**Systematic Review of Antibiotic Dosing in Sustained Low Efficiency Dialysis**

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**Background:** Sustained low efficiency dialysis (SLED) is a form of renal replacement therapy for patients suffering from acute kidney injury (AKI). SLED has been envisaged to safeguard hemodynamic stability and improve biochemical clearance with increased cost effectiveness. It is a challenge to find therapeutic doses for antibiotics during SLED therapy due to lack of guidelines and large-scale clinical trials. It is essential that clinicians understand the antibiotic dosing in SLED to optimize patient treatment and ongoing management.

**Methods:** PubMed/Medline search was done with key words “sustained low efficiency dialysis or extended daily dialysis or prolonged intermittent renal replacement therapy” without date restrictions. Studies that investigated antibiotic dosing and pharmacokinetics during SLED in comparison to other modalities of renal replacement therapy were included in the study.

**Results:** Multiple antibiotics were reviewed in the study. The results varied based on the type of antibiotic, SLED dialysate, blood flow rates and the half-life. For vancomycin, initial dose of 15 mg/kg and measurement of serum drug levels at 24 hrs recommended. Gentamicin was give at a dose of 2-2.5 mg/kg IV after hemodialysis to maintain optimal peak and trough levels at 7.5 mcg/ml and 0.8 mcg/ml respectively. Recommended dose for ampicillin/sulbactam was 2g/1g IV twice daily with one dose given after dialysis. The recommended dose of meropenem was 0.5 – 1g IV every 8 hrs to maintain effective plasma levels while ertapenem was give at a dose of 1g/day IV. For moxifloxacin, ideal dose was 400mg/day 8 hrs IV prior to dialysis while levofloxacin was given at a dose of 250-500 mg IV 12 hrs prior to dialysis with post dialysis administration. For linezolid, single dose of 600 mg IV towards the end of dialysis session recommended. In case of colistin, loading dose of 6 million units and a maintenance dose of 3 million units every 8 hours IV recommended. Trimethoprim/sulfamethoxazole was given at a dose of 15 mg/kg/day and 95 mg/kg/day IV butfurther studies were recommended.

**Conclusion**: Both pharmacokinetic and pharmacodynamic principles should be taken into consideration for the appropriate dosing of drugs during SLED. When the expected clinical response does not occur, the sufficiency of drug dosing in SLED can be challenged given the lack of adequate clinical trials. Critical care clinicians should liaise with nephrologists to make decisions regarding appropriate antibiotic dosing in patients undergoing SLED. With future large-scale trials, a better understanding of appropriate antibiotic dosing in SLED can be developed into guidelines.