

Cases of syphilis in pregnant women: an epidemiological perspective in Cáceres-MT

Casos de sífilis em gestantes: uma perspectiva epidemiológica em Cáceres-MT

Casos de sífilis en embarazadas: una perspectiva epidemiológica en Cáceres-MT

RESUMO

Objetivo: Analisar a evolução epidemiológica da sífilis em gestantes em Cáceres/MT. Metodologia: Uma retrospectiva dos casos de sífilis em gestantes foi realizada no período de 2013 a julho/2023, com registros do sistema de vigilância epidemiológica municipal. Resultados: Foram notificados 315 novos casos no município. A incidência passou de 10 casos em 2013 para 51 em 2022. Em 2019 houve a maior incidência (16,5%), com tendência de crescimento entre 2013 e 2019, no entanto, comparando entre os anos, ocorreram decréscimo do número de novos casos em relação ao ano anterior, nos anos de 2016, 2020 e 2021. A ocorrência foi maior na faixa etária de 20 a 24 anos, representando 34,9%, gestantes de cor parda, são 78,7% e ocupação como dona de casa de 61,3%. Conclusão: Dados atualizados podem contribuir no entendimento da doença, implementar estratégias eficazes de prevenção, diagnóstico precoce e tratamento eficaz, direcionando políticas de saúde à proteção da saúde materno-infantil em Cáceres/MT.

DESCRIPTORIOS: Sífilis Adquirida; Infecções Sexualmente Transmissíveis; Gestação; Pré-natal; Vigilância em Saúde.

ABSTRACT

Objective: To identify in the scientific literature the factors that interfere with vaccination coverage in the Unified Health System. Method: This is an integrative literature review carried out in the SciELO and BVS libraries with emphasis on articles indexed in the BDNF, LILACS, MEDLINE databases, between the years 2016 to 2021. Results: The sample resulted in a total of 22 articles, through which it was possible to identify a total of 21 factors with a predominance of vaccine hesitation, low education, Fake News, shortage of inputs, difficulty with information system, among others. Final considerations: It is concluded that these obstacles can trigger unfavorable outcomes regarding the effectiveness of the National Immunization Program and requires constant analysis of how these factors interfere in the effectiveness of vaccine coverage according to the situational peculiarity of the field involved and its possible conditions.

DESCRIPTORS: Immunization. Vaccine Coverage. Immunization Programs.

RESUMEN

Objetivo: Analizar la evolución epidemiológica de la sífilis en gestantes en Cáceres/MT. Metodología: Se realizó un estudio retrospectivo de los casos de sífilis en gestantes desde 2013 hasta julio de 2023, a partir de los registros del sistema de vigilancia epidemiológica municipal. Resultados: Se notificaron 315 nuevos casos en el municipio. La incidencia pasó de 10 casos en 2013 a 51 en 2022. En 2019 se presentó la mayor incidencia (16,5%), con una tendencia ascendente entre 2013 y 2019, sin embargo, comparando los años, se presentaron descensos en el número de casos nuevos con respecto al año anterior en 2016, 2020 y 2021. La ocurrencia fue mayor en el grupo de edad de 20 a 24 años, representando el 34,9%, embarazadas morenas, 78,7% y ocupación como ama de casa 61,3%. Conclusión: Los datos actualizados pueden contribuir a la comprensión de la enfermedad, implementar estrategias eficaces de prevención, diagnóstico precoz y tratamiento eficaz, orientando las políticas de salud para proteger la salud materno-infantil en Cáceres/MT.

DESCRIPTORIOS: Sífilis Adquirida; Infecciones de Transmisión Sexual; Embarazo; Control Prenatal; Vigilancia Sanitaria.

