

## Clinical and Epidemiological Aspects of Pregnant Women Diagnosed with Syphilis

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**Received:** June 04, 2021; **Published:** July 23, 2021

### Abstract

Syphilis is a subject of much discussion involving the incidence and prevalence of cases, being important to update epidemiological studies for the application of conduct and control. In this study, the target aims specifically, the pregnancy and congenital phase of syphilis, allowing the analysis of data and the planning of health education, prevention and treatment actions aimed at reducing the vertical transmission of syphilis and the early treatment of pregnant women. The present study aims to analyze the epidemiological profile of pregnant women diagnosed with syphilis registered and published in Brazilian literature in the period from 2015 to 2019. This is a literature review with a qualitative and quantitative approach to analyze the data, having as theoretical-methodological support descriptive and deductive data analysis. The results obtained from the initial search were 179 articles in the bases: LILACS, BDENF, SCIELO, CAPES, referring to the years 2015 to 2019, where we applied inclusion and exclusion criteria through thorough reading. In addition to the support measures for the care of pregnant women diagnosed with syphilis, it is necessary to discontinue the dissemination of stigma about the infection in society. It is essential that pregnant women, partners, and family members adhere to the guidelines on the effectiveness of treatment in order to effectively and continuously integrate the control of this infection by syphilis in pregnant women and congenital syphilis.

**Keywords:** *Pregnancy; Epidemiological Profile; Syphilis*

### Abbreviations

APS: Atenção Primária de Saúde; ELISA: Enzyme-Linked Immunosorbent Assay; EQL: Quimioluminescência; FTA-Abs: Fluorescent *Treponemal* Antibody-Absorption; IM: Intramuscular; I V: Intravenous; IST: Infecção Sexualmente Transmissíveis; Kg: Kilogram; MHATP: Micro-

Haemagglutination Assay for *T. pallidum*; OMS: Organização Mundial de Saúde; PCDT IST: Protocolo Clínico e Diretrizes Terapêuticas para a Atenção Integral às pessoas com Infecções Sexualmente Transmissíveis; RN: Recém-Nascido; RPR: Rapid Test Reagin; SSR: Saúde Sexual Reprodutiva; TPHA: *Treponema pallidum* Haemagglutination test; TPPA: *Treponema pallidum* Passive Particle Agglutination test; TRD.: Teste Rapid Diagnostic; TRUST: Tolidine Red Unheated Serum Test; UBS: Unidades Básicas de Saúde; UI: Unidades Internacionais; USR: Unheated Serum Reagin; VDRL: Venereal Disease Research Laboratory; VO: Via Oral; SUS: Sistema Único de Saúde; MS: Ministério da Saúde

### Introduction

According to historical findings, the description of syphilis was revealed in a poem written by the physician and poet Girolamo Fracastoro in 1530, but it was not until 1905 that the zoologist Fritz Schaudin and the dermatologist Paul Erich Hoffman discovered the etiological agent of syphilis, *Treponema pallidum* sp., pallidum, a species of gram-negative bacteria of the order of the spirochetes with little resistance to the environment. The disease has several clinical manifestations, depending on its stage and clinical conditions. Being considered the disease of a thousand faces, name given by its variety of signs and symptoms, which will be discussed below [1,2].

Syphilis is an infectious and systemic pathology, its transmission can be acquired sexually, through contact with contagious lesions (cancer, mucous plaque, exanthema or cutaneous condyloma); indirectly through contact with contaminated objects, manipulation of instruments for tattooing, manicures and blood transfusion. It can also be transmitted to the fetus (vertical transmission). The disease affects approximately all organs and systems of the human body, evolving to different clinical stages and may present irreversible neurological and cardiovascular complications in the long term [3].

The diagnosis of syphilis is mainly based on serology, classified into direct tests, immunological tests, Treponemal, non-Treponemal, quantitative and qualitative, VDRL (Venereal Disease Research Laboratory), and other complementary tests when necessary. They are offered free of charge by the SUS and the pregnant woman may seek a basic health unit in the public network, prevention and early diagnosis reduce the risks that the pathology exposes to the maternal-fetal [4].

