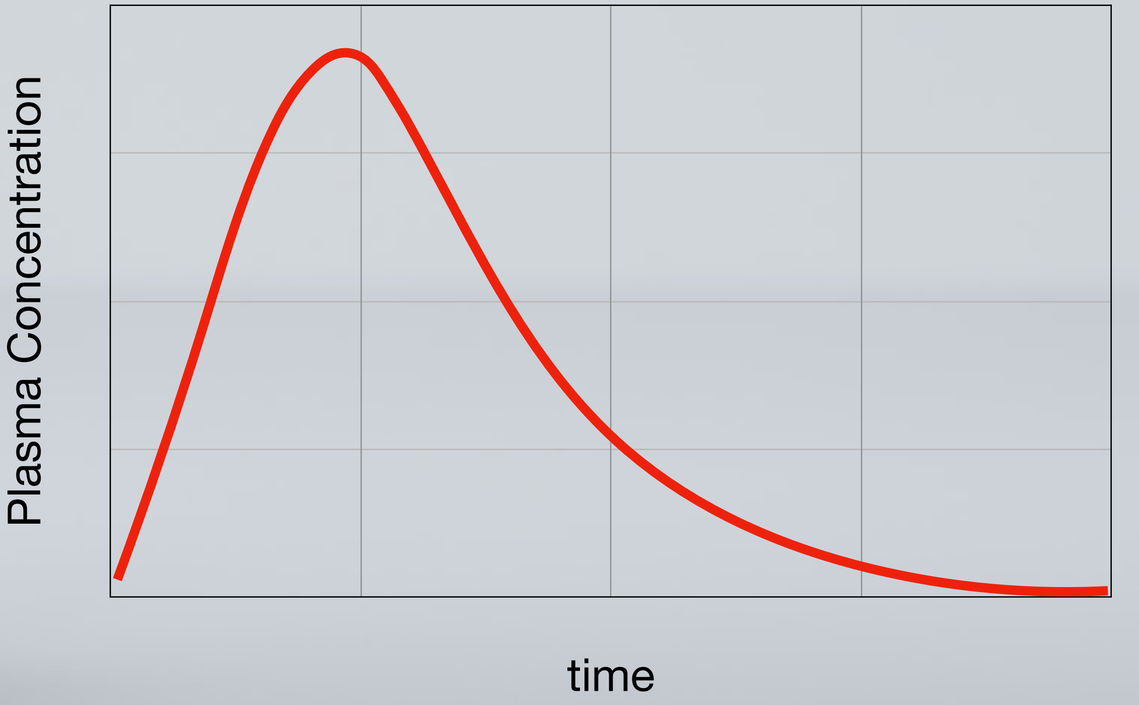
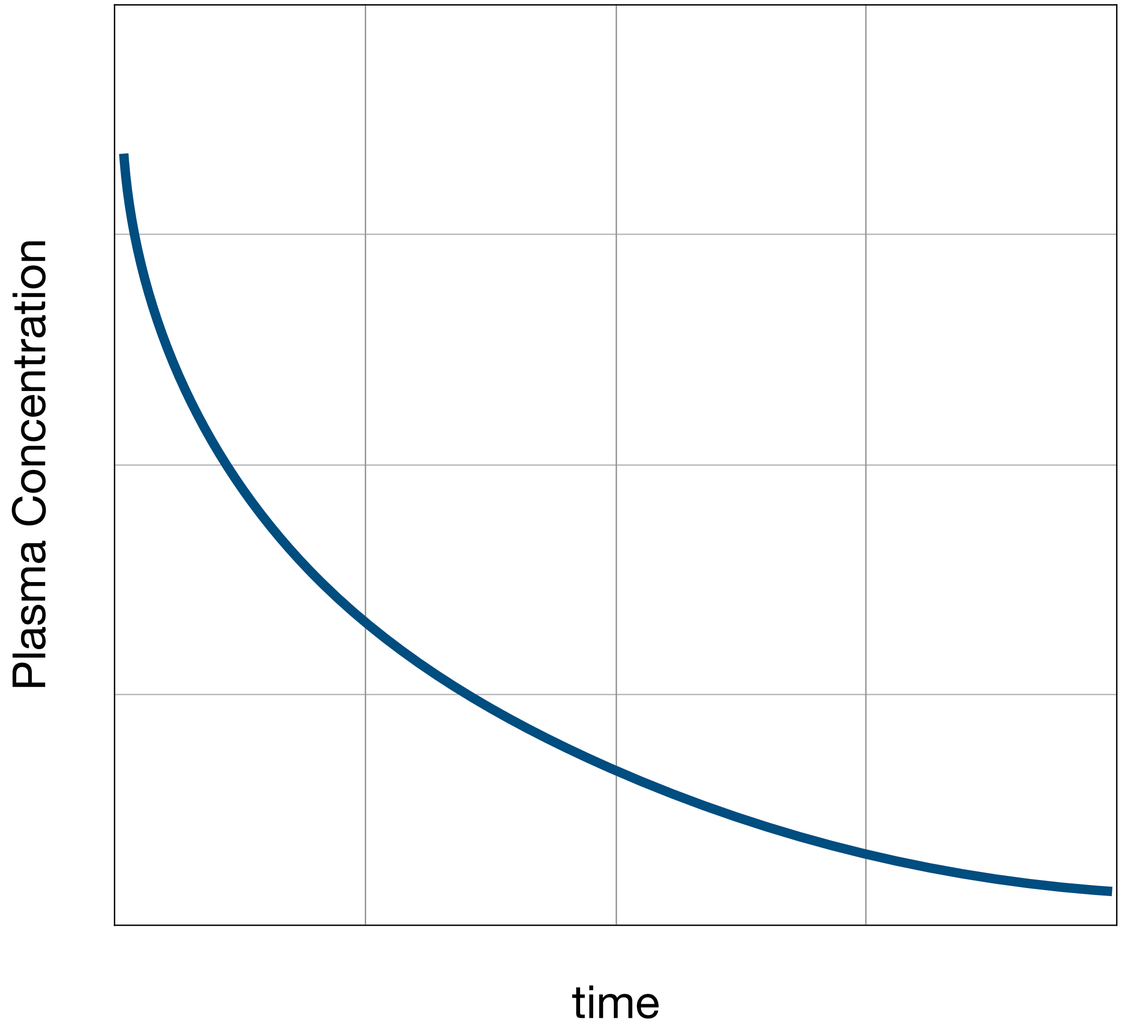
