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## The challenge of the reference and counter-reference system in the prenatal assistance to pregnant women with infectious diseases

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### ABSTRACT

The objective of this study was to determine the prevalence of infectious diseases, such as syphilis, acquired immunodeficiency syndrome (AIDS) and hepatitis B and C, in pregnant women who undertook their prenatal care in thirteen basic health units (BHU) in São Paulo city. The efficiency of the reference and counter-reference system in such prenatal infectious diseases was evaluated considering the medical recordings of the final result of the pregnancy and the vertical transmission rates of these diseases. It consists of an epidemiologic study whose observations were based on the notes of the prenatal medical and nurse records of pregnant women who had infectious diseases susceptible to vertical transmission and final infectious status registers of their concepts. Women's syphilis prevalence was 0.86%, HIV and Hepatitis B was 0.22% and Hepatitis C was 0.36%. It's possible to conclude that there is no register of the reference and counter-reference system of these infectious diseases analyzed at the thirteen basic health units of the south-east region of São Paulo city evaluated in 2005. This lack of register makes it impossible to know the preventive measures taken and the vertical transmission rates. Making the professionals and the Health Coordination authorities aware of the importance of the dynamic of the prenatal attendance is necessary.

**Key words:** congenital syphilis, Hepatitis B, Hepatitis C, HIV, prenatal care, referral and consultation.

### INTRODUCTION

The theoretical concept of reference and counter-reference in health was proposed in 1990 by the Brazilian Ministry of Health through Law 8080 – SUS (Brasil. Ministério da Saúde, 1990). It was introduced in an organization proposal that brings another concept: primary health care (Witt 1992). “Primary health care” is understood as the accessibility to essential services of all people and families of a community, offered in means they can accept, through their full participation, and being affordable to the society and to the country. Such system consists of joining the primary, secondary and

tertiary levels of health assistance, in that “reference” is gotten from the lowest to the highest level of complexity, being the opposite called counter-reference.

Putting into practice this reference and counter-reference system starting at the basic health unit can result in a quicker attendance, avoiding repeated visits at different service levels. Regarding the attendance of pregnant women's infectious diseases, it aims at preventing such diseases transmission to newborn. All steps of the pregnant women attendance, from inclusion in the health system (infectious disease investigation, right guiding and effective prophylaxis) to the control of these diseases, are essential.



health attendance quicker and minimizes the risk of failure in preventing the mother-to-child transmission of infectious diseases, besides its contribution in constructing the pregnant health integrality principle (Brasil. Ministério da Saúde 1988, Maeda 2002). Failures in any steps of this procedure may result in delay or in obstructing the mothers' and the newborns' treatment or prophylaxis. Ignoring the local mother-to-child transmission rates of these infectious diseases, besides turning the public health actions more difficult, may discourage the health teams that do not realize how important their preventive actions are and, as a result, stop taking them.

A pregnant woman who has an infectious disease susceptible to vertical transmission and is attended during her prenatal care in a basic health unit (BHU) must be attended by the BUH professionals themselves or, considering the cases complexity, be guided to a specialized clinic and later to a maternity capable of taking the suitable measures to the mother and the newborn. Joining several levels of complexity is very difficult, once the influx of complex services overpasses the number of requests coming from the basic care, making it harder to reach the excellence in attending clients who need specialized services, such as mothers' and newborns' care.

Despite more than two decades since the SUS concept introduction, there are few studies about the efficacy of the SUS articulation healthcare on outpatient medical assistance after hospital discharge (Fratini et al. 2008), as well as emergency care (Kovacs et al. 2005) or prenatal care quality (Maeda 2002, Oba and Tavares 2000).

Aiming at providing assistance to the reference and counter-reference system, as well as to the program of health surveillance, this research intended to determine the prevalence of syphilis, HIV-infection, and hepatitis B and C in pregnant women who undertook their prenatal care in thirteen basic health units (BHU) in São Paulo city. The efficiency of the reference and counter-reference system in such diseases were evaluated considering the register in the BHU of the final result of the pregnancy outcomes and the vertical transmission rates of these infectious diseases.

approved by the Ethics Committees for Research of Universidade Federal de São Paulo and the Health Secretary of São Paulo city. It consists of an epidemiologic study, whose observations aimed at the registers of the prenatal medical records of the reference and counter-reference process of pregnant women who had infectious diseases susceptible to vertical transmission. Three different moments were evaluated: upon the arrival of the lab test positive results at the BHU, while treating and following the pregnant women and at last, the puerperal follow-up appointment (up to 42 days after delivery) having the newborns' infectious status registered.