The drug of choice for the initial treatment is penicillin, being effective in the first stage and the only one indicated in the gestational period, with an efficacy of 98% in non-vertical transmission and in all stages of the disease. According to several studies, prevention must be implemented and the individual with syphilis is exposed to the risks of being affected by other STIs [1].

According to the World Health Organization (WHO), from 2011 onwards, the estimate of syphilis would be around two million cases in pregnant women annually. Syphilis in pregnancy has its perinatal repercussions that are worrying, the assistance to these pregnant women diagnosed with syphilis aims to avoid compromising the health of the mother of the fetus or baby [4,5].

In Brazil, from 2010 to 2019, SINAN notified 158,051 cases of acquired syphilis (with a detection rate of 75.8 cases/100,000 inhabitants); 62,599 in pregnant women (with a detection rate of 21.4/1,000 live births). The Brazilian region with the highest number of notified cases was the Southeast, with 38,808 (23.3%), the North region had 32,012, and of these data in the state of Amazonas, 11,715 cases of acquired syphilis were reported, 8,961 in pregnant women (cases and detection rates per 1,000 live births- 2010 to 2019), 4,501 congenital syphilis [6].

The care of infected pregnant women aims to identify the serological conditions and initiate therapy, together with their partner(s), aiming at planning and prevention and control measures for vertical transmission, pointing out the quality of prenatal care and at childbirth, determining factors in the prevention of this transmission [1].

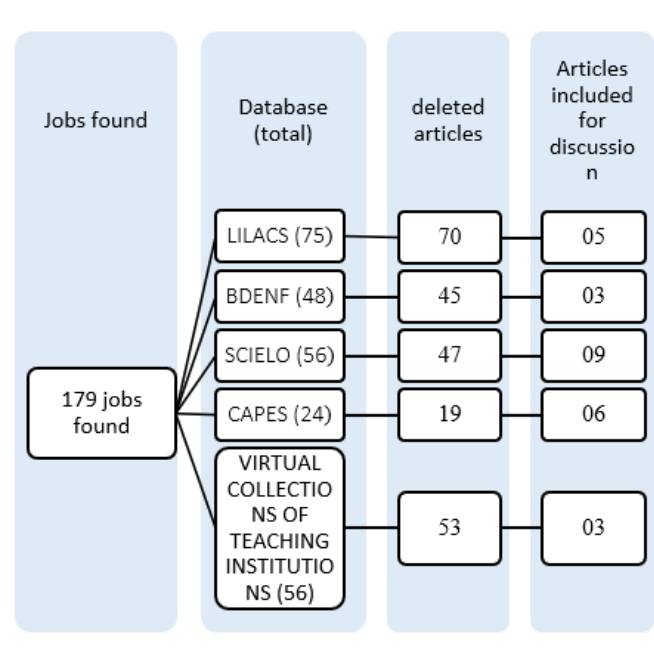
**Aim of the Study**

The aim of the study is to analyze the clinical and epidemiological aspect of pregnant women diagnosed with syphilis, recorded and published in Brazilian and foreign literature from 2015 to 2020.

**Methods**

This is a descriptive-exploratory research, in the integrative review modality, with a quantitative and qualitative methodological approach. Data collection took place virtually, with search for articles in databases such as: LILACS (Latin American and Caribbean Literature in Health Sciences), Virtual Health Library (VHL), BDENF (Nursing Database), SCIELO (Scientific Electronic Library Online), CAPES Journals (Coordination for the Improvement of Higher Education Personnel). To construct this study, we conducted data searches on the websites of the Health Surveillance Secretariat (SVS) of the Ministry of Health (MS), together with the information from the records of the National System of Notifiable Diseases (SINAN). The inclusion criteria, the articles published in Portuguese and English were established with publications between 2015 and 2020 and that met the theme. Exclusion criteria: it was publications prior to 2015 and published articles that did not meet the objectives of this study.

