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Modeling Variable Compliance to Recommended Interventions to Control Outbreaks

Management of the COVID-19 pandemic required, during its early stages, the deployment of non pharmaceutical interventions (NPIs) [social isolation, physical distancing, mask-wearing, hand-washing], and then, as they became available, administration of repeated doses of vaccine. We are interested in the consequences, for the dynamics of the disease, of variable adherence to these measures, and the motivation generating the lack thereof; so we investigate a model for the change in attitude post-infection. A basic SEIRS model is expanded by a. introducing a structure in the infectious class, to reflect the variable severity of symptoms and the presence of asymptomatic cases; and b. considering the population divided into two classes according to their degree of adherence to the NPIs. Analysis of the ensuing model is guided by epidemiological observations in Québec. A recent analysis of a simpler model for compliance pre-infection will be presented.