RECEBIDO EM: 31/10/2023 APROVADO EM: 12/12/2023

How cited: Moraes LO, Borges VKM, Santos TM, Nascimento M. Cases of syphilis in pregnant women: an epidemiological perspective in Cáceres-MT. Saúde Coletiva (Edição Brasileira) [Internet]. 2024 [acesso ano mês dia];14(89):13192-13203. Disponível em:

DOI: 10.36489/saudecoletiva.2024v14i89p13192-13203

Artigo Original EN

Letícia de O. Moraes, Vitória K.M. Borges, Thais M. dos Santos, Maraisa N
Cases of syphilis in pregnant women: an epidemiological perspective in Cáceres-MT

ID **Letícia de Oliveira Moraes**
Acadêmica de medicina do Centro Universitário do Pantanal – UNIPANTANAL.
ORCID: 0009-0004-1204-7452

ID **Vitória Karoline Magalhães Borges**
Acadêmica de medicina do Centro Universitário do Pantanal – UNIPANTANAL.
ORCID: 0009-0004-3912-0680

ID **Thais Martins dos Santos**
Docente do curso de Medicina no Centro Universitário Estácio do Pantanal – UNIPANTANAL. Mestra em Ciências Ambientais pela Universidade do Estado de Mato Grosso – UNEMAT.
ORCID: 0000-0002-4957-9995

ID **Maraisa do Nascimento**
Docente do curso de Medicina no Centro Universitário Estácio do Pantanal – UNIPANTANAL. Mestra em Tecnologia em Saúde pela Pontifícia Universidade Católica do Paraná – PUCPR.
ORCID: 0000-0001-5482-0707

INTRODUCTION

Acquired syphilis is an infectious disease of great relevance to public health, especially in pregnant women, as it can result in adverse complications for both the mother and the fetus. In recent years, there has been a significant increase in the number of people infected with acquired syphilis in Brazil, as well as worldwide. According to the World Health Organization (WHO), it is believed that there are 12 million people currently suffering from the disease.¹

This is a systemic disease, exclusive to humans, whose etiological agent is *Treponema pallidum*, a spiral-shaped, Gram-negative bacterium that has low resistance to the environment.¹ Syphilis infection is divided into stages based on clinical findings (primary, secondary, recent latent, late latent and tertiary).²

Its transmission can occur through unprotected sex without a condom with an infected person, through contact with infected blood or, vertically, during pregnancy or childbirth, with vertical transmission being a significant concern due to the potential to cause serious harm to the fetus. Therefore, early diagnosis of syphilis during pregnancy is essential, as well as adequate treatment to prevent transmission to the fetus, protecting the health of the mo-

ther and the newborn. Treatment with intramuscular benzathine penicillin G is commonly used to treat syphilis during pregnancy³, due to its effectiveness at different stages of the infection. It is essential that syphilis treatment during pregnancy is complete and administered at least 30 days before delivery.³

It is noteworthy that the transmission of syphilis during pregnancy can occur at any stage of the disease and at any gestational age. The probability of transmission during pregnancy is higher in cases of primary or secondary syphilis. As pregnancy progresses, the likelihood of congenital infection increases due to the greater permeability of the placental barrier. However, the intrauterine transmission rate can be high, reaching up to 80%. The risk to the fetus is related to the presence of maternal treponema, which means that the stage of infection in the mother also affects the risk of transmission.¹ At the end of pregnancy, maternal syphilis can cause more significant fetal damage, even if the fetus has developed greater immunological competence at this stage.⁴

Gestational syphilis can cause serious impacts on fetal and neonatal health, highlighting that these conditions can lead to serious fetal outcomes, including fetal death, stillbirth, prematurity and low birth weight. Furthermore, congenital syphilis is identified as one of the

main causes of morbidity and mortality among newborns in many settings, contributing globally to more than 212,000 fetal deaths per year.⁵ Raising awareness, carrying out screening tests during prenatal care and timely treatment are crucial measures to combat gestational and congenital syphilis, reducing morbidity and mortality in mothers and newborns.