The research was developed from January 2005 to December 2005, considering all pregnant women attended (2,200) in thirteen BHUs of the south-east region of São Paulo city, located in the area reached by Hospital São Paulo (HSP), a large tertiary hospital which is connected to the Universidade Federal de São Paulo. These units were considered “mixed”, having attending strategies preconized by the Family Health Program or traditional BHUs (attending strategies based on complaint appointment).

The studied variables related to mother and children obtained from the medical records were:

- syphilis, HIV, Hepatitis B and Hepatitis C tests results registered in their medical records;
- treatment of the pregnant women and their sexual partner;
- health care guidance to the pregnant women;
- return to the BHU during the puerperal period;
- recording of the infectious status of the newborn.

Other informations were provided from interviews with 57 health professionals (doctors, nurses, speech-language therapists, dentists, social assistants, managers) working in the participating centers. Open and closed questions were asked in order to know the guidance offered to the infected mothers and their babies, as well as prophylactic measures taken to reduce the vertical transmission rates of these infectious diseases:



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- do you know the procedures about breast-feeding and medications used for the babies of these mothers?
- do you know the local vertical transmission rates of these diseases?
- are the babies of these pregnant women followed at this center?
- would you like to propose a different way to manage these situations?

At each of these infectious diseases, we attempted to understand the reference system of the basic unit to specialty clinics and/or maternity, as well as the counter-reference system, which means its inverse influx. Evaluation of the prenatal care at these same BUH was published recently (Succi et al. 2008). In order to better know the vertical transmission rates of these infectious diseases, after discussion and orientation of the medical staff, all BHUs were offered the possibility of taking all the babies under the infectious risk to be attended at the Centro de Atendimento da Disciplina de Infecologia Pediátrica da Universidade Federal de São Paulo (CEADIPE), which is a reference university center for care of pediatric infectious diseases.

#### RESULTS

Out of the 2,200 pregnant women that undertook prenatal care and reached the end of their pregnancy during the period analyzed, 37 (1.68%) presented registers of lab exams in their medical records that defined the diagnosis of one of the researched infectious diseases. Syphilis was the most common disease (19 cases = 0.86%), followed by hepatitis C virus infection (8 cases = 0.36%) and by hepatitis B virus and HIV, both having 5 cases each = 0.22% (Table I).

Only three BHUs did not have any pregnant women who had the infectious diseases studied during the period evaluated (units V, VI and XIII). All the other units presented at least one case of infected pregnant woman susceptible to vertical transmission. Unit VIII, that attended 266 pregnant women along the period, presented the largest number of pregnant women infected

identified in more than half of the BHUs evaluated, having the largest Hepatitis C prevalence identified in BHU II (1.42%). Cases of HIV-infected pregnant women and cases of hepatitis B infections were identified in four BHUs.

The health professionals' awareness of the importance of guiding for pregnant women with infectious diseases has revealed that many of them did not have any information on reference and counter-reference procedures (Table II). Out of 57 interviewed professionals, 29.8% did not know where pregnant women infected with contagious diseases should be taken.

Through medical records evaluation, it was possible to notice that 46.20% of the pregnant women with the infectious diseases studied returned to the BHUs throughout the puerperal period (up to 42 days after delivery). However, the interview with health professionals has revealed that only 31.57% of the professionals knew the importance of returning to BHUs after the puerperal period, and 22.80% stated that they did not know the clients' whereabouts. As for the follow-up of newborns of pregnant women infected with syphilis, although this information cannot be taken from medical records, most of the interviewed professionals (44/57 = 77.2%) stated to know the results of newborn serologic tests that underwent in the nursery room.

As for the BHU supervision over the procedures adopted to HIV-infected mothers and children, it was possible to notice that, according to the professionals, only 56.14% (7) of the units supervised the use of antiretroviral therapy by the baby and the avoidance of breast-feeding, and only 47.36% (6) kept on attending the baby up to the definition of their final infectious status (Table III).

