

SUPPLEMENTARY FIGURE 2: Algorithms to calculate trough and peak sputum concentration for Sidestream and MistyNeb nebulisers

(i) TROUGH calculation

$$\begin{array}{l} \text{Tobramycin sputum} \\ \text{TROUGH concentration } [\mu\text{g/g}] \end{array} = \frac{\text{Fine particle mass}^* \text{ of comparator nebuliser [mg]} (\text{Vecellio } et al., 2011)}{\text{Fine particle mass of PARI LC PLUS [mg]} (\text{Vecellio } et al., 2011)} \quad \times \quad \text{PK/PD SPUTUM TROUGH} \\ \text{CONCENTRATION PARI LC PLUS} \\ [\mu\text{g/g}] (\text{Hubert } et al., 2009)$$

(ii) PEAK calculation

$$\begin{array}{l} \text{Tobramycin sputum} \\ \text{PEAK concentration } [\mu\text{g/g}] \end{array} = \frac{\text{Fine particle mass}^* \text{ of comparator nebuliser [mg]} (\text{Vecellio } et al., 2011)}{\text{Fine particle mass of PARI LC PLUS [mg]} (\text{Vecellio } et al., 2011)} \quad \times \quad \text{PK/PD SPUTUM PEAK} \\ \text{CONCENTRATION PARI LC PLUS} \\ [\mu\text{g/g}] (\text{Hubert } et al., 2009)$$

PK=pharmacokinetic; PD=pharmacodynamics; fine particle mass = is the amount of tobramycin that is expected to deposit in the lungs, calculated by multiplying the inhalable mass by the fine particle fraction, i.e. fine particle mass = Inhalable mass (mg) X fine particle fraction (%)

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Vecellio L, Abdelrahim ME, Montharu J, Galle J, Diot P, Dubus JC. Disposable versus reusable jet nebulizers for cystic fibrosis treatment with tobramycin. J Cyst Fibros 2011;10:86–92. <https://doi.org/10.1016/j.jcf.2010.10.004>