In 1986, congenital syphilis was included in the list of notifiable diseases in Brazil. This means that all cases of syphilis in newborns, stillbirths or babies of women with syphilis must be reported to health authorities, allowing for better monitoring and control of the disease.⁶

In 2011, the Brazilian Ministry of Health launched the "Rede Cegonha" as a strategy to improve the quality of maternal and neonatal care offered by the Unified Health System (SUS). Rede Cegonha aims to humanize care for pregnant women, ensuring support during prenatal care, childbirth and the postpartum period. One of Rede Cegonha's responsibilities is to carry out tests to diagnose sexually transmitted infections, including syphilis, during prenatal care. It is recommended that the Venereal Disease Research Laboratory (VDRL) test and/or rapid tests be performed at the first prenatal visit and again at the beginning of the third tri-

mester of pregnancy.⁶

These measures aim to prevent the transmission of syphilis to the fetus and guarantee the health of both the mother and the newborn, demonstrating the importance of early diagnosis and adequate treatment during pregnancy in the context of public health in Brazil. An increase in Brazilian notification rates of syphilis in pregnant women has been observed. This may be triggered, in part, by the improvement of the epidemiological surveillance system and improvement in diagnosis, with the expansion of the distribution of rapid tests.⁷

In the period from 2013 to July 2023, 9,067 cases of syphilis were reported in pregnant women in Brazil, with 290 cases in the first year of analysis and 1,229 cases in 2023, an increase of more than 400%. The growth in the incidence of syphilis cases in pregnant women resulted in an increase in the number of cases of congenital syphilis, which increased from 193 in 2013 to 254 in 2023. Between January and June 2022, 122 thousand new cases of syphilis were recorded in Brazil. According to the Ministry of Health, between 2013 and July 2023, 79.5 thousand cases of acquired syphilis were diagnosed, 31 thousand records in pregnant women and 12 thousand occurrences of congenital syphilis.^{8,9}

OBJECTIVES

To analyze the epidemiological evolution of gestational syphilis in the municipality of Cáceres, Mato Grosso, from 2013 to 2023.

METHOD

Cross-sectional ecological study, carried out using secondary data on reported cases of syphilis in pregnant women between 2013 and July 2023, in the municipality of Cáceres, located in the State of Mato Grosso.

The data were obtained from the

Information Systems Data Repository of the State Department of Health of Mato Grosso, which are in the public domain and are available online and free of charge on the website of the State Department of Health of Mato Grosso. After collecting and obtaining the data, the distribution of absolute and relative frequencies was performed for descriptive statistical analysis, conducted using IBM SPSS 25 statistical software.

The analysis variables included the number of annual cases of gestational syphilis, the gestational trimester of diagnosis, the age of the pregnant women, race, year of diagnosis, occupation of the pregnant women and the treatment administered. To this end, the variables age and gestational trimester were categorized into: a) age group: 15 to 19 years old; 20 to 24 years old; 25 to 29 years old; 30 to 34 years old; 35 to 39 years old; 40 to 44 years old and over 45 years old) and; b) gestational trimester: 1st trimester; 2nd quarter; 3rd trimester and gestational age ignored. Furthermore, reported cases and detection rates per year were also analyzed.

Considering that this study made use of secondary data, which are available online and free of charge, it was not necessary to submit it to the Research Ethics Committee, taking into consid-

eration resolution no. 510, of April 7th, 2016, of the National Health Council.

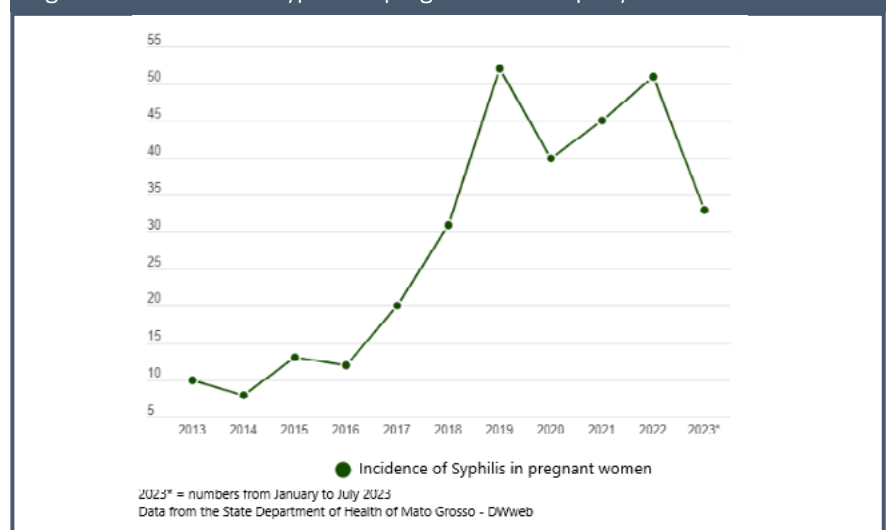
RESULTS

During the period investigated, 315 new cases of syphilis were reported in pregnant women in the municipality of Cáceres-MT. The incidence rate of syphilis in pregnant women increased from 10 cases in 2013 to 51 cases in 2022.