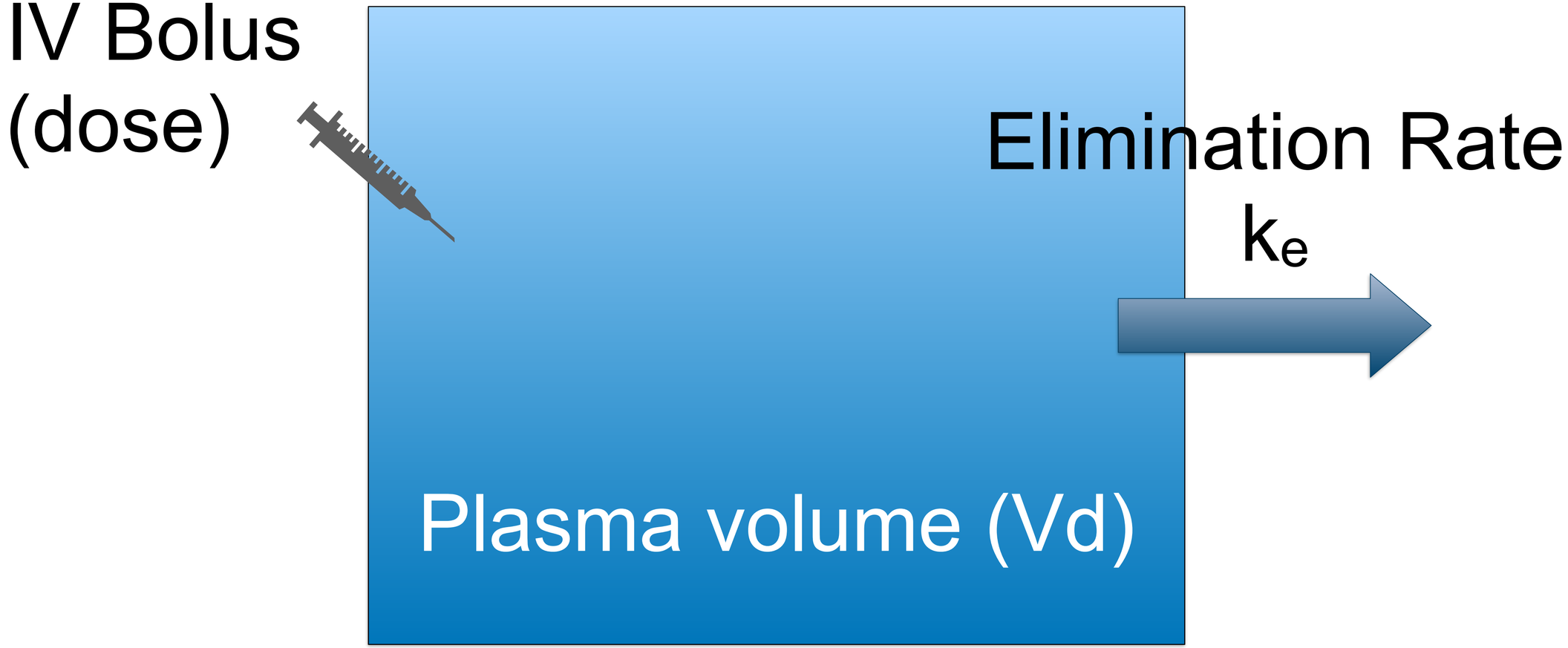
# How to code a simple one-compartment pharmacokinetics model in Python