As for hepatitis B and C, 43.26% of the professionals stated that the BHU has control over the newborn up to the final diagnostic; however, 52.12% stated that this follow-up procedure did not exist or that the professionals were unaware of it.

The interviewed professionals revealed their uncertainty about the procedures to be adopted concerning these infectious diseases; therefore, suggesting how to improve the reference and counter-reference



**TABLE I**  
**Prevalence of infectious disease (syphilis, Hepatitis B, Hepatitis C, HIV) among pregnant women in thirteen basic health units of the south-east region of São Paulo city, from January to December 2005.**

BHU (total # of pregnant women)	Syphilis prevalence		HIV infection prevalence		Hepatitis B prevalence		Hepatitis C prevalence		General prevalence	
	#	%	#	%	#	%	#	%	#	%
I (224)	2	0.89	1	0.44	1	0.44	0	0.00	4	1.78
II (70)	0	0.00	0	0.00	0	0.00	1	1.42	1	1.42
III (154)	1	0.65	1	0.65	0	0.00	1	0.65	3	1.94
IV (240)	0	0.00	0	0.00	0	0.00	1	0.41	1	0.41
V (79)	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
VI (67)	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
VII (240)	2	0.83	0	0.00	1	0.41	1	0.41	4	1.66
VIII (266)	10	3.76	2	0.75	2	0.75	1	0.37	15	5.63
IX (182)	0	0.00	1	0.55	0	0.00	1	0.55	2	1.09
X (182)	1	0.55	0	0.00	0	0.00	0	0.00	1	0.55
XI (220)	2	0.90	0	0.00	0	0.00	2	0.90	4	1.81
XII (256)	1	0.39	0	0.00	1	0.39	0	0.00	2	0.78
XIII (20)	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Total (2200)	19	0.86	5	0.22	5	0.22	8	0.36	37	1.68

**TABLE II**  
**Answers from 57 health professionals concerning places to attend pregnant women with infectious diseases susceptible to vertical transmission, in thirteen BHUs of São Paulo city, 2005.**

	BHU*		UR**		BHU + UR		Unaware	
	#	%	#	%	#	%	#	%
Syphilis	42	73.68	5	8.77	0	—	10	17.54
HIV	4	7.02	42	73.68	2	3.51	9	15.79
Hepatitis B	9	15.79	30	52.63	4	7.02	14	24.56
Hepatitis C	6	10.53	31	54.39	3	5.26	17	29.82

\*BHU = Basic Health Unit. \*\*UR = Unity of Reference. BHU + UR = Basic Health Unit + Unity of Reference.

**TABLE III**  
**Answers from health professionals concerning the BHU supervision over the procedures adopted to HIV positive mothers and exposed children, in thirteen basic health units of São Paulo city, 2005.**

	Supervision over the HIV exposed children in 13 BHU			
	As for breast-feeding and antiretroviral use		Up to the final diagnostic	
	#	%	#	%
Yes	7	56.14	6	43.86



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attending both mother and child. In order to illustrate the difficulties met, some statements gotten during the interview were pointed out – *“There should be a written register of the counter-reference”*; *“The written counter-reference should be better”*; *“Improve the written communication”*; *“It should be returned to the BHU with some report”*; *“We need written registers”*.

It was not possible to establish the vertical transmission rates of the studied diseases in any BHU evaluated, once there was no register on the mother’s medical records indicating the newborns’ outcomes. It was not possible to access the infants infectious status once their data records were not taken together with their mother’s records. During the interview, all professionals were unaware of such data.

The percentage of cases notified by the BHUs to the Supervision of Health Care Surveillance was not possible to evaluate. Although efforts to obtain the follow-up of these children, no babies under vertical transmission risk were taken to the Centro de Atendimento da Disciplina de Infectologia Pediátrica da Universidade Federal de São Paulo (CEADIPE).

#### DISCUSSION

The integrity in people, groups and collectivity care, considering the client as a subject, becomes not only an aim of the SUS, but a concept that identifies the subjects as totalities, taking into account all the possible and suitable dimensions to intervention (Machado et al. 2007).

For this and other SUS principles implementation, an increasing process for quantity and health service quality has been initiated, attempting to obtain a primary care model that concluded the service and actions integrality (Machado et al. 2007). However, there were countless setbacks to this process, such as the professionals and managers’ lack of qualification, according to the model of health promotion, as well as to the new structures of health basic actions (Machado et al. 2007).

