

---

Poster

## [P25-5] P25-5: Anti-infective drugs (5)

Chair: Paula Schaiquevich, Argentina

Mon. Sep 25, 2017 12:30 PM - 1:30 PM Annex Hall (1F)

---

(Mon. Sep 25, 2017 12:30 PM - 1:30 PM Annex Hall )

## [P25-5-2] Combined dried blood spot analysis of vancomycin, tobramycin and creatinine using LC-MS/MS for monitoring outpatient parenteral antimicrobial therapy

Evelien ter Weijden<sup>1</sup>, Erik van Maarseveen<sup>2</sup> (1.University Medical Center Utrecht, 2.University Medical Center Utrecht)

Keywords: tobramycin, vancomycin, dried blood spot, creatinine, hematocrit

### Background

Outpatient parenteral antimicrobial therapy (OPAT) is rapidly gaining interest worldwide for reasons of cost saving and improved quality of life. In cystic fibrosis and orthopaedic populations OPAT is now accepted as a standard of care. In these patients, tobramycin and vancomycin are frequently prescribed necessitating therapeutic drug monitoring (TDM) in the outpatient setting. In addition, guidelines recommend to periodically monitor creatinine due to potentially nephrotoxic side effects of these antibiotics. Therefore, we aimed to develop an dried blood spot (DBS) method using LC-MS/MS to simultaneously quantify vancomycin, tobramycin and creatinine in OPAT patients.

### Methods

DBS extraction consisted of a protein precipitation with 15% trichloroacetic acid. The analytes were detected with a Thermo Scientific triple quadrupole Quantum Access with positive ionization. The method was analytically validated according to EMA guidelines and clinically by comparing plasma and DBS results. Venous whole blood samples of 30 patients with known hematocrit (Ht) were used to prepare DBS. Afterwards, whole blood was centrifuged and plasma was used to determine the plasma concentration of vancomycin, tobramycin and creatinine. Also, Ht in DBS was measured using an assay previously published by our group (1). Plasma concentrations of vancomycin were estimated from DBS using the formula  $[\text{Ht} \times \text{DBS concentration}] + \text{DBS concentration}$ . For creatinine no correction for Ht was needed. Concentrations determined by DBS and plasma were plotted and compared by Passing-Bablok regression for all components.

### Results

CV of LLQ, LOW, MED and HIGH controls were <10% for all compounds. Regression for calibration curves were  $R^2 = 0,998$ ,  $R^2 = 0,999$ ,  $R^2 = 0,997$  for DBS assay of vancomycin, tobramycin and creatinine, respectively. DBS and plasma concentrations of vancomycin, tobramycin and creatinine showed good correlation ( $R^2 > 0,95$ ).

### Conclusions

A dried blood spot method was successfully developed to quantify vancomycin, tobramycin and creatinine using LC-MS/MS. The developed method can be considered a valuable tool for telediagnosics in OPAT patients.

(1) Oostendorp et al., *Clinical Chemistry* Dec 2016, 62 (12) 1675-1676

