

Modelling and Analysis of HBV Transmission in Senegal

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The objective of this thesis is modelling the transmission of hepatitis B in Africa in general and, Senegal in particular.

We propose new models based on the state of art and the epidemiology currently

known from the transmission of the hepatitis B virus. Thus, we present two models of the transmission of HBV, a model without vertical transmission and another in which the vertical transmission of the disease is taken into account. This second model is justified by the controversy, with regard to the incidence of the vertical and perinatal transmission of the Virus in some parts of Africa ; between the World Health Organization on one hand and hepatitis B's specialists in Senegal on the other hand. These models helped us study epidemiological models with a differential susceptibility of the population, and staged of infectious. We present a complete analysis of the stability of the models using the Lyapunov techniques and obtain the basic reproduction ratio, R_0 which allows into the study of general epidemiological models including those proposed for the transmission of the hepatitis B Virus.