The initial selection of the study took place through the results obtained from the initial search, there were 179 articles in the bases: LILACS, BDENF, SCIELO, CAPES and virtual collections of universities that contained published scientific works. referring to the years 2015 to 2020, where we apply inclusion and exclusion criteria through detailed reading to carry out the selection of publications as shown in figure 1.



**Figure 1:** Flowchart of selection and inclusion of articles in the review.  
 Source: The author herself, 2021.

**Results**

Initially, 75 articles were found in the LILACS platform, after applying the inclusion and exclusion criteria, 05 articles corresponding to the theme were used. In the BDEF platform, 45 articles were initially obtained, after applying the inclusion and exclusion criteria, only 03 articles corresponding to the theme were used. Initially, 56 articles were found in the SCIELO platform, after applying the inclusion and exclusion criteria, it was found that the articles with the titles referring to the topic were repeated in the other platforms, therefore, we obtained 09 articles used. In the CAPES journal platform, 24 initial articles were found, but after applying the inclusion and exclusion criteria, 06 articles were found. And finally, in virtual collections of institutions, 53 published articles were found and only 03 articles were selected after inclusion and exclusion criteria according to table 1. The selected articles totaled 26 articles, which will compose the discussion of this study. As described in the table below.

Author (S)/Year	Title	Methods
Arruda, Ricardo Leandro; Santos Ramos, Aleksandra Rosendo [7]	Importance of laboratory diagnosis for congenital syphilis in prenatal care	Study using quantitative bibliographic research.
Assis, Thaís Rocha., <i>et al.</i> [8]	Implementation of the Stork Network in a Health Regional region of the state of Goiás: what do health indicators show about maternal and child care?	Ecological study.
Batista, Joira Barbosa; Bizarria, Fabiana Pinto De Almeida [9]	Health education, prevention and treatment of syphilis: challenges and possibilities	Integrative literature review.
Bulgach, Valeria; Weissbrod, Paula; Duran, Mirta; Mato, Roberto [10]	The importance of sexual education through workshops on sexual and reproductive health given to mothers and fathers in a highly complex hospital	Literature Review.
Cavalcante, Patrícia Alves De Mendonça; Pereira, Ruth Bernardes De Lima; Castro, José Gerley Diaz [11]	Gestational and congenital syphilis in Palmas, Tocantins, 2007-2014	Descriptive study.
Cardoso, Érika Koch; Tartari, Débora De Oliveira; Nascimento, Deisy Da Silva Fernandes [12]	Prevalence of antibodies for <i>Treponema pallidum</i> in a hemodialysis clinic in southern Brazil/The prevalence of antibodies for <i>Treponema pallidum</i> in a hemodialysis clinic in southern Brazil	Observational and analytical study.
Costa, Carolina Vaz., <i>et al.</i> [13]	Congenital syphilis: repercussions and challenges/Congenital syphilis: repercussions and challenges	Literature revision.
Dantas, Livia Azevedo., <i>et al.</i> [14]	Epidemiological profile of acquired syphilis diagnosed and reported in a maternal-infant university hospital	Exploratory and descriptive study with a quantitative approach.
Dias, Mariana De Sales; Gaiotto, Emiliana Maria; Cunha, Marcia Regina; Nichiata, Lúcia Izumi Yasuko [15]	Synthesis of evidence for health policies: coping with congenital syphilis in the scope of Primary Health Care	Systematic Review.
Gonçalves, Mariane., <i>et al.</i> [16]	The Pathology of Syphilis	Bibliographic Review

