



Therapeutic Concentrations Of Vancomycin Are Not Maintained In Critically Ill Patients Transitioning To Ward Therapy

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**Government
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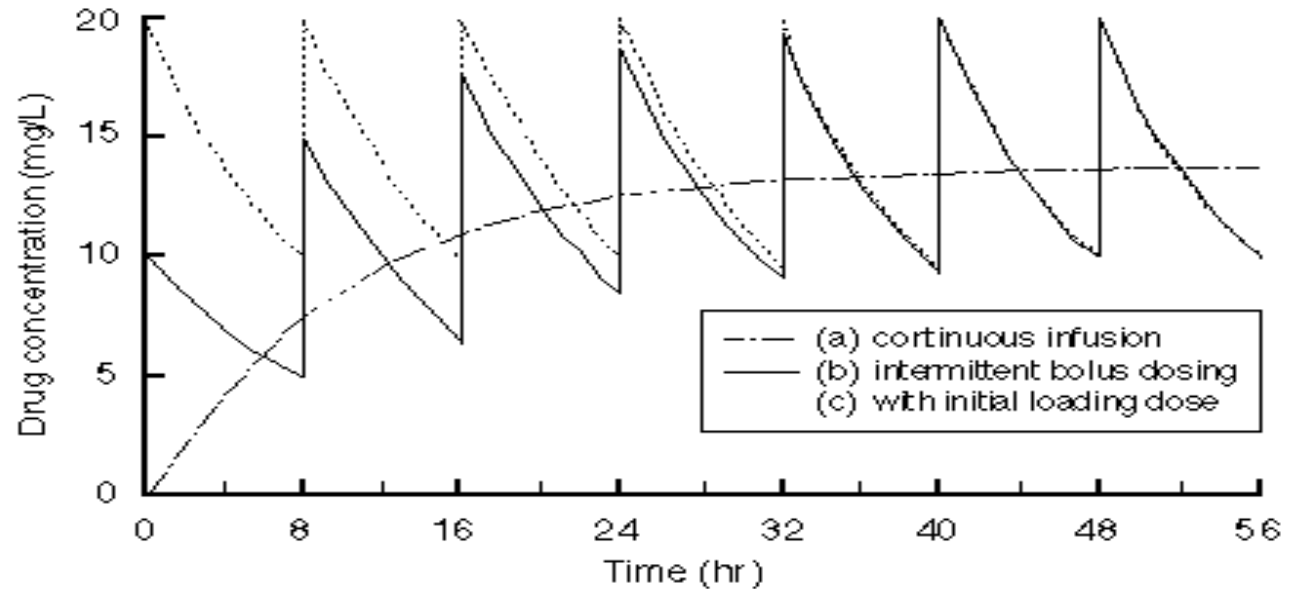
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Vancomycin

- > Intravenous glycopeptide antibiotic
- > Gram positive infections
- > Bactericidal by interacting with cell wall
- > Given as infusion over at least 1 hour
 - Usually 1-3 intermittent doses
- > Close therapeutic drug monitoring
 - Balance toxicity and efficacy

Continuous Infusions





Medication Transfer

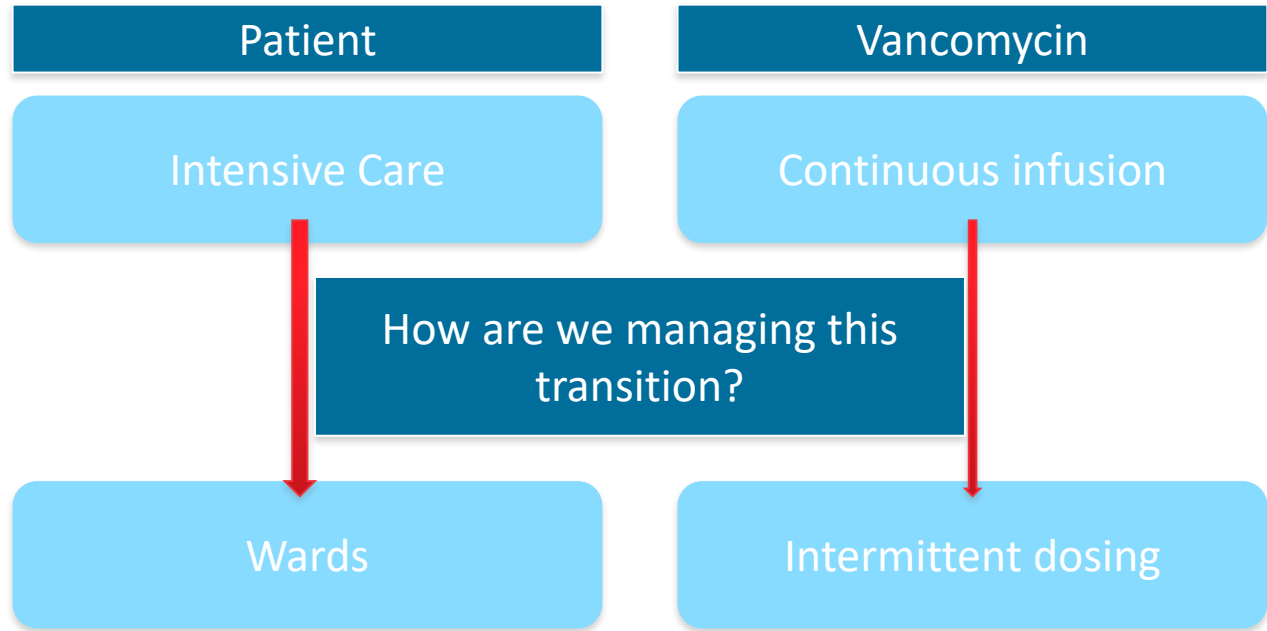
- > No information TDM drug transfer from ICU
- > Stress ulcer prophylaxis data
 - Acid suppression therapy initiated in ICU
 - Prevent stress ulcer in ICU
 - Up to 52% inappropriately continued post ICU
(Mohebbi, L, Hesch K 2009)
 - Continued post hospital discharge in 31%
patients (Farrel CP, Mercogliano G, Kuntz GL 2010)



