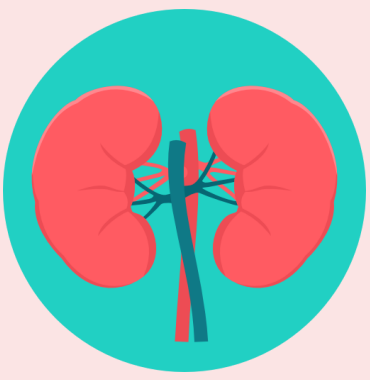
MY TOP 5 TAKES

On a paper titled: Saturable elimination of piperacillin in critically ill patients: implications of continuous infusion (CI)

NON-LINEAR PK

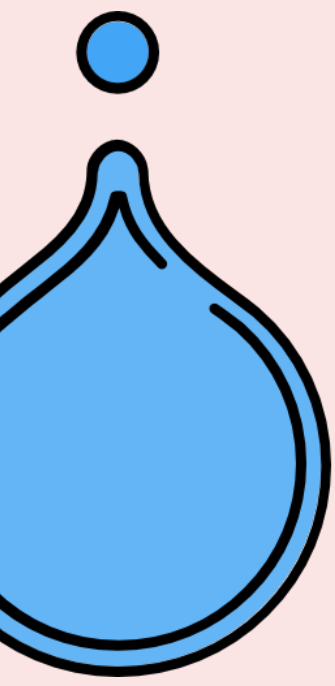
Piperacillin undergoes 2 types of clearance in the kidneys. Active secretion via transporter system, as well as glomerular filtration. Of note, the former is a non-linear process as it depends on the number of available transporters (i.e. saturable)



Authors tried to tease out contribution of the non-linear process, on both continuous and intermittent bolus (IB). If this is present, more piperacillin might be excreted when given via CI (as opposed to IB of the same dose), as this allows the transporter system to clear more piperacillin into urine over time.

17 ADULT PATIENTS

Recruited subjects received the loading dose of piperacillin first, followed by CI then intermittent bolus (over 30 mins). 13-lot sampling per subject was performed.



MICHELIS-MENTEN + LINEAR EXCRETION

The best model that best described piperacillin serum concentration in these subjects was the one that incorporated both glomerular filtration and transporter-based clearance.

Indeed, the concentrations of piperacillin over 24 hours captured via AUC24H were lower for CI vs. IB for the same dose.

HIGHER TOTAL DOSE IS NEEDED IF PIP IS GIVEN CONTINUOUSLY?

In conclusion, giving piperacillin via CI may inadvertently reduce the effective concentrations/PD target (%T?MIC) compared to intermittent infusion.

Further studies need to be performed to confirm these findings, especially ones that are appropriately powered.