# The IV bolus model



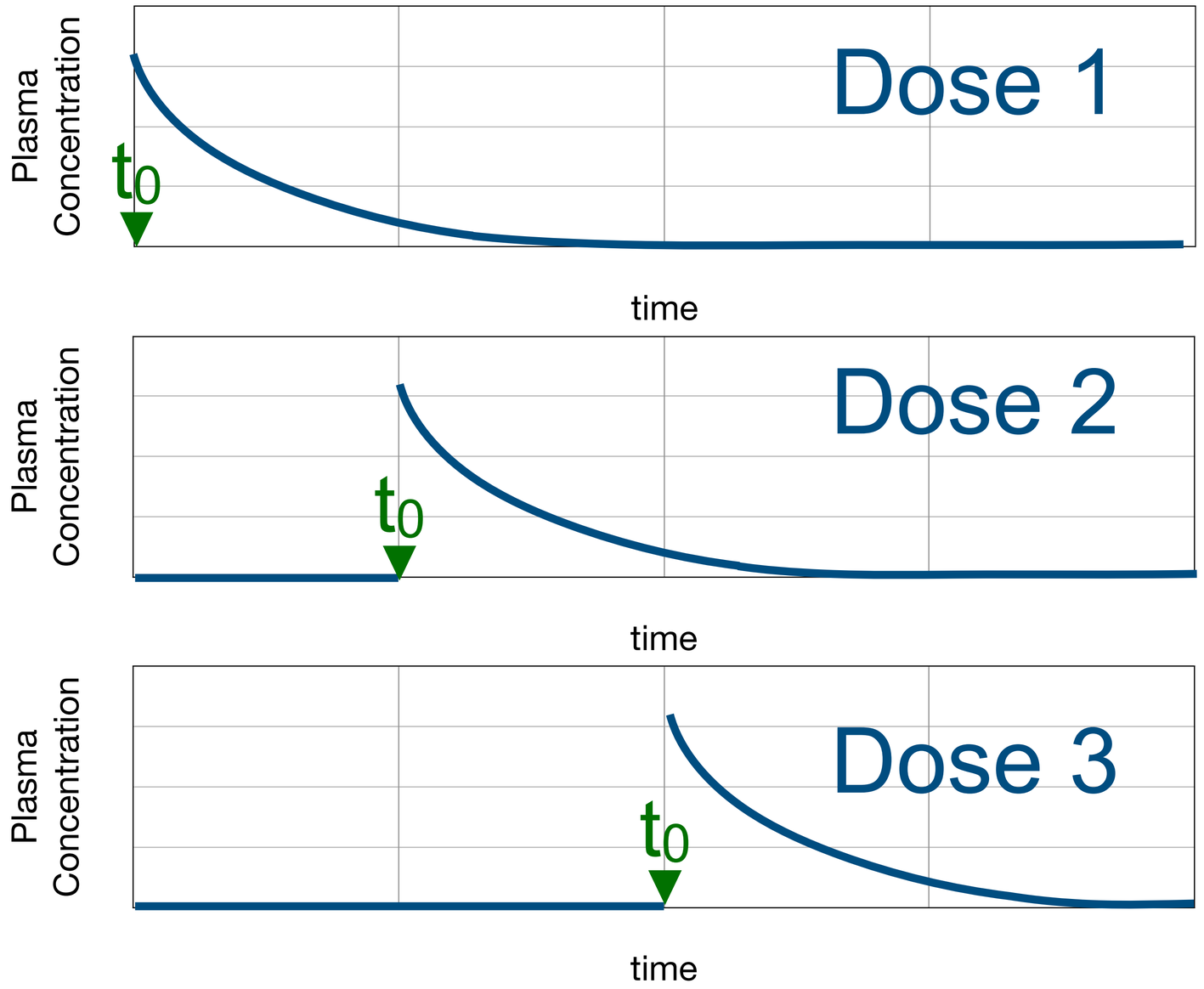
# The IV bolus model



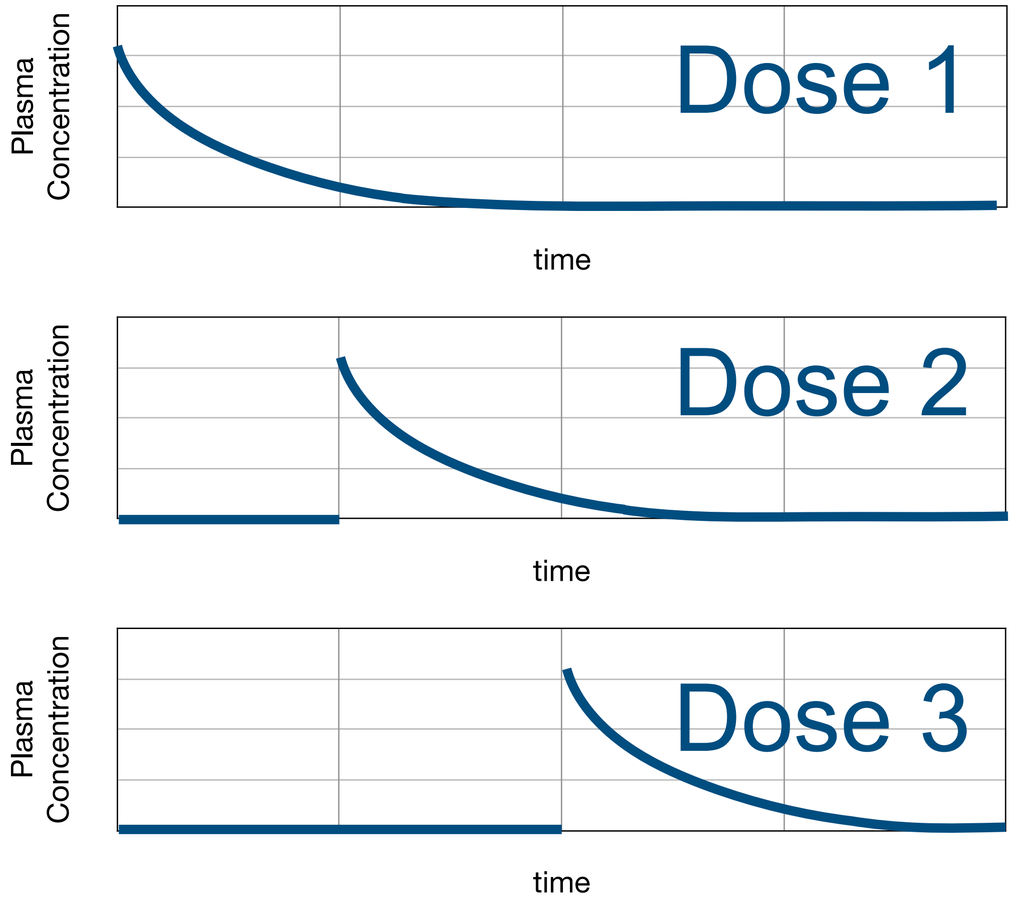
