THERAPEUTIC DRUG MONITORING-GUIDED PHARMACY INTERVENTIONS TO OPTIMIZE THE DOSAGE OF BETA-LACTAMS ADMINISTERED IN CONTINUOUS INFUSION IN NON-CRITICAL ILL PATIENTS

A.M. ARAGONES EROLES[1], P. TABERNER BONASTRE[1], J.A. SCHOENENBERGER ARNAIZ[1], A. BELLÉS BELLÉS[2], S.M. CANO MARRÓN[1], A. MORALES PORTILLO[1], A. JOVER SAENZ[3]

[1]HOSPITAL UNIVERSITARIO ARNAU DE VILANOVA, HOSPITAL PHARMACY, LLEIDA, SPAIN
[2]HOSPITAL UNIVERSITARIO ARNAU DE VILANOVA, MICROBIOLOGY, LLEIDA, SPAIN
[3]HOSPITAL UNIVERSITARIO ARNAU DE VILANOVA, PROA EQUIP, LLEIDA, SPAIN

Background and Importance

Increasing bacterial resistance to antibiotics requires new treatment strategies.

Aim and Objectives

To assess the number and type of pharmacy interventions in therapeutic drug monitoring (TMD) guided piperacillin or meropenem treatments. Treatments were administered by continuous infusion (CI) in non-critical patients

Materials and Methods

We conducted a prospective study (October 2019-February 2020) to measure plasma concentration(PC) of piperacillin or meropenem administered by CI:

- Physicians prescribed the antibiotic in continuous infusion and requested monitoring of drug therapy.
- Pharmacists established the time to determinate the plasma levels and interpreted the analytical result, modifying the treatment if necessary.

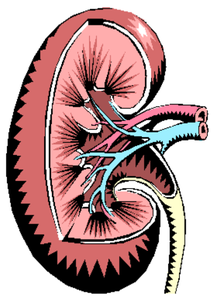
TDM sought to achieve free drug PC with 100% fT, four times the minimum inhibitory concentration(MIC) of the microorganism. If there were no isolate, the MIC of the most resistant microorganism would be considered. We used high-performance liquid chromatography to determine the PC.

Samples were obtained once the steady-state was reached:

- MIC of the microorganisms was determined by microdilution in broth or by E-test.
- Glomerular filtration rate (GFR) of the patients was calculated using CKD-EPI.
- Pharmacists directly modified the regimen for piperacillin and meropenem PCs below 4*MIC or above 6*MIC.
- Microsoft Excel was used for the statistics calculation.

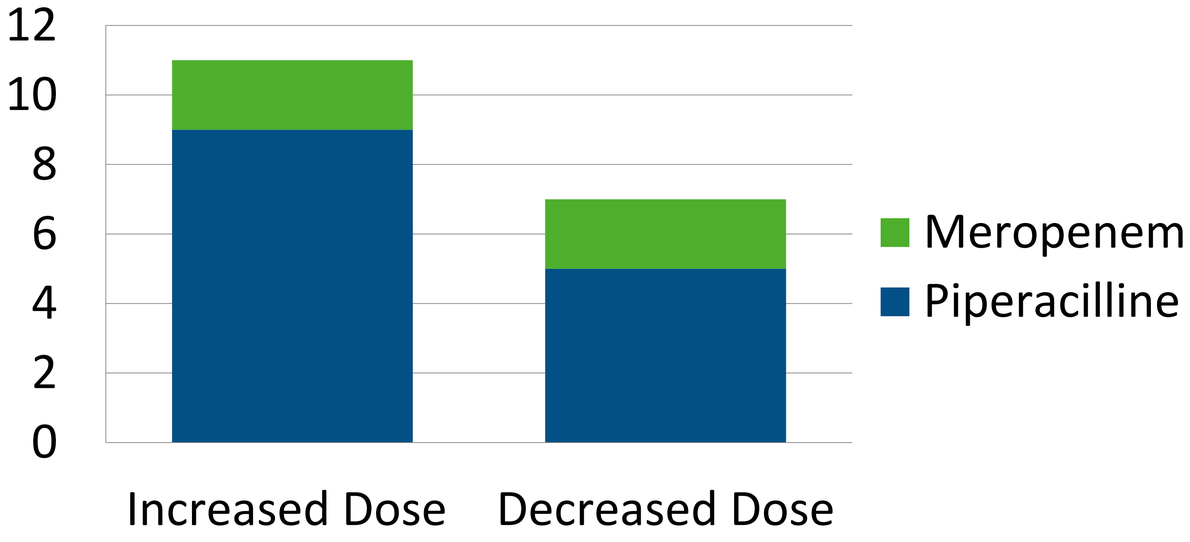
Results

Antibiotic	Included	♂	♀	Age (years)
Piperacilline	37	23	24	67,3±14,4
Meropenem	11	5	6	73,8±24,8

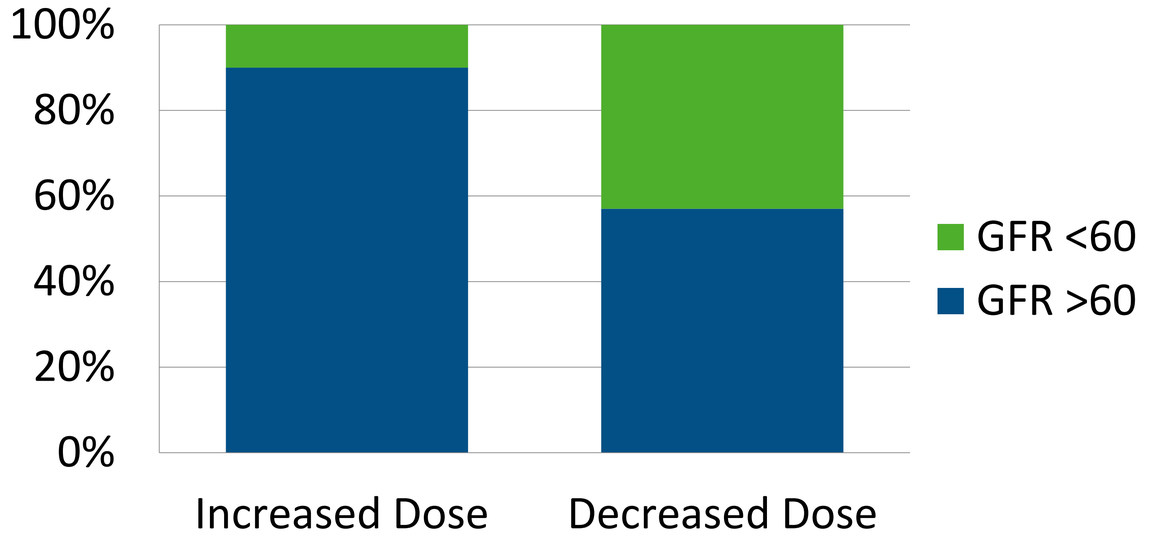


GFR of those treated:
Piperacillin: 77.46 ±29 ml/min/1.73m²
Meropenem 89.27±17.43ml/min/1.73m²

Pharmaceutic Interventions



Interventions by GFR



Conclusion and Relevance

TDM of beta-lactams allows to measure whether concentration reached is adequate for the causative microorganism and patient's situation.

Pharmaceutical interventions optimized the dosage in cases in which standard regimes are not appropriated.

Disclosure: None of the authors of this study have to disclose any possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this study.

Correspondence to: **ptaberner.lleida.ics@gencat.cat**

Salut/ Hospital Universitari **Arnau de Vilanova Lleida**

eahp european association of hospital pharmacists