In the historical analysis, 2019 had the highest incidence of the disease, with 16.5% of cases reported in 10 years (Figure 1). A general growth trend is observed between 2016 and 2019, however, comparing the incidence of the disease between the same years, it is noted that there were fluctuations with a decrease in the number of new cases compared to the previous year, in the years 2016, 2020 and 2021. It is important to consider that the decrease in the years in which the SARS-COV2 pandemic took hold may have contributed to the underreporting of syphilis cases in the municipality.

Furthermore, the data analyzed allowed us to identify the highest prevalence of cases in the 20 to 24 age group, representing 110 reported cases, around 34.9% (Figure 2).

Figure 1 - Incidence of Syphilis in pregnant women per year in Cáceres-MT



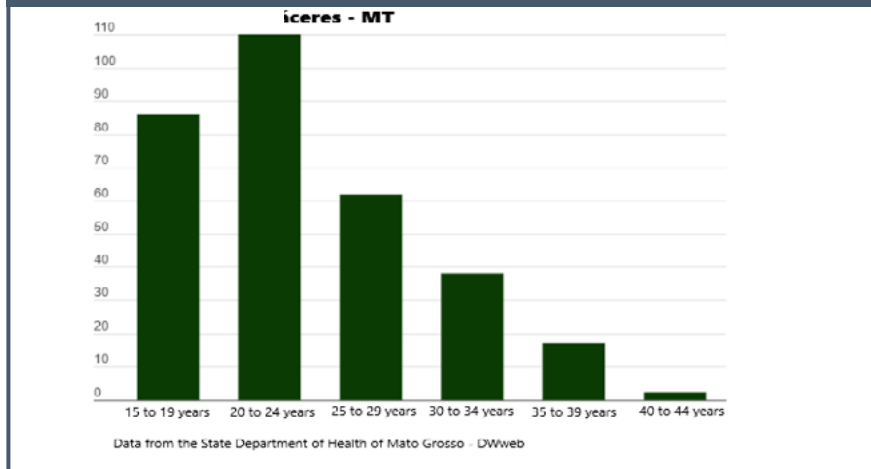
The data revealed that the occurrence of cases was higher in pregnant women of mixed color, totaling 248 cases in the last nine years, which represents 78.7% of the total registered cases. The majority (42.9%) of pregnant women were treated with Benzathine Penicillin G 7,200,000 IU, followed by Benzathine Penicillin G 2,400,000 IU (31.7%) and Benzathine Penicillin G 4,800,000 IU (7%). Around 13% of pregnant women did not undergo treatment for syphilis and 61.3% of partners did not undergo treatment concomitantly. Regarding the pregnant woman's professional occupation, the majority are housewives (61.3%).

DISCUSSION

An increase in the prevalence of Syphilis in pregnant women was observed in the city of Cáceres-MT, as has been noted in other regions of the country and the world.¹ Women with syphilis are mostly mixed-race, young, living in urban areas and who do not have a professional relationship. The detection rate of syphilis in pregnant women in Brazil, from 2013 to 2021, for comparison, increased approximately three times, from 20,911 to 61,402 cases¹⁰, a lower result than that found in this research where the detection rate of syphilis in pregnant women in the period from 2013 to 2023 had a 5-fold increase in the number of notifications.