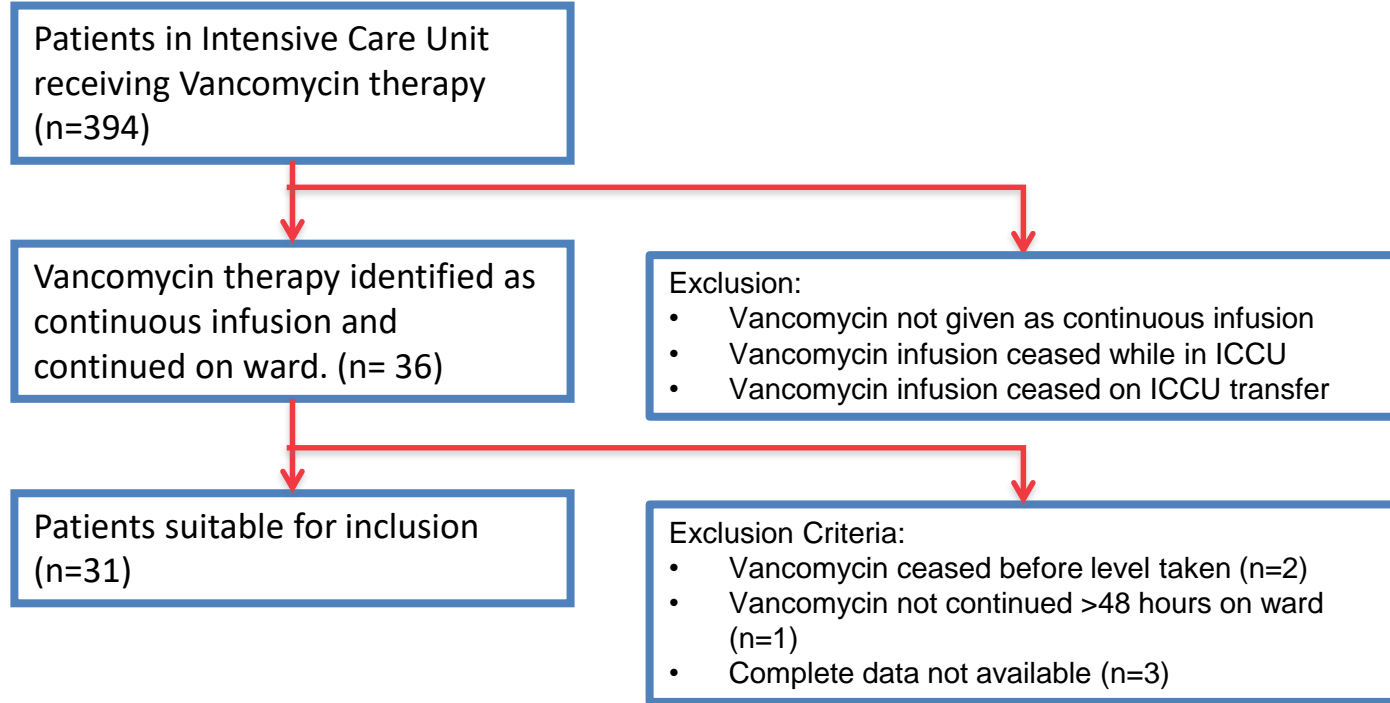
Aims

- > Aims of this study:
 1. Review current vancomycin management for patients receiving continuous infusion of vancomycin within ICCU transferring to the ward.
 2. Assess compliance to the vancomycin continuous infusion in ICCU protocol.
 3. **Assess time to a therapeutic level once transferred to the ward and identify areas for improvement.**