Koksal, Muammer Osman [17]	Syphilis seroprevalence among HIV-infected males in Istanbul, Turkey Seroprevalence of syphilis among HIV-infected men in Istanbul, Turkey	Field Research
Macedo, Vilma Costa., <i>et al.</i> [18]	Risk factors for syphilis in women: a case-control study	Case-control study
Machado Bianca Luísa; Terra, Márcia Regina [19]	Syphilis In Pregnancy: an updated problem	Systematic review
Matias, Michelle Danielle Porto <i>et al.</i> [20]	Diagnosing syphilis acquired through oral lesions: the 12-year experience of an Oral Medicine Center	Retrospective study
Mello, Melissa Gomes De; Parauta, Thais Cordeiro; Saldanha, Bruna Lopes; Lemos, Adriana [21]	Participation of the young father in prenatal care: the health professional's view/The young father's involvement in the prenatal care: the perspective of health care professionals/Participation of the young priest in the follow-up of prenatal care: the point of view of the health professional	Documentary research with a qualitative approach
Moreira, Kátia Fernanda Alves., <i>et al.</i> [22]	Profile of notified cases of congenital syphilis	Descriptive epidemiology study.
Mota, Isabella Almeida., <i>et al.</i> [23]	Congenital syphilis: why is its prevalence so high?	Literature Review
Nasser, Mariana Arantes., <i>et al.</i> [24]	Evaluation in primary care in São Paulo: incipient actions in sexual and reproductive health	Building an evaluative framework.
Nonato, Solange Maria; Melo, Ana Paula Souto; Guimaraes, Mark Drew Crosland [25]	Syphilis in pregnancy and factors associated with congenital syphilis in Belo Horizonte - MG, 2010-2013	Historical Cohort Study.
Pedroso, Ana Júlia Ferreira [26]	Nursing care for pregnant women with syphilis	Bibliographic Review.
Queiroz, Júlio Henrique Ferreira de Sá [27]	Study of antigenic proteins of <i>Treponema pallidum</i>	Literature Review
Rodrigues, Débora Acyole; Gonçalves, Iara Rosa; SÁ, Karla Camila Camargo [28]	Main factors related to congenital syphilis in Brazil - integrative review	Integrative Review
Santos, Ivana Nardes; Ribeiro, Bárbara Santos; Cardoso, Layres Canuta; Soares, Carine de Jesus [29]	Epidemiological profile of Congenital Syphilis in el Estado de Bahia, Brazil, 2007 to 2017	Descriptive epidemiological research study.
Soares, Brena Geyse Mesquita Rocha; Marinho, Maria Alana Duarte; Linhares, Maria Isabel; Mota, Dário da Silva [30]	Profile of reports of cases of gestational syphilis and congenital syphilis	Integrative Review.
Sousa, Francisco das Chagas Araújo., <i>et al.</i> [31]	Profile of Syphilis in Pregnancy in the period 2007/2016 in Caxias - MA	Exploratory and observational descriptive study, retrospective cohort.
Sunyer, Jordi; Payam, Dadvand [32]	Pre-natal brain development as a target for urban air pollution	Descriptive study

**Table 1:** Characterization of articles included in the study.

Source: Own Authorship, 2021.

Based on the collected articles, the epidemiological and sociocultural profile of pregnant women who acquire and/or are diagnosed with syphilis during the gestational period was identified, with data emphasizing age, color, socioeconomic and environmental conditions, among other characteristics related to the contraction of disease and the profile of pregnant women.

### Discussion

Syphilis is an infectious-contagious disease of hematogenous dissemination caused by the bacterium *Treponema pallidum* of the subspecies pallidum, which has a spiral shape and does not have a cell membrane. It is protected by an outer envelope with three layers rich in molecules of N-acetylmuramic acid and N-acetyl glucosamine has flagella that start at the distal end. This bacterium is a pathogen unique to humans and has little resistance outside its environment [6,27].

*Treponema pallidum* is a gram-negative anaerobic bacterium of the spirochete group, belonging to the order Spirochaetales, family Spirochaetaceae and genus *Treponema*, with approximate measures of 6µm in height, 15 µm in length and 0.2 µm in diameter. The reproduction of this bacteria occurs in an asexual way by transverse binary fission. It has two plasma membranes, an outer one that also involves a periplasmic flagellum [12].

