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Circadian variability in a two-compartment pharmacokinetic model

Circadian variability of a number of physiological parameters is well documented. Attempts have been made to incorporate these fluctuations into one-compartment pharmacokinetic models, but some of the fundamental parameters, notably C_{max}, were shown to remain constant. We introduce a bi-compartmental, time-varying model to represent responses to intravenous and oral drug administration. The effects of the parameters representing circadian changes on a single dose, and on multiple doses, are investigated, and are found to potentially, but not systematically, induce significant changes in C_{max}.

Joint work with Florence Véronneau-Veilleux.