An increasing trend in syphilis cases in pregnant women was observed over the years in Cáceres-MT. From January 2013 to July 2023, 315 cases of syphilis were diagnosed in pregnant women, with an average of 33.5 cases identified per year. In 2019, there was the highest number of diagnoses, reaching 16.5% of cases reported in 10 years, followed by 2022 (16.2%) and 2021 (14.3%). This fact can be attributed to a series of factors, such as an increase in risky sexual practices, lack of awareness, insufficient access to medical care or failures in prevention and screening programs.¹¹

Figura 2 - Incidência de sífilis em gestantes por faixa etária em Cáceres- MT



The distribution by age group, predominantly 20 to 24 years old (34.4% of total cases), shows that young pregnant women are more vulnerable to the disease, partly due to risky behavior, in recent years, especially among young people, there has been a decrease in adherence to the use of contraceptive methods, which has reflected in an increase in other sexually transmitted infections. Furthermore, multiple sexual partners, the use of recreational drugs and a lack of sexual education, which in some places may be inadequate or non-existent, result in an increase in syphilis rates in general, due to limited knowledge about safe sex practices and prevention of sexually transmitted diseases.

Furthermore, younger people may face social vulnerabilities that make them more susceptible to infections. Including lack of access to healthcare services, lack of health insurance, financial and housing instability, and other factors that make it difficult to access adequate medical care.¹²

Observation by gestational trimester showed that most cases were diagnosed in the third trimester (53.7%), which may be related to standard screening, since prenatal care requires that VDRL tests be performed in both the first and second trimesters of pregnancy. The late detection of syphilis can also be explained by its detection window, in

which the incubation period of syphilis (time between infection and the onset of symptoms) can be variable, taking some time for the infection to be detectable in laboratory tests.

Therefore, tests performed in the first trimester may not detect infection if exposure to the bacteria that causes syphilis occurred shortly before pregnancy or during early pregnancy. Therefore, a second test in the third trimester may be performed to ensure that pregnant women do not develop syphilis during pregnancy.¹³

It is common for syphilis to present no symptoms in its early stages, which means that people may be infected without realizing it, leading to the continued spread of the disease, especially if they do not undergo regular examinations to detect sexually transmitted diseases.¹² The possibility of a pregnant woman being exposed to the risk of contracting syphilis during pregnancy, due to risky behavior or sexual partners with the infection without their knowledge of it, is significant.¹³ In these cases, the infection may not be detected until later in pregnancy. Furthermore, the detection of syphilis mostly in the third trimester highlights the need for better early monitoring of pregnant women.

The treatment analysis also indicated the demand for improvements in the effectiveness of therapeutic inter-

ventions and post-treatment follow-up, since the rate of partners not being treated for syphilis at the same time as the pregnant woman is a significant concern in terms of public health, only 30.5% of partners underwent treatment correctly. Effective treatment of syphilis in pregnant women and their partners is essential to prevent transmission of the disease to the fetus, which can result in serious complications, including congenital syphilis.¹³

In this case, the Ministry of Health (MH) recommends, firstly, that partners be summoned to attend health services through the pregnant woman. If the partner does not respond to this call within a period of 15 days, it is advisable to communicate through correspondence that ensures the confidentiality of the information. And, when all available resources have been exhausted, the guideline is to carry out an active search. Furthermore, the Ministry of Health recommends the inclusion of partners in prenatal consultations to ensure the interruption of the transmission chain.^{13,14,15}

The fact that less than half of the partners performed the treatment correctly indicates a need for improvement in awareness efforts, education and access to health services. Some of the reasons why partners may not carry out treatment adequately include lack of access to health care, lack of knowledge about the importance of treatment, and, in some cases, social or economic barriers.¹¹

One explanation for the high prevalence of untreated partners considers men's social and cultural behavior in relation to health, since many of them perceive health services, especially prenatal care, as it predominantly targets women, resulting in their reluctance to seek care. Furthermore, research suggests that this situation may be influenced by pregnant women's fear of sharing the diagnosis with their partners, due to feelings of guilt, fear of being held responsible for the infection or even

uncertainty regarding the fidelity of their partners. These factors can further inhibit seeking medical care and treatment.¹¹

It is important to provide clear and accessible information about syphilis, its risks, the consequences of not treating it and the importance of treating partners, ensuring that they have easy access to health services where they can be tested and treated. Implementing partner tracking and notification programs, in which partners of individuals diagnosed with syphilis are contacted and encouraged to get tested and receive treatment if necessary. Work to reduce the stigma associated with syphilis and other sexually transmitted diseases, which can discourage people from seeking treatment.¹⁶

Still in relation to deficiencies in services, it is important to highlight the lack of preparation of professionals involved in prenatal care. Recent studies^{15,16} have revealed that the knowledge, practices and approaches to syphilis by obstetricians and nurses are not aligned with the protocols established by the Ministry of Health. Furthermore, only a small number of professionals have an adequate understanding of the vertical transmission of syphilis. Health professionals play a fundamental role in controlling syphilis, and therefore it is imperative that they are trained to effectively deal with these situations.

