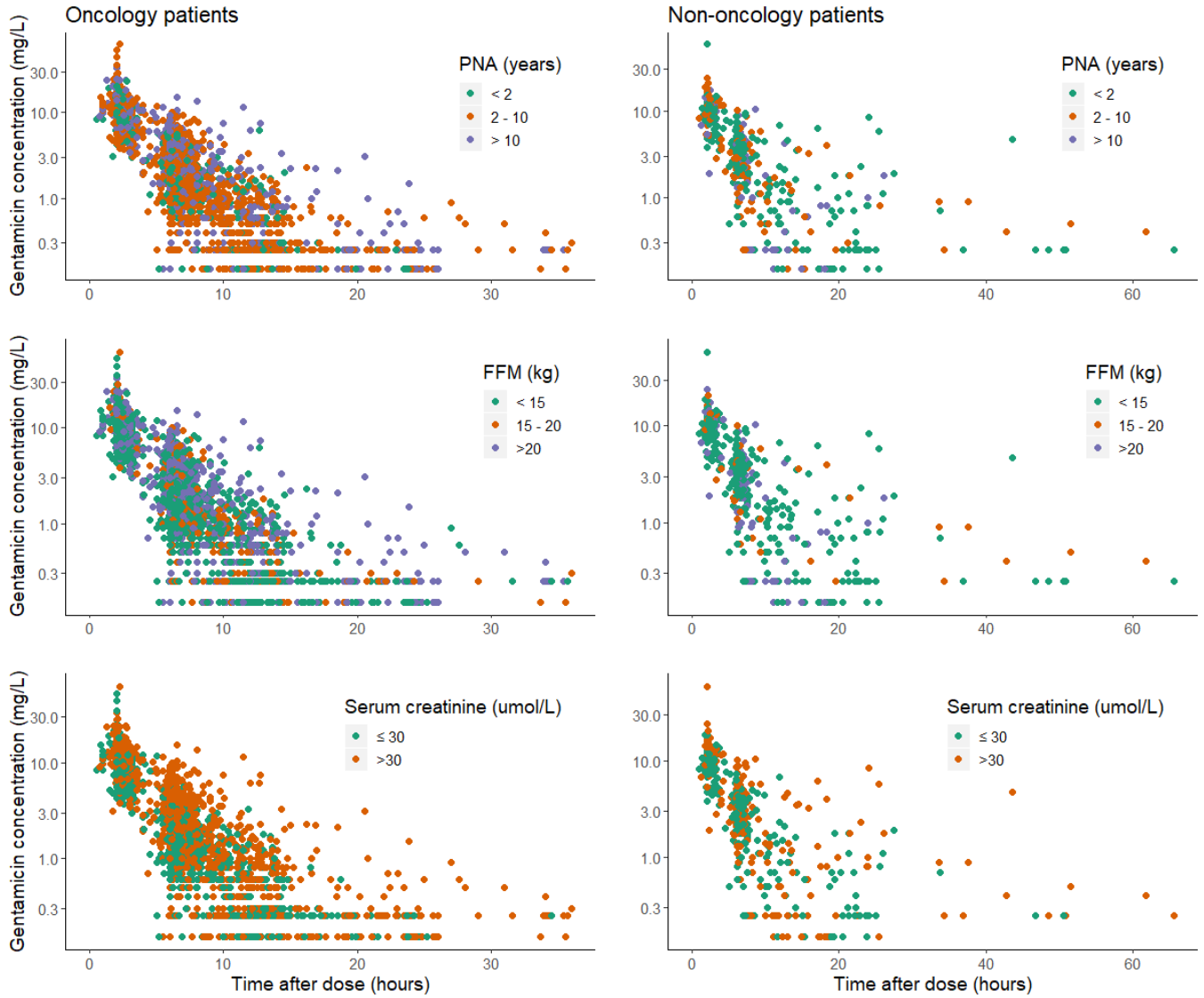


1 **Supplemental material**

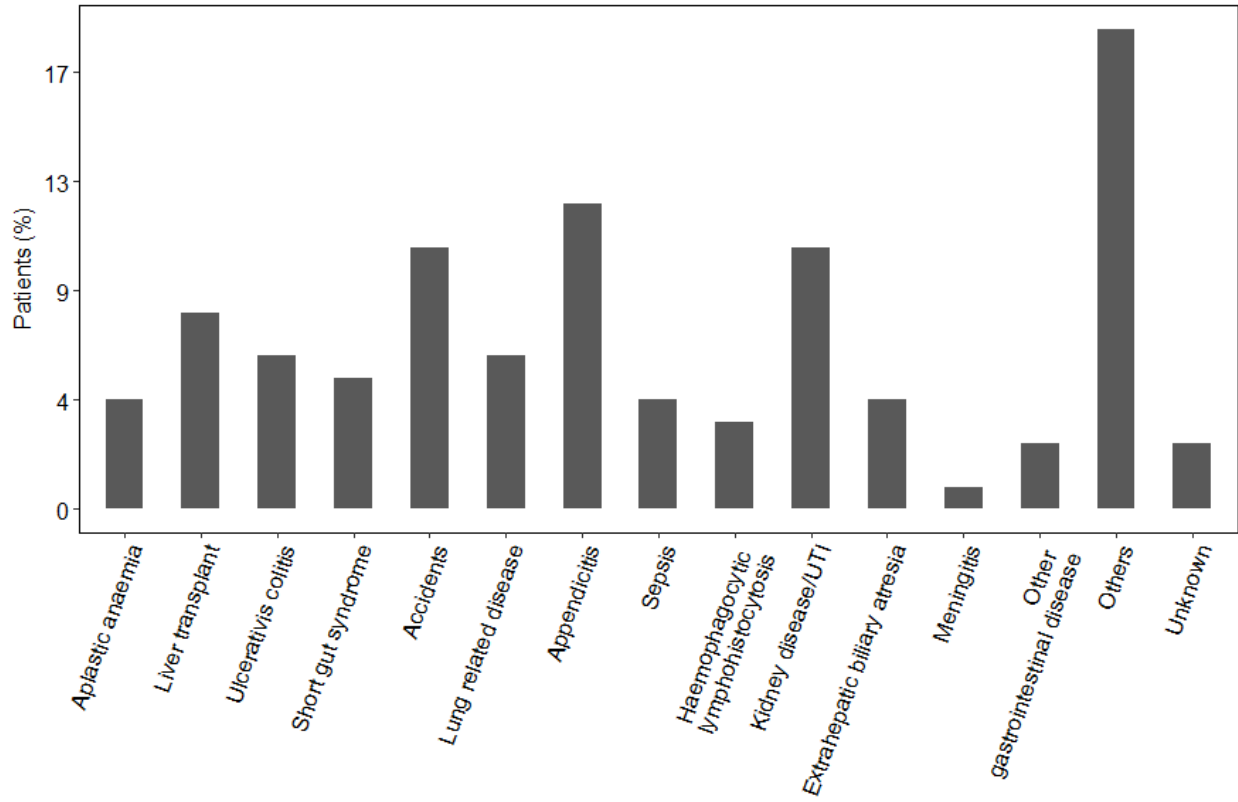
2 **Fig. S1. Gentamicin concentrations vs. time after dose between the oncology and non-**
3 **oncology patients stratified by post-natal