Methods



Study Flow



Patient Demographics

Age, Median (IQR)	61 (49.5-67)
Male, n (%)	21 (62)
ICCU Stay [days], Median (IQR)	3 (2-7)
Vancomycin continuous infusion [days], Median (IQR)	3 (2-4)
Renal function on transfer, Median (IQR)	66.2 (45-79)
Renal replacement therapy	0
APACHE III, Median (IQR)	56 (45-73)

Treatment Demographics

Pre-ward Vancomycin Level (mg/L)	19.1 (14.9-22.2)
Infusion dose on Transfer (mg/24h) (mL/hr)	1753 (1,464-2,320) 8.8 (7.35-11.65)
Daily ward dose on transfer (mg/24h)	2,000 (2,000-3,000)

Conversion

CONVERSION TO WARD THERAPY:

The use of continuous infusions is restricted to the ICU. ~~patients will need to be transitioned to~~ intermittent dosing as per Table 6 upon transfer to the ward. ~~The first dose should be given immediately after stopping the~~ continuous infusion, with a ~~serum level taken following 2 intermittent doses~~.

Table 6. Conversion to ward dosing

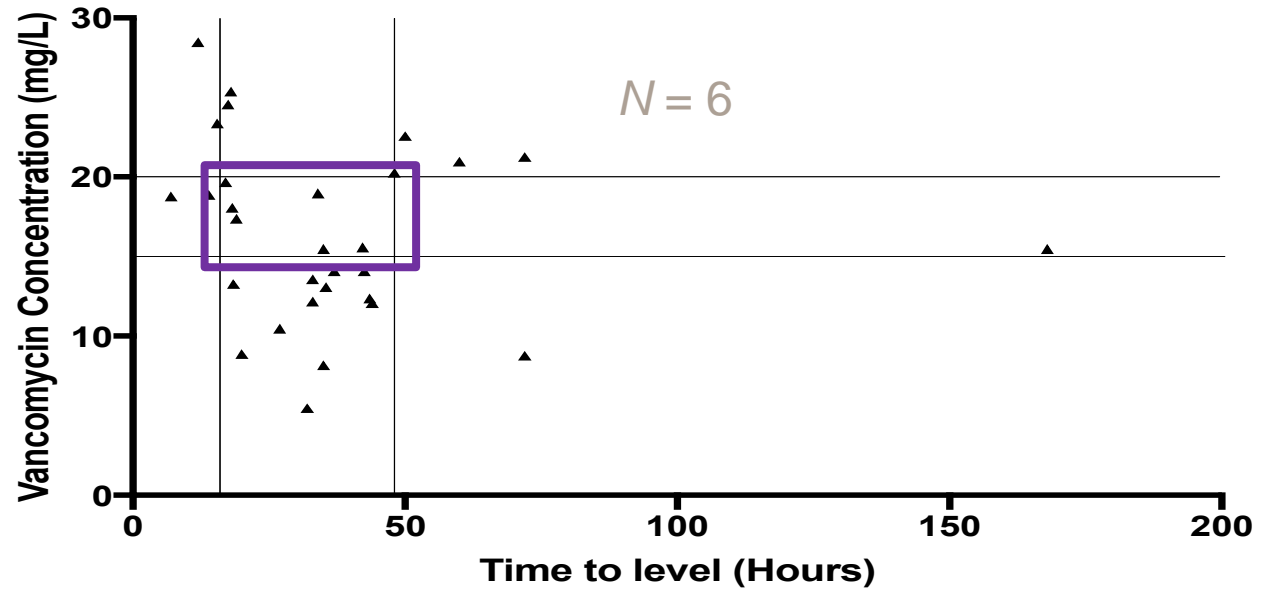
Infusion rate	Dose conversion for ward
3.75mL/hour	1000mg daily
5 mL/hour	750mg 12-hourly
6.25 mL/hour	750mg 12-hourly
7.5 mL/hour	1000mg 12-hourly
8.75 mL/hour	1000mg 12-hourly
10 mL/hour	1250mg 12-hourly
11.25 mL/hour	1250mg 12-hourly
12.5 mL/hour	1000mg 8-hourly
13.75 mL/hour	1000mg 8-hourly
15 mL/hour	1250mg 8-hourly



Results

- > *First intermittent* dose given *immediately* following cessation of continuous infusion.
 - 19% patients (6)
- > Dosage *conversion* consistent with the *hospital protocol*.
 - 52% patients (16)
- > Collection of the *first* serum trough *vancomycin concentration* sample within *48 hours* of ward transfer.
 - 81% patients (25)
- > *First* ward trough serum *vancomycin concentration* of *15-20mg/L*.
 - 55% patients (17)
 - Not true trough in 13% of patients.

Vancomycin Transfer Concentration





Limitations

- > Small study size
 - Only 32 bed unit
 - Single site study
 - Vancomycin not go-to antibiotic for most infections
- > Many influencing factors
 - Staffing on medical wards
 - Dose delays
 - Clinical picture
 - Trouble achieving therapeutic concentration



Improvement

> Protocol review

> Education

- Pharmacists
- Doctors
- Nursing staff



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