

Audit of routine tests in the antenatal period in women delivering at National District Hospital, Bloemfontein, South Africa, in 2016

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Background. Infectious diseases are transmissible from mother to unborn child. Appropriate treatment during antenatal care is crucial.
Objective. To determine whether routine antenatal tests (syphilis, HIV, Rhesus factor) were performed in women delivering at National District Hospital (NDH), Bloemfontein, South Africa, and whether treatment was initiated for women testing positive for these infections.
Methods. This descriptive retrospective study consisted of 2 425 women who delivered between January and December 2016. Antenatal care history was obtained from the delivery register.
Results. Nearly all women were tested for syphilis (99.1%), HIV (99.9%) and Rhesus factor (99.9%). A third (33.3%) of the patients who tested positive for syphilis were untreated. Of the 27.0% of patients who tested HIV-positive, 99.7% were recorded to have been on treatment. Just over half (54.3%) of the patients who tested Rhesus-negative received prophylaxis.
Conclusion. A record of routine antenatal testing of women delivering at NDH was found. The reaction to positive results could improve.

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Sexually transmitted diseases such as syphilis and HIV can be transmitted from mother to child during pregnancy and birth.^[1] Untreated syphilis in pregnant women can lead to death in up to 40% of neonates.^[1] Infants born with HIV tend to develop AIDS-defining symptoms very rapidly, with most of them having diagnosable AIDS within the first 2 years of life.^[2]

According to the World Health Organization, the risk of mother-to-child transmission in the absence of immediate antiretroviral treatment is 15 - 45%. However, effective prevention of mother-to-child transmission may reduce this risk to <5%.^[3] A study conducted at four public healthcare facilities in the Cape Metropole, South Africa (SA), found that early access to antenatal care helps to reduce maternal deaths, as HIV has been shown to be the biggest contributor to maternal deaths in SA.^[4]

The SA Department of Health provides routine syphilis and HIV tests to all consenting pregnant women. Screening for syphilis is done in the first and third trimester of pregnancy. The first HIV test is usually performed at the woman's first visit to the healthcare facility, and repeated at 32 weeks.^[2]

Rhesus (Rh) incompatibility may occur when the mother is Rh-negative and the fetus receives the Rh antigen from the father. Should the mother become sensitised by the leaking of some of the fetus' blood, she may develop antibodies, which can lead to complications in later pregnancies.^[2] Prophylactic anti-D can be given to prevent this.

National District Hospital (NDH) is a primary healthcare facility providing delivery services for Bloemfontein and the southern Free State Province. About 2 500 deliveries are supervised in the maternity section per annum. As basic antenatal care is provided free of charge

at all SA state health facilities, this study served to audit whether the routine tests were indeed performed in pregnant women who delivered at NDH.

The aim of the study was to determine whether pregnant women underwent basic screening testing for syphilis, HIV and Rh factor. The study also aimed to further determine whether they were then treated according to the current protocol, if they tested positive.

Methods

This was a descriptive retrospective study. The protocol was approved by the Health Sciences Research Ethics Committee of the University of the Free State (UFS; ref. no. HSREC-S 43/2017). Permission to access the delivery register was obtained from the Free State Department of Health. Confidentiality was maintained by allocating a study number to each patient. No identifying information such as names or addresses was noted.

Study population and sampling

The study sample consisted of all women who delivered at NDH between January and December 2016.

Measurement

Data were obtained from the delivery register of the maternity ward at NDH, which contains routinely collected patient data and is updated on discharge. The following information was noted on the data form: whether the HIV, syphilis and Rh factor tests were performed; and whether the patients were being treated in accordance with their test results.

Data analysis

Data were coded and entered into Excel (Microsoft, USA) by the student researchers. Data checking and analysis were performed by the Department of Biostatistics, UFS. Results were summarised as frequencies and percentages.

Results

Data were found for 2 425 women who had been entered into the delivery register during the study period. The median age of the women was 26 (range 14 - 45) years. The majority (94.3%, $n=2\ 288$) had received antenatal care, while 4.9% ($n=118$) had not. For 0.8% ($n=19$) of the patients, antenatal care data were not recorded in the register. Of the women who had received antenatal care, 3.1% ($n=70$) began antenatal care in the first trimester, 69.1% ($n=1\ 581$) in the second trimester and 23.5% ($n=537$) in the third trimester. For 4.4% ($n=100$), the trimester was not noted.

Tables 1 - 3 summarise the number of patients who had syphilis, HIV and Rh factor tests, respectively, during their antenatal care, as well as the outcomes and treatment. Nearly all women were tested for syphilis using the rapid plasminogen reagin (RPR) test during the third trimester. A third of the patients who tested positive for syphilis were untreated.

All patients had an HIV test, apart from one patient for whom it was stated as unknown. Of the 27.0% of patients who tested positive for HIV, it was recorded that 99.7% received treatment according to the current protocol.

Nearly all of the patients (99.9%) underwent Rh factor testing, with only 2.9% testing Rh-negative. Just over half (54.3%) of the patients who tested Rh-negative received prophylactic treatment, with 34.3% recorded as untreated and 11.4% recorded as unknown.

Discussion

Nearly all women who delivered at NDH during 2016 had been tested for syphilis (99.1%), HIV (99.9%) and Rh factor (99.9%) during the antenatal period.