age (PNA), fat-free mass (FFM) and serum**
4 **creatinine concentration (SCR).**

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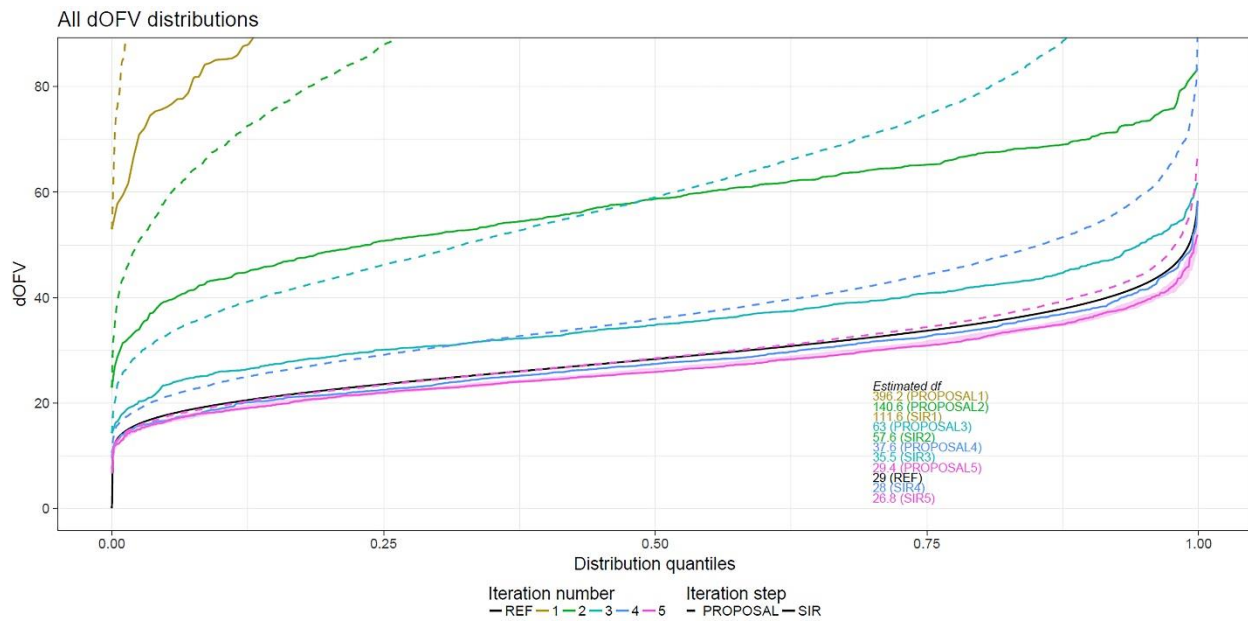
7 Fig. S2 Reasons for admission in 115 paediatric non-oncology patients.



