

## Continuous infusion of piperacillin/tazobactam and meropenem Cardiac Intensive Care Unit (CICU) and Cardiac step down ward

### Background

Beta-lactam antibiotics exhibit time dependent bacterial kill. Maintaining beta-lactam levels above the minimum inhibitory concentration (MIC) for a percentage of the dosing interval (50% for penicillins and 40% for carbapenems) will ensure near maximal bactericidal effect<sup>1</sup>. Improved outcomes have been demonstrated in critically ill patients when beta-lactams are administered as a continuous infusion, rather than the conventional bolus or 30 minute infusion, producing a drug concentration in excess of the MIC for a longer period of time<sup>2, 5, 6, 7</sup>.

### First Antibiotic Dose

- A loading dose is always required prior to starting a continuous infusion
- Patients who HAVE already received a dose(s) of piperacillin/tazobactam (tazocin) or meropenem in the last 8 hours do NOT require a loading dose and can be started on the continuous infusion immediately
- The continuous infusion should be started immediately after the loading dose

Patients can be transferred from CICU to the cardiac step down ward with the continuous infusion still running. It can also be initiated, when appropriate, on the step down ward. Continuous antibiotic infusions should be regularly reviewed and converted to the equivalent intermittent dose as appropriate. **This is not to be given on any other ward area.**

Piperacillin / tazobactam (Tazocin) Continuous Infusion				
	Dose	Reconstitution and dilution <sup>3</sup>	Infusion Rate	Equivalent Intermittent Dose
Loading Dose	4.5g as a slow IV bolus over 5 mins	Reconstitute each vial with 20mL sodium chloride 0.9%		
Maintenance dose: 1 <sup>st</sup> 48 hours (all patients)	13.5g/24 hours	Reconstitute each 4.5g vial with 20mL sodium chlorides 0.9% and add to 250mL sodium chloride 0.9%. Final volume = 310mL (44mg/mL)	12.9mL per hour (over 24hours)	4.5g every 8 hours
After 48 hours				
If CrCl >20mL/min or on cRRT	Continue infusion of 13.5g/24 hours	Reconstitute each 4.5g vial with 20mL sodium chlorides 0.9% and add to 250mL sodium chloride 0.9%. Final volume = 310mL (44mg/mL)	12.9mL per hour (over 24hours)	4.5g every 8 hours
If CrCl ≤20mL/min and <b>NOT</b> on cRRT	Reduce infusion to 9g/24 hours	Reconstitute each 4.5g vial with 20mL sodium chlorides 0.9% and add to 250mL sodium chloride 0.9%. Final volume = 290mL (31mg/mL)	12.1mL per hour (over 24hours)	4.5g every 12 hours

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Approved by: Antimicrobial Stewardship Group (September 2021) Minor update Jan 22

Review date: September 2023

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<b>Meropenem Continuous Infusion</b>				
	<b>Dose</b>	<b>Reconstitution and dilution<sup>3</sup></b>	<b>Infusion Rate</b>	<b>Equivalent Intermittent Dose</b>
Loading Dose	1g as a slow IV bolus over 5 mins	Reconstitute each vial with 20mL water for injection		
Maintenance dose: 1 <sup>st</sup> 48 hours (all patients)	3g/24 hours	Reconstitute a 1g vial with 20mL sodium chloride 0.9% injection and add to 100mL sodium chloride 0.9%. Final volume = 120mL (8mg/mL) <b>Note: only ONE vial to be reconstituted at a time due to drug stability issues &gt;8hours<sup>4</sup></b>	15mL per hour (over 8 hours)	1g every 8 hours
<b>Maintenance dose: after 48 hours</b>				
If CrCl >20mL/min or on cRRT	Continue infusion of 3g/24 hours	Reconstitute a 1g vial with 20mL sodium chloride 0.9% and add to 100mL sodium chloride 0.9%. Final volume = 120mL (8mg/mL)	15mL per hour (over 8 hours)	1g every 8 hours
If CrCl ≤20mL/min and <b>NOT</b> on cRRT	Reduce infusion to 2g/24 hours	Reconstitute a 500mg vial with 10mL sodium chloride 0.9% and add to 50mL sodium chloride 0.9%. Final volume = 60mL (8mg/mL)	10mL per hour (over 6 hours)	1g every 12 hours
For CNS infections double the loading and maintenance doses into the same volumes as above				

**References**

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