An increasing trend in the number of cases can be seen, considering the possibility that 2023 will exceed the number of diagnoses, since in July the average number of cases identified per year had already reached. Early diagnosis and treatment of syphilis in pregnant women is crucial to prevent transmission of the disease to the fetus, which can result in serious complications for the baby, such as congenital syphilis. Therefore, regular screening during pregnancy is an important strategy to identify and treat syphilis in pregnant women and ensure a better outcome for mother and baby.

It is important to highlight actions

such as the Seal of Good Practices in Combating Congenital Syphilis, which takes place in the city of São Paulo-SP, the practices to achieve the objectives of this plan were divided into five areas of responsibility: communication, information and health surveillance, assistance, management and guidelines and continuing education.¹⁷ At this point, in December 2022, the city of São Paulo was awarded by the Ministry of Health with the bronze seal certification of good practices towards the elimination of congenital syphilis. In addition, there is also the Luiza Matida award, in the state of São Paulo, which honors municipalities for their efforts to eliminate vertical transmission of congenital syphilis and/or HIV.¹⁸ In this regard, more than 240 municipalities, through representatives from each territory, received symbolic trophies from the hands of health professionals and managers.

CONCLUSION

The analysis reveals a worrying trend in the increase in cases of syphilis in pregnant women, if public policies and improvement of disease prevention and control strategies are not targeted in the region. This study reinforces the importance of accurate and updated data collection to understand the dynamics of the disease and implement effective prevention strategies, early diagnosis and effective treatment of syphilis in pregnant women in Cáceres-MT. The updated information presented here is crucial for guiding health policies aimed at protecting maternal and child health in the region.

A limitation of this study is the use of secondary data, which is subject to incorrect entries, such as incomplete records. Furthermore, there may have been many underreports in the selected period.