*Treponema pallidum* has distinct biological characteristics, including the difficulty of *in vitro* reproduction due to its slow generation, sensitivity to high temperatures and its difficulty to survive when exposed to oxygen. Currently, this pathogen is part of a select group of bacteria pathogenic to man, which cannot be reproduced in a culture environment outside a living organism [12].

In its etiopathogenesis, *Treponema pallidum* penetrates the regional lymphatic system and spreads hematogenously, in other parts of the body, the immune system is activated and there is a local defense response, resulting in erosion and exulceration at the point of inoculation, while systemic dissemination results in the production of circulating immune complexes, which can reach the organs causing irreversible problems [6,27].

Syphilis is a systemic, chronic, curable, and exclusive human disease with distinct clinical, immunological and histopathological characteristics. The clinical manifestations of acquired syphilis are primary syphilis, latent syphilis, secondary syphilis and tertiary syphilis. It can be divided according to its time, referring to the diagnosis as latent syphilis up to one year and late syphilis after one year [4,16].

The natural characteristics of the pathology present themselves in several clinical manifestations, unique in each stage of the infection. In the primary stage, specific lesions such as hard chancre or protosyphiloma appear, appearing at the site of inoculation on average three weeks after infection; in the secondary stage of six to eight weeks, after the latency period, the disease starts to act again, affecting the skin and organs, that is, causing the distribution of the bacteria throughout the body. In the third stage, the formation of destructive granulomas begins, which develops lesions in the skin and mucous membranes affecting organs, bones, muscles and liver, and may involve the lungs, heart and nerve cells, since in neurosyphilis *Treponema* invades the meninges [6,19].

Transmission can be through sexual intercourse without a condom with an infected person (acquired syphilis) or to the child during pregnancy (congenital syphilis), a result of the hematogenous dissemination of *Treponema pallidum* from the infected pregnant woman not treated or inadequately treated, which results in transmission transplacentally (vertical transmission). Other forms of transmission are indirect (contaminated objects, tattoos) and blood transfusion, requiring serological techniques for diagnosis [6,16].

The main risk factors for acquiring syphilis are directly related to low socioeconomic status, low education, sexual promiscuity, the presence of other sexually transmitted diseases, use of illicit drugs, lack of adequate health services for detection, lack of early treatment suitable, among others [7].

Syphilis is associated with high-risk sexual behavior, coinciding with the new era of sexually transmitted infections (STIs), infecting healthy individuals. Syphilis infection puts both the health of adults and children during pregnancy at risk, and can cause miscarriage, premature birth, vertical transmission and fetal or neonatal death. The disseminated systemic involvement that leads to an evolution to more serious complications for patients, pregnant women with syphilis are able to transmit the disease vertically to their children and may present asymptomatic condition. This can lead to the absence of early diagnosis and, consequently, causing serious damage to their health in the future, bringing psychological and social repercussions to the family [6,20].

According to Koksals, *et al.* [17] individuals affected by syphilis are more likely to be infected by the human immunodeficiency virus (HIV), which significantly increases the risk of primary and secondary syphilis. Syphilis associated with ulcerations causes damage to epithelial and mucosal barriers, stimulates the immune system to defend against pro-inflammatory bacterial pathogens, thus stimulating the susceptibility of human monocytes to HIV infection.

In Brazil, in 1986, syphilis became a compulsory notification disease for epidemiological surveillance purposes, governed by ordinance No. 542 of December 22, 1986. However, the compulsory notification of pregnant women with syphilis throughout the national territory was instituted by through ordinance no. 33 of July 14, 2005, the weaknesses of the system in the control of syphilis demonstrate the need for insistence due to the implementation of strategies aimed at planning and conducting studies on this pathology [33].

In some years, the Federal Government has been striving to reduce the number of syphilis cases in Brazil, during which time many programs were implemented with this objective, among them we can mention "Rede Cegonha" and "Pacto Pela Vida". Syphilis control focuses on breaking the chain of transmission along with preventing new cases. For this, it is important to detect, early and appropriately treat the patient and partner(s), one of the strategies is to offer a rapid test for patients, partners and pregnant women to diagnose new cases [13].