These new concepts have brought the reference and counter-reference system (Witt 1992) as an effort

tion of these susceptible to vertical transmission diseases during pregnancy requires that the health professionals take the pregnant women to the unit professional even to other reference services where they may receive specific intervention and an adequate care. It is important to integrate these attendances, and the professionals involved must be aware of all the conduct towards this pregnant woman, because they will be attending at the BHU next to her residence, once she has initiated her prenatal care and should continue with her baby after the delivery.

Some of the infectious diseases evaluated could not be followed up by the BHU, as it happens in the case of pregnancy syphilis, whose treatment is simple and can be done with the resources of the primary health care. However, other diseases such as viral hepatitis and HIV infections could require more sophisticated examinations, which would require the use of specialized professionals used to conduct these examinations. Thus, it is important that BHU professionals know the dynamics that allows a correct and adequate direction to each case. For this to happen, according to these needs, an integrated management is expected to happen in local level and all involved, in an attempt of an effective administration that focus on setbacks in order to generate new actions. The vertical transmission rates of these infectious diseases are a very good indicator of the prenatal care quality – knowing and valuating these rates in the unit could help the individual and collective effort in the guidance of each patient.

One of the questions arising when evaluating the reference and counter-reference system is the satisfaction of the population with the service rendered in the health center (Fratini et al. 2008). Including the knowledge of low vertical transmission rates of these infectious diseases could be an important point to discuss with the pregnant women when they ask for assistance at the center. The infrequent disclosure of success experience regarding the reference and counter-reference system may suggest they are not important and couldn’t improve the system itself (Oba and 2000, Silveira et al. 2001, Maeda 2002).



to-child transmission of these infections. It was not possible to know the reason why there was so different distribution of prevalence of these infectious diseases among them. Despite a high level of prevalence of syphilis in pregnancy in one of the units (BHU VIII – prevalence = 3.76%), the average prevalence (0.86%) was lower when compared to another study taken in 2004, with representative sample of pregnant women aged from 19 to 45 in all regions of the country. It showed a 1.6% of prevalence rate for active syphilis (Brasil. Ministério da Saúde 2006a). The improvement in controlling syphilis in pregnant women, the agility in returning the exams to their BHUs and the orientation on the use of benzatine penicillin are some of the efforts implemented in a municipal level in order to achieve the elimination of such infection or, at least, to reach the levels indicated by the Health Minister, meaning one case of syphilis for every 1000 newborn alive (Brasil. Ministério da Saúde 2006b).

Finding HIV-infected pregnant women in only four of the 13 evaluated BHUs (Table I) reveals a lower frequency of this infectious disease than the national prevalence estimative of HIV-infected pregnant women, done by a sentinel study in 2004, which showed a rate of 0.537% in the southeast region (Brasil. Ministério da Saúde 2006a). This may happen as a consequence for the higher level of access of these pregnant women to the AIDS treatment and prophylaxis reference centers in São Paulo. Besides, most of the interviewed professionals (44/57 = 77.2%) were aware of the necessity of taking these pregnant women to reference units in order to do the prophylaxis of HIV-vertical transmission (Table II).

Even though there are no specific measures for hepatitis C vertical transmission prophylaxis, the identification of the pregnant women infected will lead to a more adequate attendance.

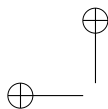
The encounter of HCV+ pregnant women in seven of the 13 evaluated BHUs tackles attention to the needs of a routine investigation of this infectious disease during prenatal. The lack of the health team awareness towards this infection became evident when we could

very important to generate prophylactic measures in order to stop contamination in newborns who should receive a vaccine against hepatitis B and specific immunoglobulin in their first hours of life. The prevalence of these two complications among pregnant women was similar to the results found in other studies (Focaccia et al. 1998, Peixoto et al. 2003, Perim and Costa 2005), but the mechanisms of reference and counter-reference in evaluated BHUs still do not have a suitable influx.

