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CAN WE INFER THE ROUTES OF INFECTION TRANSMISSION FROM INCIDENCE DATA?

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Infectious diseases of humans may be transmitted in several ways, such as direct contact, environmental contamination, vertical, vector-borne. Often it may be difficult to recognize the relative importance of different transmission modes in sustaining an epidemic.

A case in hand is the one of Zika, whose transmission was initially described [2] as occurring solely through the bite of infected adult female mosquitoes of the genus *Aedes*, but for which more recently transmission through sexual contact has been documented [3]. The fact that most reported cases in Brazil were in women has prompted the suggestion [1] that transmission through sexual contacts played a large role in that epidemic.

Based on this example, we examine simple models in which transmission may occur through different routes, including sexual contacts with a higher probability of transmission from one sex to the other than vice versa, and study how this bias in transmission reflects in sex differences in final attack ratios (i.e. the fraction of individuals of each sex that eventually gets infected) [4].

Another model, inspired by West Nile Virus, includes vector-borne and direct transmission; we study how the relative weights of the two modes affects the prevalence in hosts and vectors.

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