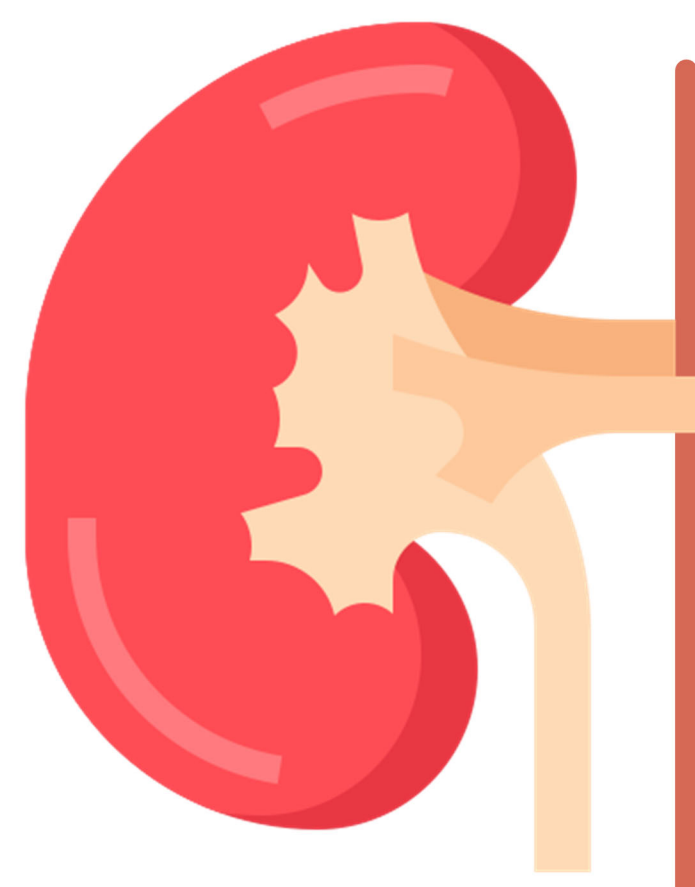




Underdosing **Imipenem** In Patients With **Renal Insufficiency**: Global Clinical Data-driven Pharmacokinetic/Pharmacodynamic Study

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BACKGROUND

Currently, population pharmacokinetic (popPK) models for imipenem in critically ill patients are available.

However, they lack a good representation of a wide range of renal functions. Also, most models are not externally validated.

These models are therefore of limited use in clinical settings.

2-compartment model (log-transformed data)

$$CL_i = 14.6 \times \left(\frac{CLCR_{CG}}{87.60} \right)^{0.462}$$

V_c = 28.7 L | **V_p** = 21.4 L
Q = 17.8 L/h

Exponential error = 0.383
IIV CL = 35.9%

CONCLUSION

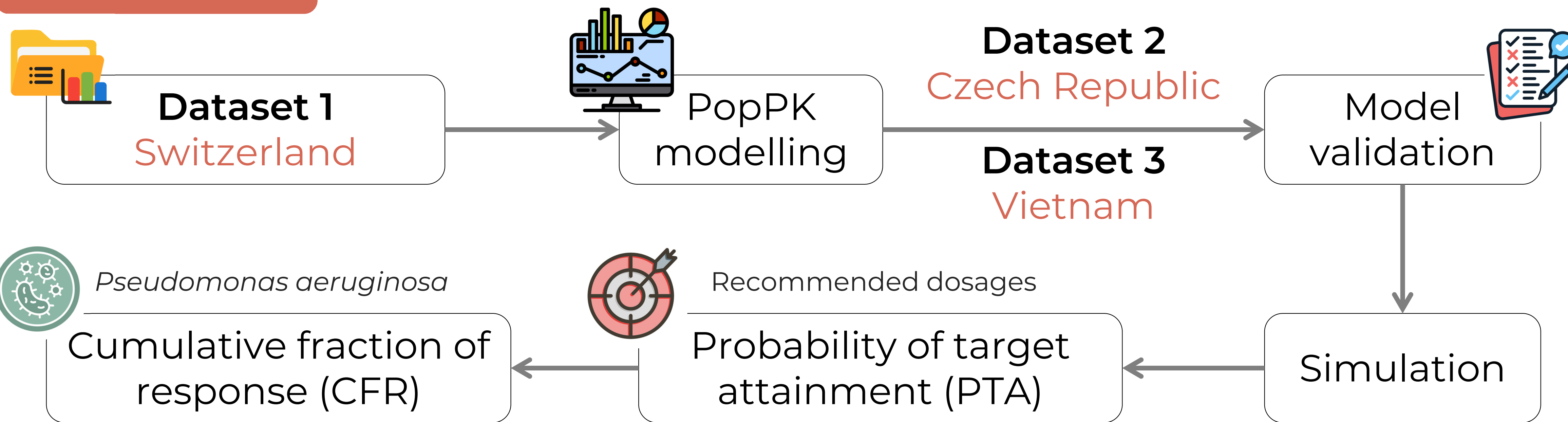
The current recommended dose for renal insufficient patients could not adequately achieve the 100% $fT > MIC_{2mg/L}$.