9 **Fig. S3. Sampling importance ratio results to obtain parameter uncertainty of the FREM.**

10 The covariance step failed when running the FREM model and the SIR technique was applied to
 11 obtain parameter-covariate uncertainty. This plot displays the distribution of the Δ OFVs for the
 12 five proposal uncertainty estimates obtained in the FREM (dotted coloured lines) and five posterior
 13 uncertainties (solid coloured lines) for different quantiles. The solid black line represents a chi-
 14 square distribution with degrees of freedom equal to the number of estimated parameters and it is
 15 used as a reference. The estimated degree of freedom for each distribution is displayed at the
 16 bottom right of the plot.

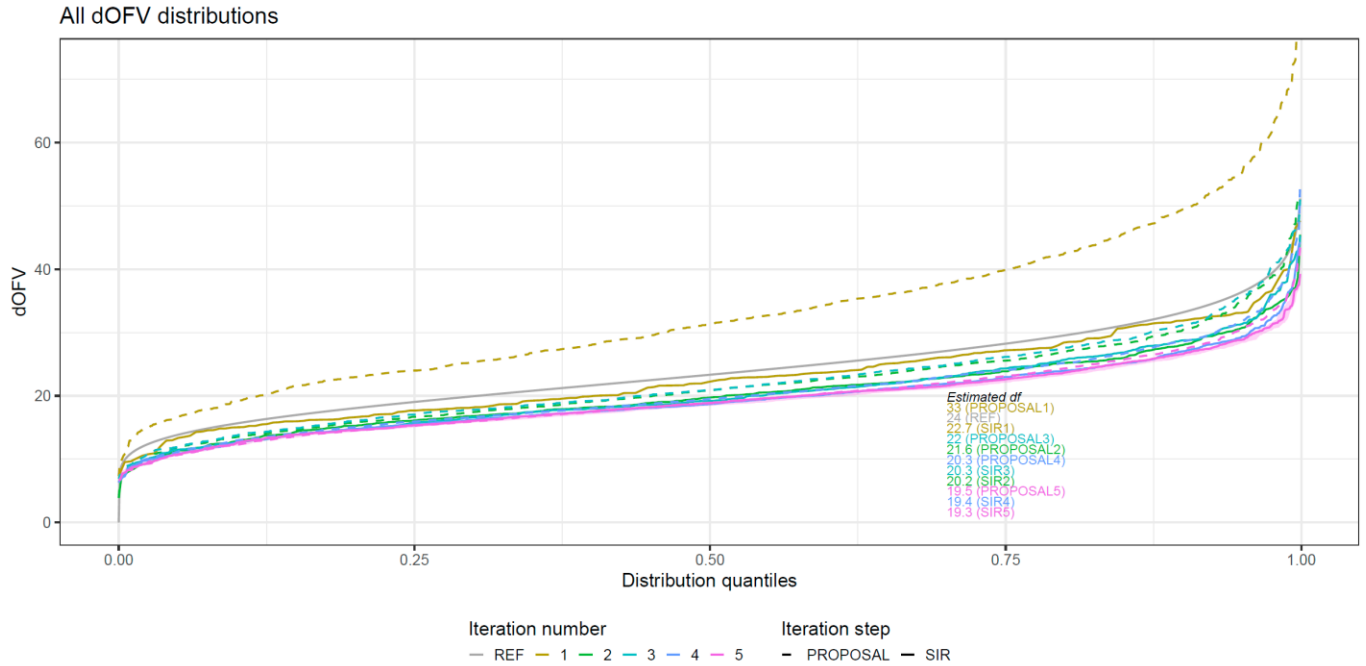
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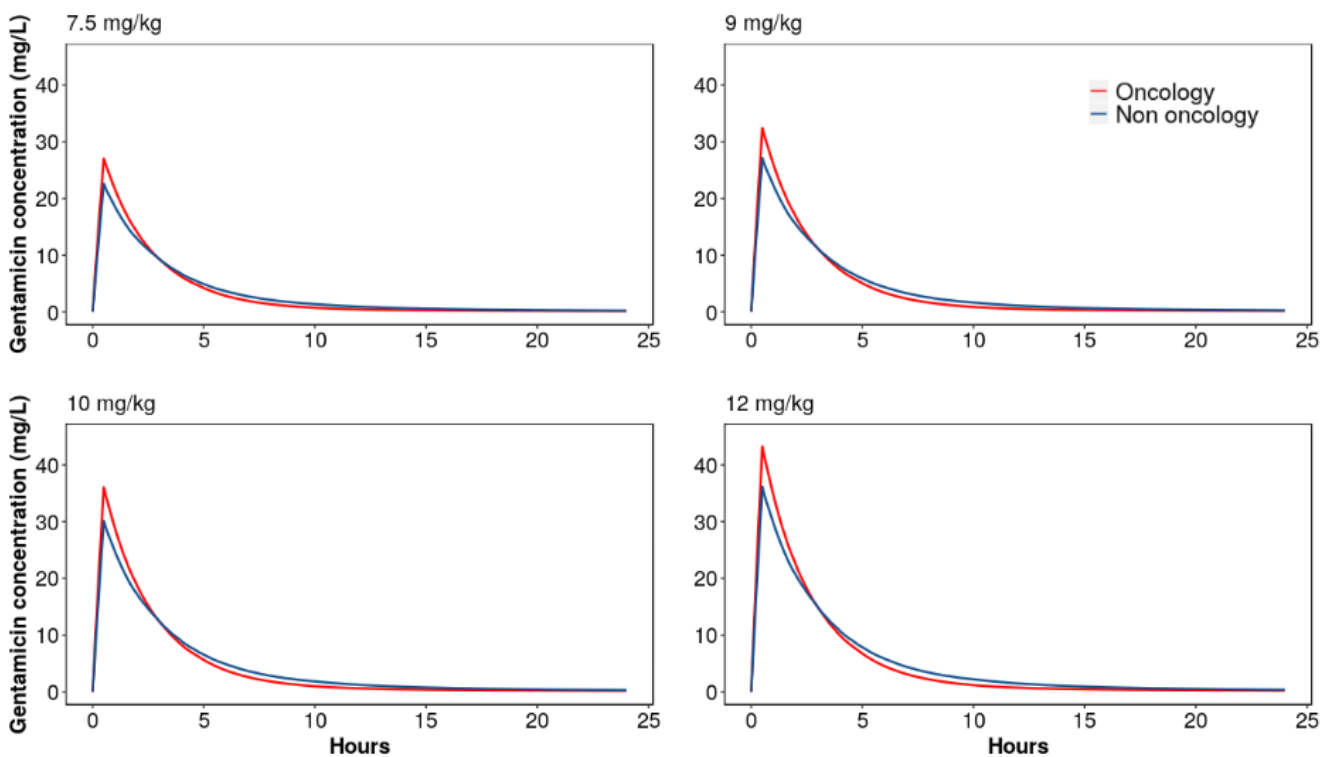
19 **Fig. S4. Sampling importance ratio results to obtain parameter uncertainty for the final**
 20 **model of gentamicin in oncology and non-oncology patients.**

21 Distribution of the Δ OFV for the five proposals (dotted coloured lines) and five posterior
 22 uncertainties (solid coloured lines) of the SIR procedure for different quantiles. The solid grey line
 23 represents a chi-square distribution with degrees of freedom equal to the number of estimated
 24 parameters and it is used as a reference. The estimated degree of freedom for each distribution is
 25 displayed at the bottom right of the plot.



27 **Fig. S5.** Simulations (n=1,000) following once daily dosing of 7.5 mg/kg/q24h, 9 mg/kg/q24h, 10
28 mg/kg/q24h and 12 mg/kg/q24h of gentamicin showing the median concentration-time profile of
29 gentamicin in oncology (red line) and non-oncology patients (blue line).

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