The control measures aimed at preventing syphilis is the correct and regular use of female or male condoms, these are very positive and are also the most important way to prevent STI's, as it is a sexually transmitted infection, responsibility is important in relation to the exchange of sexual partners [6,10].

According to data from the National Plan for the Prevention of Sexually Transmitted Infections, the reasons why women become infected with syphilis and other STIs is the practice of casual sex, the lack of information on prevention and the difficulty in accessing implementation programs of educational intervention in sexual and reproductive health, especially for the underage clientele. Although the sexual and reproductive health law does not establish an age to receive inputs, it is common that adolescents are not assisted by the program, as they do not present themselves with a legal guardian [6,10].

Knowledge is the main form of health intervention, as it allows participants to adequately carry out prevention, promotion and health education activities, after being aware of the acquired information. Family participation becomes relevant in prevention, dialogue between mothers, fathers and children is a bond that public health considers important in helping to know sexual needs responsibly and in the exchange of information about responsible sexuality [31].

Health education is a complementary aid for the dissemination of information aimed at prevention, protection, safe practices and sex education, whether related to syphilis or any other sexually transmitted infection, aiming at treatment within the family health in basic health units [9].

The team of health professionals in primary care must consider the pregnant woman as the protagonist of prenatal care, in order to apply prevention to the fetus and treat the future mother, face the challenges together with the mother and child binomial, recognizing the interactions and changes which involves the physiological system of women in the pregnancy period in which placental hormones have profound effects on maternal metabolism for the proper development of the pregnancy cycle [32].



Pregnancy is a period of time window susceptible to exposure to maternal fetal, prenatal care is very important in preventing complications during pregnancy and childbirth, in preventing vertical transmission of diseases, being followed as recommended by the Ministry of Health, which provides a number of 7 appointments or more for a more significant effect. Prenatal care can reduce or even block exposure to effects of a potentially irreversible nature, and the greatest preventive opportunity occurs during this period, aiming at preventing damage or impaired development of the NB, and complications in parturient/puerperal women in the postnatal period/ postpartum [11].

The Ministry of Health proposes the participation of partners in family planning in prenatal care. The pregnant woman should be evaluated considering the modifiable risk factors in lifestyle, socioeconomic position, ethnic origin, family and regarding the complications they may represent to the fetal mother, aiming at the rapid improvement of advanced modalities for early diagnosis. These processes are essential for the healthy development of pregnancy [21].

The Prenatal and Birth Humanization Program called Rede Cegonha is organized to ensure access, reception and resoluteness, through a care model aimed at prenatal care, childbirth, birth and puerperium. Therefore, the purpose of providing quality prenatal care, analyzing the classification of risk and vulnerability, oriented to the connection of the pregnant woman to the reference unit (UBS and maternity), to the logistic system, planning, prevention with continuity of care humanized to the binomial [8].

The fragmentation in the development of sexually transmitted disease and infection control protocols within the scope of health professionals, requiring the application of continuing education, aiming at adequate prenatal care, diagnosis and maternal-fetal treatment [29].

According to the Ministry of Health, Ordinance No. 3242, of December 30, 2011, provides for the laboratory flowchart of syphilis in carrying out routine tests with timely results, including immunochromatographic tests (rapid test) for screening for treponemic syphilis (Antibodies Treponemals (FTA-ABS), Micro-Hemagglutination Test for antibodies against *Treponema pallidum* (MHA-TP), *Treponema pallidum* Particle Agglutination Assay (TPPA), *Treponema pallidum* Enzyme Immunoassay (TP-EIA) and the Chemiluminescent Immunoassay (CIA), non-*Treponema* tests include Venereal Disease Research Laboratory (VDRL), Rapid Plasma Reagin (RPR), Red Tolidine Unheated Sound Test (TRUST)). With the association of adequate prenatal care and educational interventions about a healthy, safe sex life and continuous adequate treatment, result in a positive and significant correlation for a healthy postnatal period [1,15].

