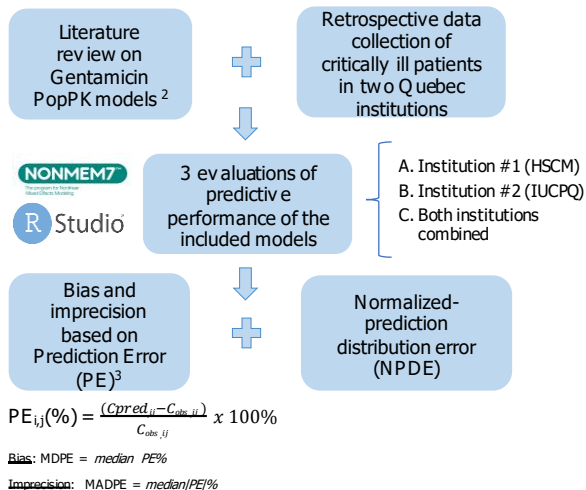


Background & Objectives

- External evaluation is the most robust method to evaluate a Population pharmacokinetic (Pop-PK) model.¹
 - It consists of testing the predictive capabilities of this model with the help of an independent database.
- Considering the high between- and within-subject variability in gentamicin pharmacokinetics in critically ill patients, multiple gentamicin Pop-PK models were developed in recent years.

Objective : Evaluate the predictive performance of gentamicin Pop-PK models with two independent datasets of critically ill adult patients.

Methods



Results

Table I: Demographic characteristics of both study populations receiving gentamicin

	Study populations			Included models			
	IUCPQ	HSCM	Both	Rea ¹	Bos ⁵	Hodiamont a, 6	Hodiamont b, 7
Number of patients (M/F)	36/12	18/21	54/33	45/57	24/24	20/22	29/30
Age (years)	58.7 (16.9)	60.3 (19.2)	54.9 (17.9)	61.4 (16.4)	40.0 [20-86]	61.0 [20-78]	60.9 (17.2)
Weight (Kg)	80.5 (22.4)	79.4 (20.5)	80.0 (21.5)	81.4 (30.3)	51.0 [33-76]	70.5 [42.0-116]	79.2 (22.0)
Scr (umol/L)	99.9 (34.8)	93.2 (91.4)	96.9 (66.0)	194.5 (168)	76.0 [37-1192]	115.0 [36-1719]	-
CrCl (mL/min)	86.0 (36.4)	99.8 (60.6)	92.2 (48.9)	-	74.0 [4-155]	54.9 [4.0-150]	-
Total daily dose (mg/kg)	2.0 (0.7)	2.9 (0.9)	2.4 (1.1)	-	-	-	-

HSCM: Hôpital du Sacré-Cœur de Montréal, IUCPQ: Institut Universitaire de Cardiologie et Pneumologie de Québec, Scr: Creatinine serum, CrCl: Creatinine clearance calculated with Cockcroft-Gault equation, SD: standard deviation. Values are presented as mean(SD) or median[range].

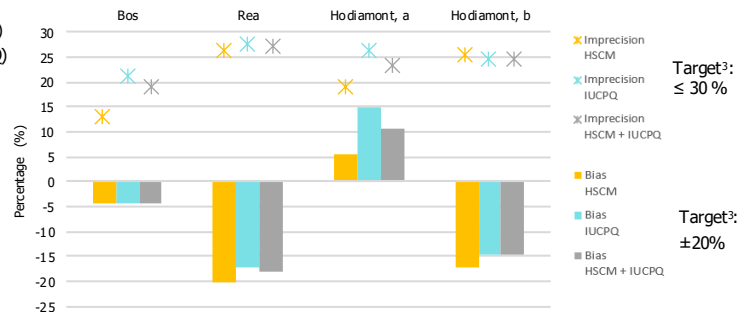


Figure I: Bias and imprecision values from included models for each institution

Results (cont.)

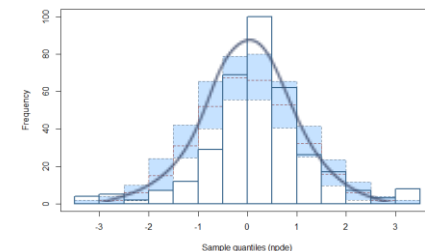


Figure II: NPDE distribution for Bos with datasets from both institutions combined

Conclusion

- All 4 models were able to adequately predict the concentrations observed from (peaks and troughs)
 - Bos and Rea had the better results from Bias/Imprecision and NPDE simulations
- Predictive performance was adequate for each evaluation
 - Despite variability in both populations in terms of demographic characteristics and reasons of admission
- Variability remains due to the differences between Quebec populations and the populations used to develop the models (African, American and European)

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Acknowledgements

