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ST VINCENT'S PATHOLOGY

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CEFEPIME DRUG MEASUREMENT INFORMATION SHEET

Cefepime	Fourth generation cephalosporin. Time-dependent killing. **Active against**: Gram-negative organisms including *Pseudomonas aeruginosa;* Gram-positive organisms including MSSA and *Streptococcus spp.;* some anaerobes. **Inactive against:** MRSA, *enterococcus*, or atypical organisms (those lacking a cell wall, and which do not stain with Gram stain).
When to consider TDM	Essential in patients with **impaired renal function**, **elderly** or **signs of neurotoxicity**, particularly acute drowsiness, delirium, or confusion. Consider in patients **undergoing dialysis** and **critically ill** patients, especially those with **sepsis**, **trauma,** or **burns.** Consider in infections **with susceptible organisms but elevated MIC** for cefepime (reported by Microbiology as SIE – sensitive, increased exposure).
Pharmacokinetics (may be altered in critical illness and organ dysfunction)	Absorption: N/A – IV only Protein binding: 20% Clearance: Unchanged in urine: 85% Elimination t½: 2 hours | CL_{Cr} < 10mL/min and HD: 13.5 h
Sample Collection Time	**Trough sample (<1 hour prior to the next dose), minimum 24 hours** after initiation or dose change.
Requesting and Collection	Collect 4 mL in a purple top (EDTA) tube (no gel separator). **Important information required on request form**: 1. Time of blood sample collection 2. Dosing regimen (dose and frequency) 3. Date and time of commencement 4. Date and time of last dose
Handling and Transport	Sample must be delivered to laboratory within 1 hour of collection. If not delivered to the lab within this time, centrifuge, separate plasma and freeze within 3 hours of collection.
Test Availability	Test performed Mondays to Fridays. Results available after 4 pm. For tests outside these hours, see handling & transport instructions above. Add-on tests are generally not available as sample integrity cannot be guaranteed.
Reference Intervals	**TARGET FOR EMPIRICAL THERAPY**: EUCAST PK-PD non-species related sensitivity breakpoint for cefepime is 4mg/L and for *P. aeruginosa* 8mg/L.[1] Appropriate target trough concentrations are 16 mg/L (most species) or 32 mg/L (*P. aeruginosa*). **TARGET FOR DIRECTED THERAPY:** Trough concentration > 4 times the pathogen's MIC. Contact the Microbiology registrar for assistance with MICs: (02) 8382 9194. **TOXIC RANGE:** > 49 mg/mL.[2,3,4,5] Monitor for neurotoxicity including encephalopathy, delirium, drowsiness and seizures.
Contact	Clinical Pharmacology Laboratory: (02) 8382 9184. Patient Results: (02) 8382 9100 Further information: www.sydpath.com.au - Test Database
Instructions for Referring Laboratories	Centrifuge, separate plasma within 3 hours of collection, store and transport plasma frozen.
Document Approval	TDM Matters committee, February 20th 2023. Signed Ric Day, director CPT Dept
References	1. EUCAST Clinical Breakpoint Tables v. 12.0, 2022 (link) 2. Huwyler et al. 2017 DOI: 10.1016/j.cmi.2017.01.005 3. Lau et al. 2020 DOI: 10.1093/jac/dkz476 4. Boschung-Pasquier et al. 2020 DOI: 10.1016/j.cmi.2019.06.028 5. Lau et al. 2021 DOI: 10.1016/j.ijantimicag.2021.106443