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Statistical modeling maternal-infant HIV transmission with variable hazard rate

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An important public health issue is to determine the risk of transmission of perinatal HIV and when it occurs. Mother to infant transmission of HIV can occur in utero, intrapartum or postpartum. Postnatal HIV transmission through contaminated breast milk is of particular concern. Anti-retroviral drugs (ARVs) are highly effective for the prevention of mother to child HIV transmission (PMTCT). Without ARV prophylaxis, the risk of transmission by eighteen months of age ranges from 25-40% in breastfeeding populations. A knowledge of the timing of perinatal transmission of Human Immunodeficiency Virus (HIV) would be valuable for the determination and evaluation of preventive treatments. Effective strategies are urgently needed to reduce mother to infant perinatal HIV transmission. Perinatal transmission refers to mother to infant HIV transmission occurring before or at the time of the birth. It results from fetal exposure to the maternal fluids or infected maternal secretions. The present article proposes the statistical models that simultaneously estimates the risks of perinatal transmission together with the sensitivity of the screening tests for HIV infection with variable hazard rates. The article aims at exponential, geometric distributions as lag time distributions as the sensitivity of the screening tests with variable hazard rates. The methods are illustrated with the data from a randomized control study, conducted in South Africa.

Biography

Subhash Shende has completed his MSc in Statistics at the age of 23 years from Pune University, India. He is head of the Department of Statistics, Fergusson College, Pune, India. He has authored 3 books in Statistics.

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