf
22. Saloojee H, Velaphi S, Goga Y, Afadapa N, Steen R, Lincetto O [Internet]. The prevention and management of congenital syphilis: an overview and recommendations. Bull World Health Organ. 2004 [cited 2016 Dec 11];82:424-30. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2622853/pdf/15356934.pdf
23. Brasil [Internet]. Secretaria de Vigilância em Saúde. Departamento de DST, Aids e Hepatites Virais. Indicadores e dados básicos da sífilis nos municípios brasileiros. [cited 2017 Jan 13]. Available from: http://indicadoressifilis.aids.gov.br/

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