

# The Eleveld Propofol model

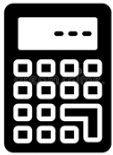
‘ONE MODEL TO RULE THEM ALL’



The Eleveld propofol model is unique as it is applicable for target-controlled-infusion (TCI) of propofol in children, adults, elderly, and the obese. It is validated for use in patients with ages from 3 to 90 years, weight 12 to 152kg, height 95 to 192cm, and therefore a wide body mass index range ( $14 - 46.8 \text{ kg m}^{-2}$ ).



Be aware that for the same target concentration, the induction bolus calculated by the Eleveld model will be much larger compared to the Schnider model (in effect-site mode) and the Marsh model (plasma mode). After induction the infusion rates are usually lower compared to the Schnider and Marsh models. That makes it important to use appropriate target concentrations.



The Eleveld model calculates bolus dose and infusion rates based on the selected target concentration, and the age, sex, height and weight of the patient that makes it important for accuracy of the model to use the real patient characteristics.



The pharmacodynamic component of Eleveld model can be used to calculate the age-specific effect-site concentration needed for a desired change in BIS. For induction, the  $C_{e50}$  is typically used (i.e. the effect-site target concentration predicted to decrease BIS from 94 to 47). After induction it is often unnecessary to adjust the target concentration. For more information about the age-specific  $C_{e50}$  please use the QR code.



The important practical benefit of the Eleveld model is that it reduces the clinician workload. Training requirements can be simplified because one model can be used for most patients, and clinicians do not have to take into account arbitrary age, weight or BMI boundaries imposed by other propofol models. In contrast with other models, fewer target concentration adjustments are needed after induction.



See figure 1 for age-specific  $C_{e50}$

References:

- Eleveld, D. J., Colin, P., Absalom, A. R. & Struys, M. M. R. F. Pharmacokinetic–pharmacodynamic model for propofol for broad application in anaesthesia and sedation. *Br. J. Anaesth.* 120, 942–959 (2018).
- Vellinga R, Hannivoort LN, Introna M, et al. Prospective clinical validation of the Eleveld propofol pharmacokinetic-pharmacodynamic model in general anaesthesia. *Br J Anaesth.* 2021;126(2):386-394. doi:10.1016/j.bja.2020.10.027