Proposed hazard functions for HIV-HSV2 co-infection model

Hazard function for **HSV-2** transmission

$$h_{THSV2_{ij}}(x,t) = \exp(a_i + b(t - t_{hsv2\text{-}infected}) + c\,M_i + d\,H_i)$$

Inter-personal variability in infectivity: $a \sim$ some distribution, e.g. Beta(alpha, beta) or Dirac delta

Gender effect: M is indicator for person i being male

HIV effect: H is indicator for person i being HIV-infected

Updated hazard function for HIV transmission

$$
\begin{aligned}
h_{T_{ij}}(x,t) = \exp(\ & \\
& a + \\
& b\,V^{-c} + \\
& W\,f_1 \exp(f_2\,(A_{w\_ry} - A_{w\_debut})) + \\
& d_1\,HSV2_i + \\
& d_2\,HSV2_j \\
&)
\end{aligned}
$$

Updated HIV diagnosis event

hazard=

exp(baseline +

    agefactor × (t−tbirth) +

    genderfactor × G +

    diagpartnersfactor × P +

    isdiagnosedfactor × D +

    β(t−tinfected) +

    HSV2factor × HSV2