The studied BHUs neither have a serial register of the prevalence rates (monthly or yearly) of the infectious disease in their pregnant population nor the mother-to-child transmission of these infections. In this study, it was not possible to establish the studied diseases of vertical transmission rates, once there was no register on the mother's medical records about the newborns' outcome, and the BHU teams were unaware of this data. The attempt of taking them to a reference unit specialized in attending and treating vertical transmission diseases, connected to the Universidade Federal de São Paulo, did not succeed and the final infectious status of these babies were never known. Such fact suggests that the low level of the patient-health team commitment is due to the lack of stimulation in the basic unities and may have contributed to this issue.

The reference and counter-reference system is supposed to generate the exchange of information related to the actions taken by the basic health unit, the labs and the maternity wards. Only by performing joint actions will such activity have positive results arising the necessary interventions. It's important to remember that these women will always look for aid in the primary care center close to their homes, where they've initiated their prenatal follow-up, and to where they are supposed to take the children to pediatric follow-up (Brasil. Ministério da Saúde 2005). However, only 46.2% of these women returned to the BHU after delivery, which suggests that the professional-client commitment was not well established during the prenatal care. Such fact can endanger the step of constant follow-up, a basic function of primary health care.

We have observed that there is no organized influx



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will provide specialized follow-up during their pregnancy. There is also no contact between the professional who provided the prenatal attendance and the one who will attend the mother and her newborn in the maternity and postnatal wards. The outcomes of an adequate reference and counter-reference system can help to maintain the link between the patient, the family and the health system as one of the beneficial consequences (Fratini et al. 2008).

The professionals interviewed at the BHUs (nurses, psychologists, speech-language therapists, social assistants, dentists and doctors) revealed no professional exchange of information about patients attended in the same unit. The pediatrician stated that he was unable to answer the questions about pregnant women, while the gynecologist was unable to answer the questions about children. Considering the prenatal care aims at caring for both mother and child, this attitude becomes even more serious, once it reveals lack of agreement among the staff of the same unit and, furthermore, there is no system to check on the patients' whereabouts. Most of the interviewed professionals were only involved with assistance, being unaware of the global epidemiological data of that unit.

The proposition that all people and families of a society must have accessibility to essential services, offered in means they can accept, through their full participation, and being affordable to the society and to the country (Witt 1992) has not been met at the BHUs evaluated. Establishing a suitable exchange of information during the prenatal follow-up, as well as the staff qualification to attend such cases would have, as a result, a better mother and child follow-up. In order to reach integrality, team work is essential to the process of professional qualification as a way to provide health care in individual and collective levels. However, as this study shows, the current procedures consist of fragmented practices focused in production, leading to countless complaints and different levels of attendance. In order to change this scenario, a new reference is set, aiming at providing and recovering health.

It is possible to conclude that there is no register

São Paulo city evaluated in 2005. This fact makes it impossible to know the preventive measures taken to reduce the vertical transmission rates. Pregnant women infected with Syphilis and HIV present a reasonably well established influx of guiding. However, there are doubts about the lack of standard in dealing with viral hepatitis. The Health Coordination and Health professionals' awareness of prenatal care dynamics is of utmost importance. Informing all the staff who will attend pregnant women and newborns about all the indications and preventive and therapeutic measures will bring benefits to clients, as well as to the staff, which will be able to provide the necessary resources to find a solution to this problem.

#### ACKNOWLEDGMENTS

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#### RESUMO

O objetivo deste estudo foi determinar a prevalência de doenças transmissíveis, tais como sífilis, síndrome da imunodeficiência adquirida (SIDA) e hepatite por vírus B e C, em gestantes que utilizaram pré-natal em treze unidades básicas de saúde do município de São Paulo e avaliar a eficácia do sistema de referência e contra referência para esses agravos, considerando o registro nas UBS do resultado final da gestação e da transmissão vertical desses agravos. Constituiu-se de um estudo epidemiológico, cujo objeto de observação foi arquivado em prontuário de atendimento pré-natal das gestantes com infecções passíveis de transmissão vertical e seus resultados. A prevalência de sífilis foi 0,86%; de HIV e Hepatite B, 0,36% e de Hepatite C, 0,36%. Conclui-se que não há registro de referência e contra referência para os agravos avaliados nas 13 unidades básicas de saúde da região sul do Município de São Paulo que foram avaliadas em 2005. Este fato impossibilita o conhecimento das medidas profiláticas adotadas e das taxas de transmissão vertical. A sensibilização dos profissionais e das Coordenadorias de Saúde sobre a importância





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