Status	Scheme
Primary syphilis, secondary syphilis, and recent latent syphilis (up to 1 year of evolution).	Penicillin G benzathine 2,4 million IU IM, single dose (1,2 million IU in each buttock).
Tertiary syphilis: late latent syphilis (more than 1 year or latent with unknown duration).	Penicillin G benzathine 7,2 million IU, in 3 doses IM, once a week (1,2 million IU in each gluteus).

**Table 2:** Penicillin dose schedule recommended by the Ministry of Health of Brazil.  
 Source: Ministry of Health, 2019. (adapted).

Brazil is a signatory country to international conferences on the rights of Sexual Reproductive Health (SSR), with the construction of policies, programs, protocols and recommendations related to the attributions and implementation of SSR inserted in the SUS. This context aims to establish early identification, timely treatment and effective monitoring for pregnant women [24].

The treatment adopted for syphilis is linked to simple and low-cost diagnostic and therapeutic resources, but facing it is still a challenge for primary health care (PHC), due to acceptance and completion of treatment, understanding of the treatment by the population



and number of active professionals, who fight and adapt to develop programs and procedures for the purpose of disease prevention, recovery, rehabilitation and guidance aiming at the equity and integrity of patients, this is the preferred scenario for the care and provision of care for the individual and population [31].

According to the Ministry of Health, the municipalities are responsible for the purchase of medicines for the treatment of STIs, according to what was agreed upon by the Tripartite Inter-Management Commission (CIT). The monitoring and treatment of syphilis is the responsibility and control of Primary Care (AB), it is up to health professionals to develop actions for the promotion, prevention and treatment of pregnant women, highlighting the importance of nursing consultations for detection, prevention, treatment and education in health. Thus, the care provided by a qualified and trained nurse positively affects the STI and morbidity indicators during prenatal care [26].

The early detection and treatment of syphilis in pregnant women represent important public health measures, the professionals of the Family Health Strategy (FHS) have a fundamental role in the application of correct educational measures to control the infection in a way that prevents psychosocial integrity of pregnant women, with routine exams and reduction of adverse events, such as vertical transmission, premature births, abortions and stillbirth [25].

Attention to infected pregnant women aims to identify the serological conditions and start appropriate and early treatment together with the partner, aiming to plan and consider prevention and control measures, especially of vertical transmission of *Treponema pallidum*, this assistance points to the quality of prenatal care and childbirth, which is decisive in reducing vertical transmission [1].

Prenatal serological screening is an effective measure and treatment with benzathine penicillin is efficient in combating the *Treponema pallidum* bacterium. When the diagnosis is positive, the treatment must start quickly, blocking the manifestations of the infection, with an effective result, preventing transmission vertical. The treatment must be aligned with their sexual partner, which must also be tested and treated to avoid the pregnant woman’s reinfection [14].

The treatment requires criteria, determined time and adequate to the period of 30 days before delivery, the patient receives a therapeutic scheme according to the clinical stage of the syphilis, respecting the interval and recommended number of doses. During treatment, the client is instructed to suspend sexual intercourse until it is completed, her partner also receives treatment for the disease and the same guidelines until the cycle is completed [6,28].

Table 3 shows the global values between the period 2015 to 2019 in relation to the treatment prescribed with penicillin for pregnant women diagnosed with syphilis, we observe a significant number in relation to other regimens, treatment not performed and ignored. The treatment is easily available at a low cost and can be applied in a basic health unit, to control the cure will be carried out monthly through the VDRL [23].

