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Introduction:
Critically unwell patients have been observed to respond unpredictably to traditional intermittent dosing (ID) schedules of vancomycin, likely due to the complex physiological derangements caused by critical illness. Continuous infusion (CI) of vancomycin has been suggested to overcome such problems by allowing more regular therapeutic drug monitoring and subsequent effective dose titration\(^1\).

Methods:
This study conducted at a tertiary intensive care unit, reports our experience following implementation of a continuous vancomycin infusion protocol. Prospective data was collected over two consecutive periods of three months, initially capturing plasma levels for ID (target level of 15-20mg/L) followed by reviewing plasma concentration levels in a CI protocol (target level of 20-25mg/L). Patients receiving renal replacement therapy were excluded.

Results:
A total of 22 intermittent vancomycin prescriptions were administered and dosing levels observed. In the three month CI period, 26 patients received CI vancomycin and levels subsequently checked. The CI protocol resulted in increased blood sampling (107 samples in CI group vs. 73 samples in ID cohort). Two non serious incidents were reported in the CI cohort relating to preparation of vancomycin.

Both groups had a comparable median time to therapeutic range (48 hours). However, CI vancomycin group had a greater proportion of first samples outside the desired therapeutic range (70% vs 36%). As the therapy continued, CI vancomycin demonstrated a greater propensity towards consistent therapeutic levels than that observed with ID. 83% of patients on a CI regime achieve the desired target levels compared to 77% in the ID cohort.

Conclusion:
Continuous infusion vancomycin protocol is a safe, acceptable and effective alternative to intermittent dosing of vancomycin in critical care.

References:

Scatter plot comparing serum vancomycin levels during continuous and intermittent dosing protocols over time.

Key:
- out of range
- within target range

Scatter plot of vancomycin plasma levels during intermittent and continuous infusion protocol periods.