# Important Facts to Consider in Modelling HBV MTCT

James Mba Azam
SACEMA, Stellenbosch University

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- The decrease in MTCT of HBV would also decrease the reservoir of chronically infected individuals who could then transmit in early childhood or adulthood[Thio et al., 2015].
- Antiviral drugs given in the late first or early second trimester have the potential for decreasing maternal HBV DNA to undetectable concentrations at delivery [Thio et al., 2015].
- Even when administered *optimally*, the current immuno prophylaxis regimen fails in 8-32% of mothers who have the highest risk of transmitting HBV - i.e, those who are HBeAg positive[Thio et al., 2015].
- Although several factors have been associated with MTCT of HBV, studies have repeatedly shown that the most important risk factor is high circulating concentrations of HBV DNA in the mothers, with about $10^7$ IU/mL being the cutoff[Thio et al., 2015].
- Crucial research gaps include:
  - the timing and exact indication of the intervention,
  - establishment of a goal HBV DNA concentration to achieve at delivery,
  - determination of frequencies of maternal HBV flares after treatment discontinuation, and
  - selection of the best antiviral drug [Thio et al., 2015].
- Since human beings are the only reservoir of HBV, eradication is possible and an important step towards this goal is interruption of MTCT[Thio et al., 2015].
- Hepatitis B immune globulin at the time of birth plus three doses of the recombinant hepatitis B vaccine over the first 6 months of life is up to 95% effective in preventing perinatal transmission[Tran, 2009].
- Antiviral treatment during the third trimester of pregnancy may reduce perinatal transmission of HBV; the benefit appears most pronounced with high maternal viremia[Tran, 2009].
- Despite successful screening and vaccination programs, *high maternal HBV DNA* correlates in some studies with perinatal transmission[Tran, 2009].
- The disease-free equilibrium can be used as an indicator of possible eradication.

# References

[Thio et al., 2015] Thio, C. L., Guo, N., Xie, C., Nelson, K. E., and Ehrhardt, S. (2015). Global elimination of mother-to-child transmission of hepatitis b: revisiting the current strategy. *The Lancet Infectious Diseases*, 15(8):981–985.

[Tran, 2009] Tran, T. T. (2009). Management of hepatitis b in pregnancy: weighing the options. *Cleveland Clinic journal of medicine*, 76:S25–9.

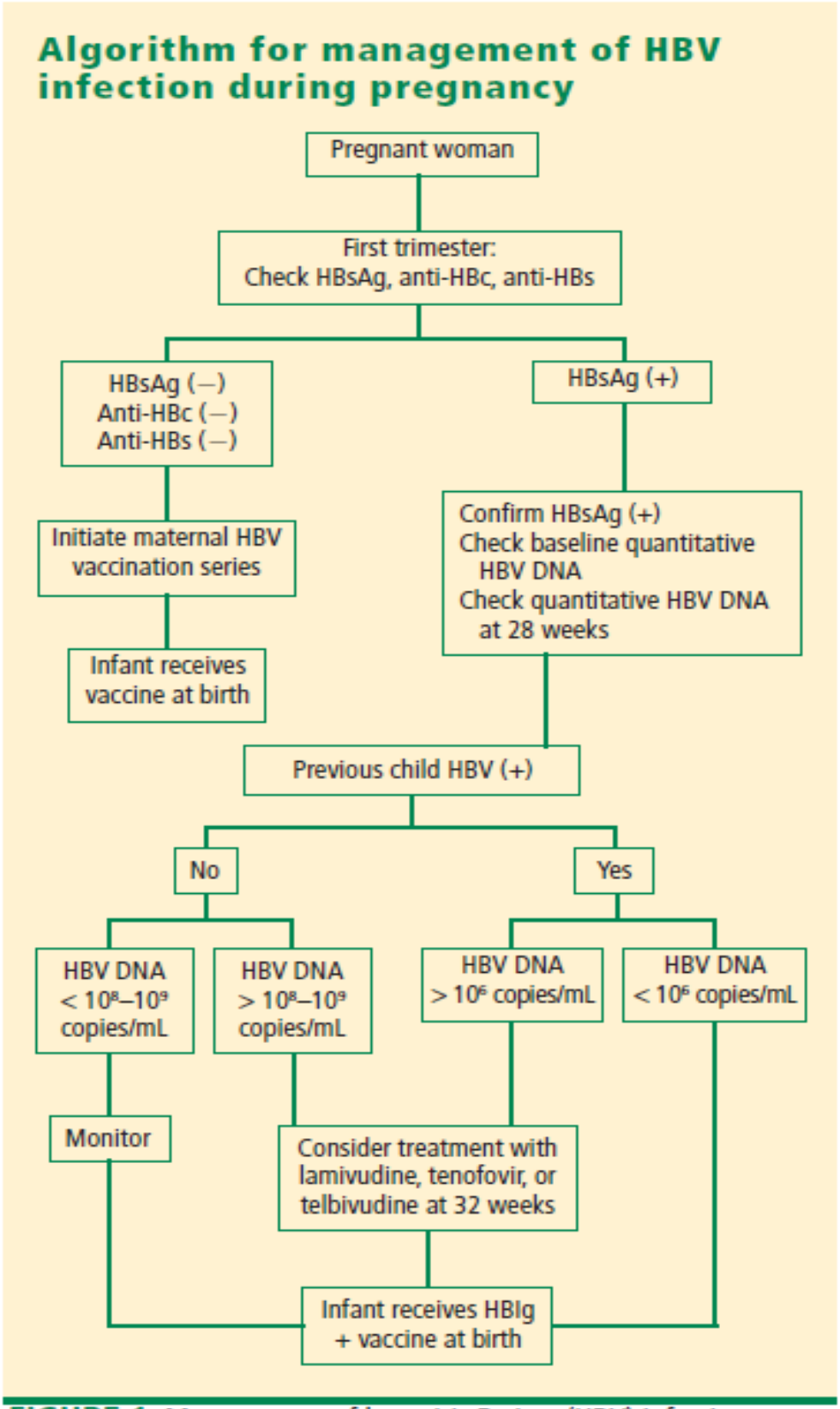


**FIGURE 1.** Management of hepatitis B virus (HBV) infection during pregnancy starts in the first trimester with assessment of hepatitis B surface antigen (HBsAg), antibody to hepatitis B core antigen (anti-HBc), and antibody to HBsAg (anti-HBs). Treatment decisions are based on viral load (HBV DNA) levels at week 28 and presence or absence of a history of perinatal transmission. HBIg = hepatitis B immunoglobulin