


Chapter 10

Pharmacogenomics and Perinatal Morbidity: A Comprehensive Review of Bacterial Sexually Transmitted Infections

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ABSTRACT

*Sexually transmitted infections affecting young women of reproductive age, adolescents and children can cause a wide spectrum of long-term morbidities. During gestation, STIs can result in adverse pregnancy outcomes, emphasizing the importance of screening and early treatment. Perinatal STIs outbreaks exert significant impact on neonatal outcomes. The range of bacterial STIs encompasses common pathogens (*Chlamydia trachomatis*, *Neisseria gonorrhoeae*, *Mycoplasma hominis* & *genitalium*, *Ureaplasma* infection, *Treponema pallidum*) and several less frequent species (*Haemophilus ducreyi*, *Klebsiella granulomatis*, etc). Nucleic acid amplification tests (NAATs), are more sensitive in the detection of bacterial loads and currently represent the gold standard tests. Overall, effectively managing bacterial STIs during pregnancy requires a population health approach that considers the specific needs of pregnant women, incorporates pharmacogenomic insights into treatment strategies, and prioritizes patient-centered care to ensure the best possible outcomes for both mothers and their newborns.*

INTRODUCTION

Sexually transmitted diseases (STDs) represent a major global health priority as they can cause long-term morbidity, especially for young women of reproductive age and children (Duh et al., 2017). Infected individuals might remain asymptomatic or present with subtle symptoms and clinical findings, among which are excessive or malodorous vaginal discharge, genital burning or itching, vulvar ulcers and abdominal pain. Related bacterial pathogens are predominantly *Neisseria Gonorrhoeae* (NG), *Chlamydia* spp, *Mycoplasma* spp and *Ureaplasma* spp infections, as well as *Treponema pallidum* and viral infections like Human Papillomavirus (HPV), Herpes Simplex Virus (HSV) as well as Human Immunodeficiency Virus (HIV). These complications illustrate a broad spectrum in terms of localization and severity; clinical examples include pelvic inflammatory disease (PID), female infertility, ectopic pregnancy, cancer of the cervix uteri, as well as congenital or severe perinatal infections in infants born to infected mothers (Kachikis et al., 2023; Kyrgiou et al., 2015; LeFevre & Force, 2014; Newman et al., 2013; Tsakiroglou et al., 2011; Valari et al., 2011; Valasoulis et al., 2020; Viscardi & Kallapur, 2015). Recent World Health Organization (WHO) data suggest that more than one million STI infections are being transmitted daily worldwide (*Global Health sector strategy on Sexually Transmitted Infections: 2016-2021*, 2019). The literature suggests that the annual incidence of new chlamydial or gonorrheal infections approximates 360 million individuals. Meanwhile, more than 500 million people are estimated to

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