# The IV bolus model

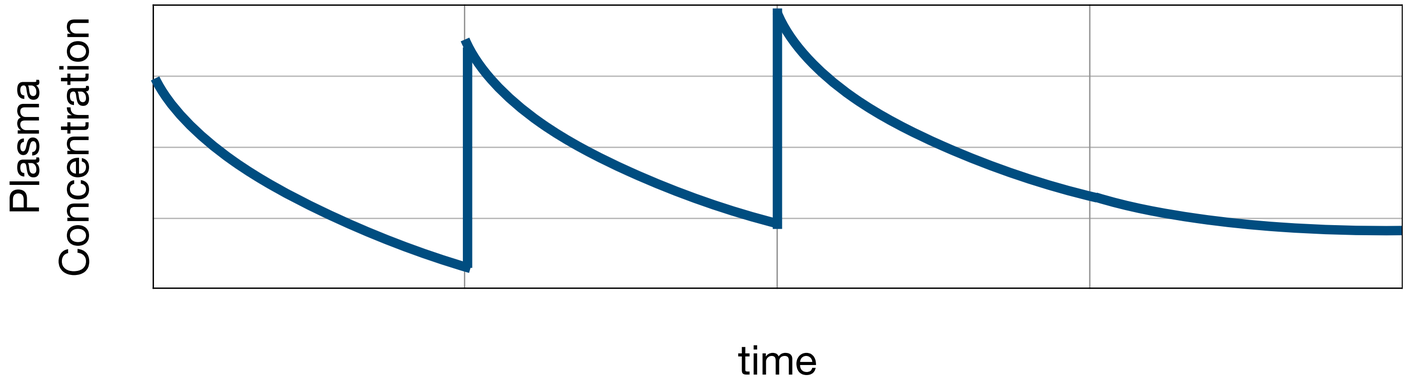
$$C(t) = \frac{dose}{Vd} e^{-k_e(t-t_0)}$$

