Reinfection in hepatitis C epidemics

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¿From recent observations it has become clear that reinfection changes basic epidemiological parameter estimates for infection with the hepatitis C virus (HCV) [1]. The strength of the force of infection for the primary infection versus the strength for following reinfections is under investigation [2, 3], and reinfection might be less likely than first infection. Gomes *et al.* have recently studied the consequences of a lower reinfection than the first infection in extenso [4, 5]. They consider an SIRI model, which links the classical SIS model with the as well classical SIR model. Such a link between SIS and SIR has been studied earlier in statistical physics in respect to critical fluctuations [6] and since then in many publications, for a recent overview see e.g. [7]. These critical fluctuations play an important role in modelling multi strain dynamics [9] being modelled directly as stochastic process, in order to also make parameter estimation possible [8]. We investigate the infection/reinfection process in HCV with the tools and ideas mentioned above, taking into account that HCV can develop from an accute to a chronic disease, where the probability of transition from first accute infection is reported to be higher that the one from accute reinfections [10]. For significantly lower accute reinfection one would expect a shadowing effect, similar to the one for decreased transition to cronic disease.

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