Treatment Scheme	2015		2016		2017		2018		2019	
	Nº	%	Nº	%	Nº	%	Nº	%	Nº	%
Penicillin	28.638	87,4	34.079	89,1	56.066	89,6	44.841	90	54.760	89,6
Other Scheme	916	2,8	807	2,1	1.059	1,7	1.001	2	857	1,4
Unrealized	1.764	5,4	1787	4,7	3.280	5,2	2.296	4,6	3.374	5,5
Ignored	1.456	4,4	1.595	4,2	2.194	3,5	1.658	3,3	2.119	3,5

**Table 3:** Total cases and percentage of pregnant women with syphilis according to treatment regimen prescribed per year of diagnosis. Brazil, 2015 - 2019. Source: Ministry of Health, 2019. (adapted).

Neonates exposed to congenital syphilis during childbirth, by mothers who were not treated, or did not receive adequate treatment, these neonates are subjected to several interventions that include: collection of blood samples, neurological evaluation, including lumbar puncture, X-ray of long bones, ophthalmological and audiological evaluation, requiring hospitalization for longer treatment [6,8].

The Ministry of Health will make the PCDT IST application available for better information to health teams, for the application of clear and standardized processes according to the flowchart that facilitates consultation by professionals, with features that facilitate the search for content through navigation, noted as a technological tool, approved by Ordinance No. 53, of October 1, 2015 [9].

Criteria	Treatment
Children born to untreated or inadequately treated mothers, with normal physical and complementary exams, and non-reactive non-Treponemal test at birth	Treat with benzylpenicillin 50,000 IU/kg, intramuscular, single dose
In the absence of neurosyphilis, the child with congenital syphilis can be treated with benzylpenicillin procaine outside the hospital unit, via IM; OR with potassium/crystalline benzylpenicillin, with hospital admission.	Benzylpenicillin procaine 50,000 IU/kg, IM, once daily for 10 days, OR
	Potassium benzylpenicillin (crystalline) 50,000 IU/kg, IV, 12/12h (children under 1 week old) and 8/8h (children over 1 week old), for 10 days.
Children diagnosed with congenital syphilis after one month of age and those with acquired syphilis should be treated with potassium/crystalline benzylpenicillin.	Potassium benzylpenicillin (crystalline) 50,000 IU/kg, IV, from 4/4h to 6/6h, for 10 days.

**Table 4:** Adequate treatment for each case of congenital syphilis.

Source: DCCI/SVS/MS, 2019.

Care interventions, effective screening, adequate treatment and the use of penicillin are linked to a reduction in mortality, premature birth and a reduction in neonatal deaths. Trained health professionals can reach the target audience efficiently and according to their specificities, applying educational activities and safe practices, in order to disseminate information and guidance on the treatment of syphilis, as well as other IST's [9].

Treatment for congenital syphilis is carried out for 10 to 14 days with penicillin, and its variations, benzylpenicillin (potassium/crystalline, procaine or benzathine), the therapeutic option is according to the criteria determined by the Ministry of Health, the choice of therapy is subject to results of laboratory tests and the clinical form of the disease. The proper treatment for each case of congenital syphilis must be started during the stay in the maternity ward, in the newborn and in the puerperal woman, and after the treatment, follow-up laboratory control must be carried out to certify the cure of the cases [6,22].

Arruda., *et al.* [7] state that a nursing systematization applied to prenatal care would prevent congenital syphilis, directly influencing the health quality indexes of the mother and child binomial. rehabilitation of these, the reduction of costs in the treatment of congenital diseases arising from complications of syphilis in pregnancy and congenital.

### Conclusion

The present study focused on gestational syphilis, showing the high rate of infection among pregnant women, according to age group, race, low education, revealing the vulnerability of prenatal care provided to pregnant women through late diagnosis, sometimes the treatment is inadequate for the situation, especially for the partner who doesn't even adhere to the syphilis treatment. It is necessary that, in addition to support measures for the care of pregnant women diagnosed with syphilis, it is necessary to deconstruct the dissemination of a stigma on the infection in society. It is essential that the guidelines on the effectiveness of the treatment are adhered to by pregnant women, partners and family members so that the effective and continuous integration of the control of this syphilis infection in pregnant and congenital women can take place.

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