

## Research Project

# Incident HIV in Pregnant Women and Sexual Risk Behaviors Related to Transmission in Urban South Africa

### Third-party funded project

**Project title** Incident HIV in Pregnant Women and Sexual Risk Behaviors Related to Transmission in Urban South Africa

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HIV incidence during pregnancy may be elevated, compromising the health of both pregnant woman and her child. Risk of mother to child transmission (MTCM) of HIV is increased approximately three fold with early HIV infection (EHI) due to the high viral load prior to sero-conversion. Understanding the magnitude of early HIV infection and risk factors for HIV acquisition and transmission during pregnancy will help to target behavioral interventions. Though antiretroviral drugs are currently available for both treatment and /or prophylaxis in South Africa, current protocols often miss newly incident infection in pregnancy increasing the risk of neonatal infection, and also risking the health of the mother and her sexual partner(s). The interdisciplinary approach to the study will not only help in identification of EHI and also to help to understand the HIV-risk perception, and biomedical, social and cultural determinants in this high risk population. Aims and objectives: The overall aim of the study is to determine early HIV infection among pregnant women who consult the Chris Hani Baragwanath Hospital in Johannesburg for antenatal care, and to understand their biological and sexual risk behaviors and that of their partners. The study will be conducted in two phases and consists of a formative phase and prospective study. The current proposal comprises the formative phase. The main objectives of this study will be to (i) detect early HIV in pregnant women using specimen pooling and HIV RNA PCR tests; (ii) compare sexual risk behavior including intravaginal practices before HIV diagnosis between pregnant women who acquire HIV during pregnancy compared to risk-set matched women without HIV; (iii) compare sexual risk behaviors during pregnancy between male partners of women who acquire HIV during pregnancy and male partners of women without HIV; (iv) understand sexual behavior during pregnancy of women and their partners who acquire HIV during pregnancy, in comparison with women and partners without HIV. The second phase, which is not part of this proposal, will determine HIV incidence in pregnancy and validate the findings from the suggested behavioral studies prospectively. Methods of investigation: Multiple methods will be used to address the four objectives. In a cross sectional design, we will identify women with new infections using specimen pooling and HIV RNA reverse transcriptase polymerase reaction (RT PCR) tests (i). Women diagnosed with early HIV infection at first antenatal visit in the Chris Hani Baragwanath Hospital, Johannesburg, will be enrolled as cases in a case control study (ii). Four aged matched controls for each case will be selected among women who are HIV negative at the time of a case diagnosis. Sexual risk behavior data will be collected to those who choose to join the study enquiring about the six weeks and three months prior to their HIV diagnosis. Partners of women en-

rolled in the case control study will be invited to enroll in a case control partner study (iii). We will collect data on basic demographics, HIV status and partners' sexual risk behaviors in the six weeks and three months prior to the HIV diagnosis of their partners. In addition, biographical in-depth qualitative interviews will be conducted with a subsample of cases and controls (iv). This study will be nested within the infrastructure of an ongoing fetal growth study, a developmental pathway study, which will follow up women and their infants up to 42 months after delivery at DPHRU-Chris Hani Baragwanath research site in Johannesburg. The preliminary analysis will inform the development of structured questions/tools for the prospective study design, which is planned to follow 15 months later (separate funding). Significance: The prevalence of HIV among pregnant women in South Africa is estimated at 30%, one of the highest in Sub-Saharan Africa. Among the 24 highest prevalence countries, South Africa is one of the five countries where the burden of HIV is still increasing. There is unmet need for family planning, high incidence of pregnancy, and high HIV transmission rates among women of reproductive age. With the wide availability of antiretroviral drugs it is imperative to optimize identification of HIV infected women for treatment/prophylaxis to prevent transmission to their infants. Although this information is widely available, there is need for an in-depth understanding of the driving forces behind the sexual risk behavior that continue to put pregnant women, their partners and children at risk to help mitigate the problem. Knowing which sexual risk behaviors lead to transmission will facilitate more effective outreach and behavioral interventions.

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