Implementation and evaluation of pharmacist-managed vancomycin protocol in adult intermittent hemodialysis and continuous renal replacement therapy patients

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Background

- The release of recent consensus guidelines for therapeutic monitoring of vancomycin now recommends area under the curve (AUC) and minimum inhibition concentration (MIC) targets instead of the recommended vancomycin target troughs of 15-20 mcg/mL for complicated *Staphylococcus aureus* infections; however, this new target has not been validated in patients receiving renal replacement therapy
- There is limited literature available describing optimal vancomycin dosing to achieve therapeutic targets in intermittent hemodialysis (IHD) and continuous renal replacement therapy (CRRT) due to the pharmacokinetic variability each intervention introduces
- Current dosing practices at Cookeville Regional Medical Center rely on the general adult vancomycin dosing protocol and the clinical pharmacist's judgment for dosing and therapeutic monitoring

Purpose

- Evaluate existing vancomycin dosing practices and develop a vancomycin dosing protocol for patients undergoing IHD and CRRT with the primary aim to increase percentage of initial therapeutic troughs

Endpoints

- Primary: change in percentage of initial therapeutic troughs after protocol implementation
- Secondary: incidence of therapeutic versus non-therapeutic initial and subsequent vancomycin troughs compared to retrospective population

Methods

Retrospective chart review to determine incidence of therapeutic and non-therapeutic vancomycin troughs in patients receiving at least one dose of vancomycin and one trough with either IHD or CRRT

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Develop a vancomycin dosing protocol for patients undergoing IHD and CRRT

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Implement pharmacist education and annual competencies reflecting optimal use of the new protocol in multiple patient cases

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Reassess incidence of therapeutic and non-therapeutic vancomycin troughs in each patient population

References

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Protocol

IHD Protocol

- Loading Dose: 25 mg/kg once (Maximum: 2000 mg)
- Maintenance Dose: 7.5 – 10 mg/kg administered after each dialysis session

Total Body Weight	Maintenance Dose
< 75 kg	500 mg
75 – 100 kg	750 mg
> 100	1000 mg

- Monitoring: draw a pre-dialysis trough prior to the second dialysis session with morning labs

Pre-dialysis Level	Post-dialysis Dose
>20 mcg/mL	decrease by 250 mg
15 – 20 mcg/mL	continue dose
<15 mcg/mL	increase dose by 250 mg

CRRT Protocol

- Loading Dose: 20 – 25 mg/kg once (Maximum: 2000 mg)
- Maintenance Dose: 1000 mg once daily
- Monitoring: draw a vancomycin level prior to the second maintenance dose

Level	Dose Adjustment
>20 mcg/mL	decrease by 500 mg
15 – 20 mcg/mL	continue dose
<15 mcg/mL	increase dose by 500 mg

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