REFERENCES

1. Ministério da Saúde. Secretaria de Vigilância em Saúde. Departamento de Vigilância, Prevenção e Controle das Doenças Sexualmente Transmissíveis, Aids e Hepatites Virais. Manual técnico para diagnóstico da sífilis. Brasília (DF): Ministério da Saúde; 2016.
2. Ministério da Saúde (BR). Protocolo clínico e diretrizes terapêuticas para prevenção da transmissão vertical do HIV, Sífilis e Hepatites virais [Internet]. Brasília: Ministério da Saúde; 2019. [Acesso 06 janeiro 2021]. Disponível em: http://www.aids.gov.br/system/tdf/pub/2016/57801/miolo_pcdt_tv_08_2019.pdf?file=1&type=node&id=57801&force=1
3. Sífilis. Disponível em: <https://www.gov.br/saude/pt-br/assuntos/saude-de-a-a-z/s/sifilis>. Acesso em: 19 set. 2023.
4. ANGONESE, N. T.; GUILHERME, G. A. D. Epidemiological profile of gestational syphilis in a public-private hospital in a municipality in western Paraná. Disponível em: <https://docs.bvsalud.org/biblioref/2023/02/1414429/femina-2022-5012-742-750.pdf>. Acesso em: 19 set. 2023.
5. Vista do ASPECTOS CLÍNICO-EPIDEMIOLÓGICOS DA SÍFILIS GESTACIONAL NO NORDESTE DO BRASIL. Disponível em: <https://periodicos.ufrn.br/rcp/article/view/22522/14893>. Acesso em: 19 set. 2023.
6. SALGADO, R.-N. et al. REDES DE ATENÇÃO À SAÚDE: A REDE CEGONHA UNIVERSIDADE FEDERAL DO MARANHÃO. Disponível em: https://ares.unasus.gov.br/acervo/html/ARES/2445/1/UNIDADE_2.pdf. Acesso em: 19 set. 2023.
7. CONGÊNITA, S. Diretrizes para o Controle da. Disponível em: https://bvsms.saude.gov.br/bvs/publicacoes/sifilis_congenita_preliminar.pdf. Acesso em: 19 set. 2023.
8. ROCHA, L. Brasil registrou mais de 122 mil novos casos de sífilis no primeiro semestre de 2022. Disponível em: <https://www.cnnbrasil.com.br/saude/brasil-registrou-mais-de-122-mil-novos-casos-de-sifilis-no-primeiro-semester-de-2022/>. Acesso em: 19 set. 2023.
9. FELIPPE, R. et al. Casos notificados de sífilis em gestantes no estado de Santa Catarina, no período de 2010 a 2015. Disponível em: <https://docs.bvsalud.org/biblioref/2022/04/1366818/ao-2309.pdf>. Acesso em: 19 set. 2023.
10. DA SAÚDE BVSMS. SAÚDE. GOV. BR, B. V. EM S. DO M. Secretaria de Vigilância em Saúde | Ministério da Saúde Número Especial | out. 2022. Disponível em: <https://www.gov.br/saude/pt-br/centrais-de-conteudo/publicacoes/boletins/epidemiologicos/especiais/2022/boletim-epidemiologico-de-sifilis-numero-especial-out-2022>. Acesso em: 22 out. 2023.
11. VIEIRA, J. M. et al. SÍFILIS CONGÊNITA NO BRASIL: FATORES QUE LEVAM AO AUMENTO DA INCIDÊNCIA DOS CASOS Disponível em: https://www.mastereditora.com.br/periodico/20200907_163822.pdf. Acesso em: 22 out. 2023.
12. FLAVIANE, C. et al. INFECÇÕES SEXUALMENTE TRANSMISSÍVEIS EM GESTANTES: UMA REVISÃO INTEGRATIVA. Disponível em: https://www.mastereditora.com.br/periodico/20210108_095204.pdf. Acesso em: 19 out. 2023.
13. Ministério da Saúde - Protocolo clínico e diretrizes terapêuticas da transmissão vertical do HIV, sífilis e hepatite B. Ministério da Saúde, novembro de 2015.
14. FERNANDES, L. P. M. R.; SOUZA, C. L.; OLIVEIRA, M. V. Missed opportunities in treating pregnant women's sexual partners with syphilis: a systematic review. Revista Brasileira de Saúde Materno Infantil, v. 21, n. 2, p. 361–368, 2021.
15. SOUZA LFM, MONTEIRO PM, MOTA AS, JUNIOR ENP, PASSOS MRL. Analysis of congenital syphilis cases notification in a reference hospital of Niterói, Rio de Janeiro state 2008 to 2015. J Bras Doenças Sex Transm. 2017; 29 (1): 2177- 8264.
16. SANTOS RR, NIQUINI RP, DOMINGUES RMSM, BASTOS FI. Conhecimento e conformidade quanto às práticas de diagnóstico e tratamento da sífilis em maternidades de Teresina - PI, Brasil. Rev Bras Ginecol Obstet. 2017; 39 (9): 453-63.
17. Secretaria Municipal da Saúde entrega prêmio por enfrentamento à sífilis congênita. Secretaria Municipal da Saúde. Prefeitura da Cidade de São Paulo. Disponível em: [https://www.prefeitura.sp.gov.br/cidade/secretarias/saude/noticias/index.php?p=344529#:~:text=Os%20indicadores%20estabelecidos%20s%C3%A3o%20de,nascidos%20vivos%20\(categoria%20bronze\)>](https://www.prefeitura.sp.gov.br/cidade/secretarias/saude/noticias/index.php?p=344529#:~:text=Os%20indicadores%20estabelecidos%20s%C3%A3o%20de,nascidos%20vivos%20(categoria%20bronze)>). Acesso em 22 out. 2023.
18. Agência de Notícia da AIDS. Disponível em: <https://agenciaaids.com.br/noticia/estado-de-sao-paulo-entrega-premio-luiza-matida-a-240-municipios-que-registraram-a-reducao-da-transmissao-vertical-de-sifilis/>. Acesso em 22 out. 2023.