

# RELATIONSHIP BETWEEN RENAL FUNCTION AND ERTAPENEM PLASMA CONCENTRATION IN ADULT PATIENTS

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## BACKGROUND AND IMPORTANCE

## AIM AND OBJECTIVE

**ERTAPENEM:** Parenteral  $\beta$ -lactam antibiotic  $\rightarrow$  Renal excretion  
 $\rightarrow$  **Time-dependent bactericidal activity**

• Usual dose: **1g/24h**  $\rightarrow$  If estimated glomerular filtration rate (eGFR)  $<30$ ml/min: 0.5g/24h.



Evaluate the relationship between renal function (eGFR) and ertapenem plasma trough concentration (Cert).

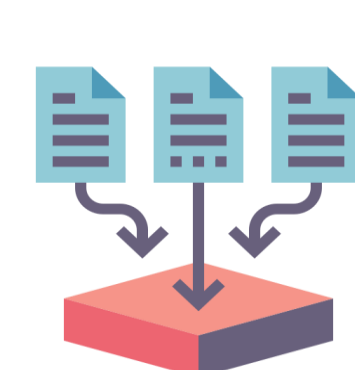
## MATERIALS AND METHODS

Retrospective observational study  
Third-level hospital



Adult patients treated with ertapenem ( $>72$  hours)  $\rightarrow$  Cert

October 2019 - February 2021



$\rightarrow$  Biodemographical  
 $\rightarrow$  Clinical  
 $\rightarrow$  Treatment-related

Continuous variables were expressed as mean  $\pm$  SD and categorical variables as % (cases)

- Cert was measured (HPLC-UV) after at least two doses of ertapenem and before the next dose administration (trough).
- Renal function was measured as eGFR according to CKD-EPI.
- Pearson correlation coefficient (R)  $\rightarrow$  Correlation between eGFR (independent variable) and Cert (dependent variable).
- ANOVA  $\rightarrow$  Determine the statistical significance of R (p value).

## RESULTS



**N= 102 patients**  $\rightarrow$  53% male sex,  $73.0 \pm 12.2$  years old

Mean eGFR:  $57.5 \pm 27.86$  mL/min/1,73 m<sup>2</sup>

Cert measure:  $6.4 \pm 4.04$  days after ertapenem initiation

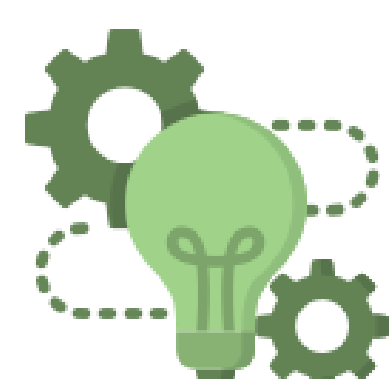
Mean duration of treatment:  $15.5 \pm 11.4$  days

- R-value: **-0.436 (R<sup>2</sup>=0.190)**  $\rightarrow$  Inverse linear correlation between eGFR and Cert with statistical significance (p=0.001).
- Influence of other covariates (albumin, platelets, ertapenem dose, sampling time) on the relationship between Cert and eGFR was studied  $\rightarrow$  No significant impact observed.

Table 1. Mean Cert for the different eGFR ranges

eGFR category	Cert (mcg/mL)
eGFR $>90$ (n=24)	$7.3 \pm 12.1$
eGFR 60-90 (n=24)	$14.1 \pm 10.1$
eGFR 30-60 (n=29)	$19.4 \pm 19.5$
eGFR $<30$ (n=25)	$29.7 \pm 28.0$
<b>Total (n=102)</b>	<b><math>17.8 \pm 20.3</math></b>

## CONCLUSION AND RELEVANCE



- Decrease in eGFR is correlated with an increased in Cert, with a possible overexposure in patients with renal dysfunction.
- A dose adjustment could be considered in patients with compromised renal function, even if the eGFR  $>30$  mL/min/1,73 m<sup>2</sup>.