# Multiple doses

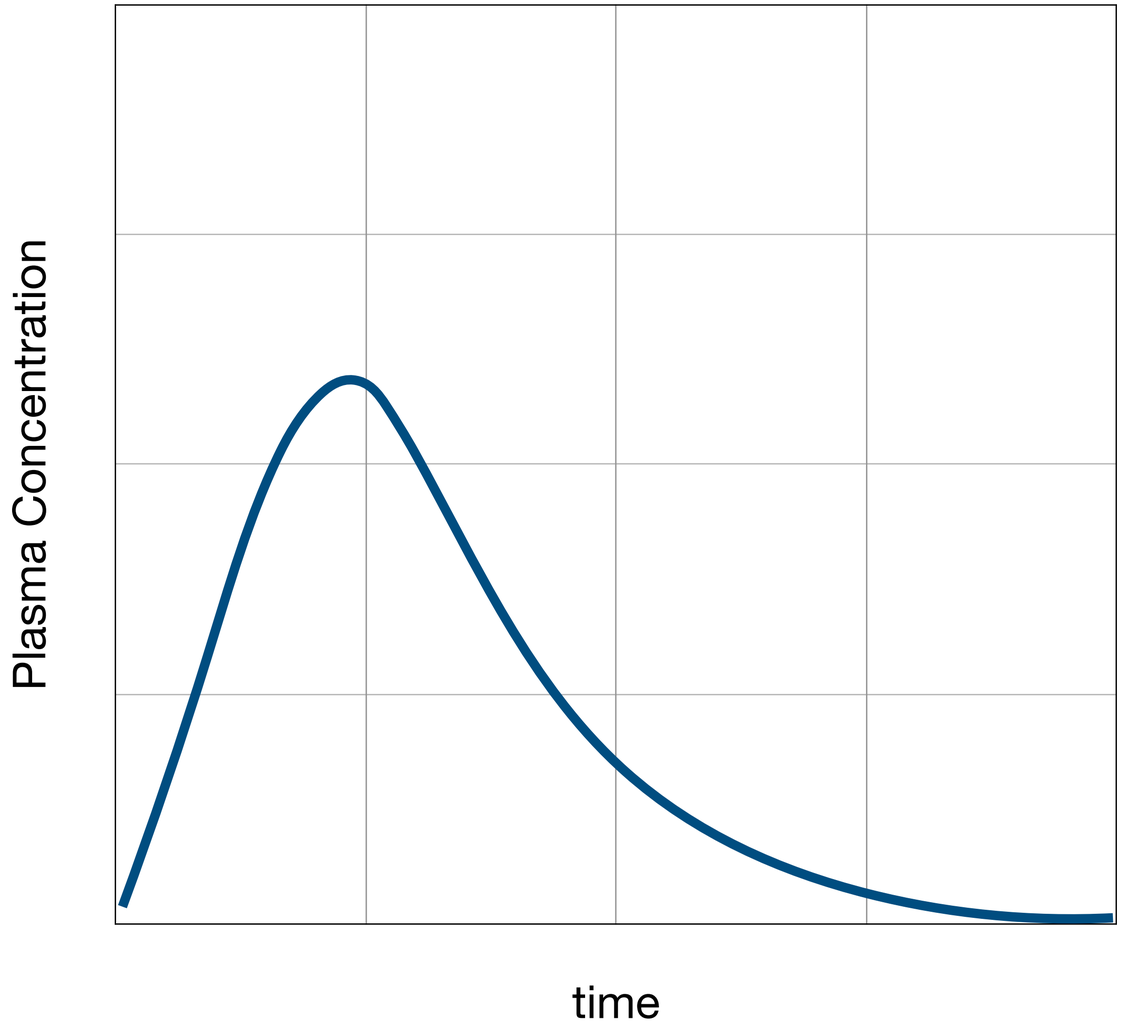


# Multiple doses

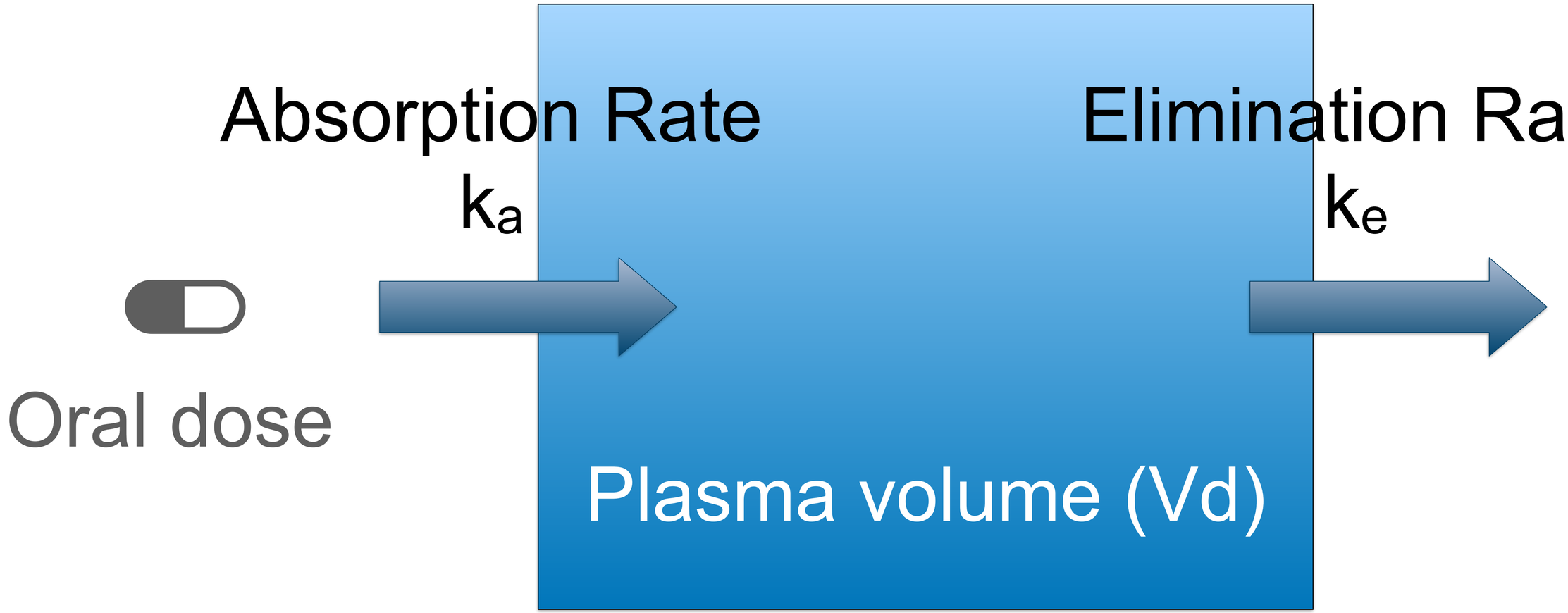


# The oral model



# The oral model



# The oral model

$$C(t) = \frac{dose \times k_a}{Vd(k_a - k_e)}(e^{-k_e(t-t_0)} - e^{-k_a(t-t_0)})$$

# The two cases for oral model

If $k_a \neq k_e$ :

$$C(t) = \frac{dose \times k_a}{Vd(k_a - k_e)}(e^{-k_e(t-t_0)} - e^{-k_a(t-t_0)})$$

If $k_a = k_e = K$ :

$$C(t) = \frac{dose \times K}{Vd}e^{-K(t-t_0)}$$