As of 2012, the National Antenatal Care Survey no longer monitors the trends in the prevalence of antenatal syphilis, owing to the relatively low values.^[1] Our results showed that almost all the women tested negative for syphilis, with only 1% testing positive. A third (33.3%) of the women who tested positive, however, remained untreated. The vast majority of the women had not presented for antenatal care in the first trimester, and did not have a first-trimester RPR test, but most women had been tested for RPR by the third trimester. A retrospective cross-sectional study conducted in 2008 to evaluate the quality of antenatal services provided in a rural district of KwaZulu-Natal Province, SA, found that in the 244 antenatal care records collected, 18% of pregnant women were screened for syphilis during their first visit, and just 2% at 36 weeks.^[5] Only 16% of the women who tested positive for syphilis received adequate treatment. The authors concluded that the quality of antenatal care in the area fell short of the required level according to the national standards.^[5]

In the present study, all patients but one were tested for HIV. The HIV prevalence of 27% in our study is consistent with the HIV prevalence of 29.8% in the overall Free State Province, as recorded in the 2015 National Antenatal Care survey.^[1] Only 2 of the 655 patients who tested HIV-positive were untreated at the time of discharge after delivery. The remaining 653 were recorded

Table 1. Syphilis routine antenatal testing (RPR), outcomes and treatment (N=2 425)

Variable	n (%)
Tested in first trimester	
Yes	58 (2.4)
No	2 268 (93.5)
Unknown	98 (4.0)
Tested in third trimester	
Yes	2 402 (99.1)
Unknown	23 (0.9)
Outcome for patients tested	
Positive	24 (1.0)
Treated	
Yes	16 (66.7)
No	8 (33.3)
Negative	2 371 (98.7)
Unknown	7 (0.3)

RPR = rapid plasminogen reagin.

Table 2. HIV routine antenatal testing, outcomes and treatment (N=2 425)

Variable	n (%)
Test performed	
Yes	2 424 (99.9)
Unknown	1 (0.04)
Outcome for patients tested	
Positive	655 (27.0)
Treatment received	
Yes	653 (99.7)
No	2 (0.3)
Negative	1 763 (72.7)
Unknown	6 (0.3)

Table 3. Rhesus factor routine antenatal testing, outcomes and treatment (N=2 425)

Variable	n (%)
Test performed	
Yes	2 422 (99.9)
No	1 (0.04)
Unknown	2 (0.08)
Outcome for patients tested	
Rh-positive	2 344 (96.8)
Rh-negative	70 (2.9)
Prophylaxis given	
Yes	38 (54.3)
No	24 (34.3)
Unknown	8 (11.4)
Unknown	8 (1.2)

as discharged with antiretroviral treatment. This is in line with the national maternal care guidelines, which state that all pregnant women found to be HIV-positive must be put onto antiretroviral therapy immediately.^[2]

The percentage of women found to be Rh-negative (2.9%) was slightly lower than expected. About a third (34.3%) of these were recorded as not having received prophylaxis, missing an opportunity for prevention.

Study limitations

As all data were obtained from the delivery register, the findings of the present study are dependent on the information captured therein. While we can verify that the information obtained from the register has been accurately captured by our study, we can only assume that it is reliable and genuine. Errors in recording by staff and researchers, as well as illegibility of handwriting in the register, were methodological errors encountered, but thought to be negligible.

Recommendation

The reaction to positive RPR and Rh-negative results needs to improve to ensure that all patients identified are treated, in order to improve the effectiveness of the screening programme.

Conclusion

Nearly all women had been tested for syphilis (99.1%), HIV (99.9%) and Rh factor (99.9%) by the time of discharge from the NDH delivery facility. The majority of those found to be HIV-positive were treated, while 33.3% of women who tested positive for syphilis remained untreated. Only 3% of women were found to be Rh-negative, and 34.3% of these did not receive prophylaxis. Therefore the screening of pregnant women delivering at NDH with routine testing is being performed satisfactorily, while the reaction to positive results has room for improvement.

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Conflicts of interest. None.

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1. National Department of Health, South Africa. 2015 National Antenatal Sentinel HIV and Syphilis Survey Report. Pretoria: National Department of Health, 2015.
2. National Department of Health, South Africa. Guidelines for maternity care in South Africa. 4th ed. Pretoria, South Africa: National Department of Health, 2015. https://www.health-e.org.za/wp-content/uploads/2015/11/Maternal-Care-Guidelines-2015_FINAL-21.7.15.pdf (accessed 26 March 2017).
3. AVERT. Prevention of mother-to-child transmission (PMTCT) of HIV. Brighton: AVERT, 2017. <https://www.avert.org/professionals/hiv-programming/prevention/prevention-mother-child> (accessed 26 March 2017).
4. Smith A. Early access to antenatal care helps stop maternal deaths. Stellenbosch: Stellenbosch University, 2017. <http://www0.sun.ac.za/pgstudies/news/early-access-to-antenatal-care-helps-stop-maternal-deaths.html> (accessed 30 March 2017).
5. Hoque M, Hoque E, Kader SB. Audit of antenatal care in a rural district of KZN, South Africa. *S Afr Fam Pract* 2008;50(3):66-66d. <https://doi.org/10.1080/20786204.2008.10873721>

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