A necessity for optimising imipenem dosing through further investigation, particularly in patients with renal insufficiency

OBJECTIVES

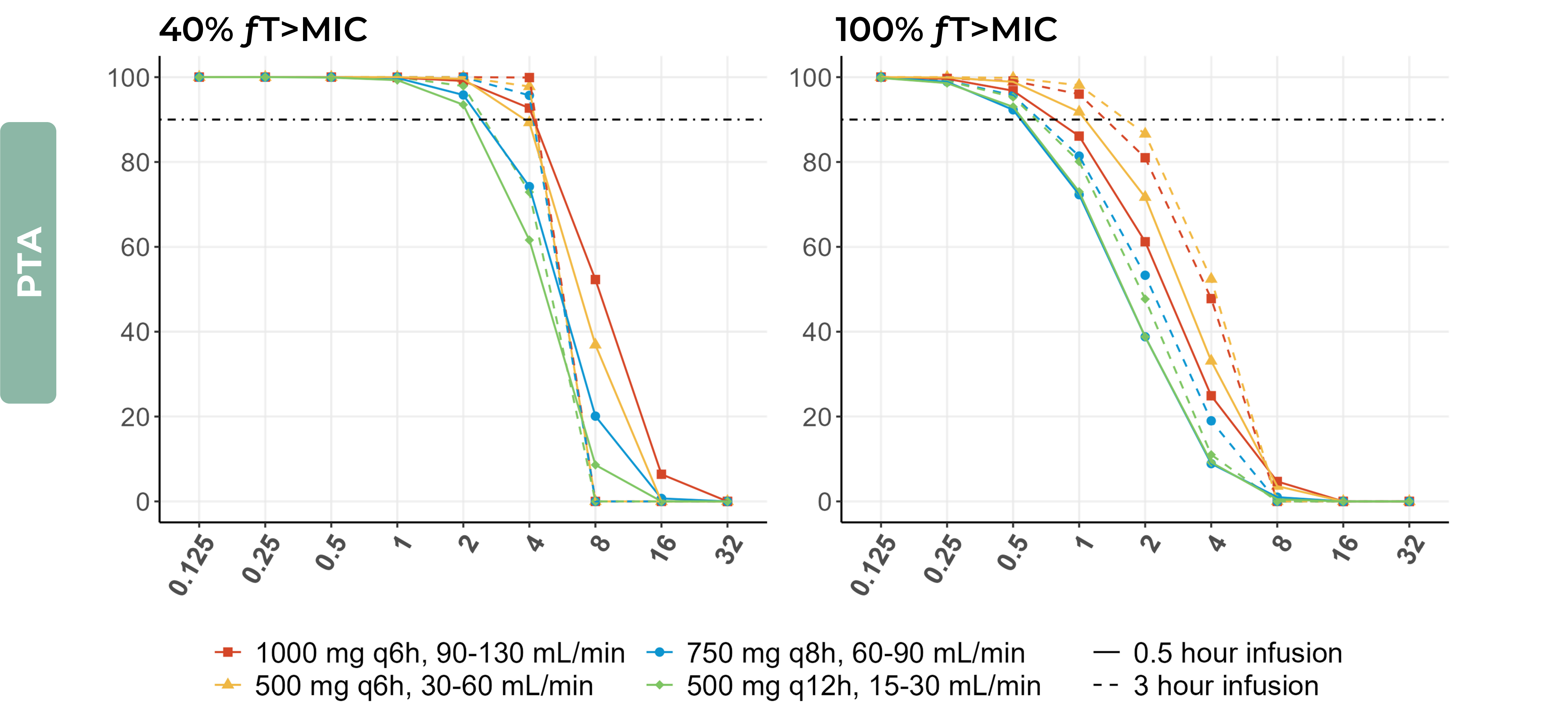
- 1) develop a popPK model of imipenem for ICU and non-ICU patients with a wide range of creatinine clearance
- 2) assess target attainment of current highest dosing regimens across different renal functions

METHODS



RESULTS

Dataset 1 (N=151, 51% ICU)	322 concentrations	25 median APACHE II	87.6 mL/min median $CLCR_{Cockcroft-Gault}$
Dataset 2 (N=19, 100% ICU)	111 concentrations	26 median APACHE II	74.3 mL/min median $CLCR_{Cockcroft-Gault}$
Dataset 3 (N=43, 100% ICU)	85 concentrations	13 median APACHE II	56.3 mL/min median $CLCR_{Cockcroft-Gault}$



CFR

All licensed dosing regimens could cover the susceptible *P. aeruginosa* ($MIC \leq 4$ mg/L) for the 40% $fT > MIC$ target, but none of them could cover the target of 100% $fT > MIC$



PAGES
abstract