Prescribing, Administration and Monitoring Practices of IV Vancomycin

Tiffany Atua
NHS Dumfries and Galloway

Background

- Glycopeptide antibiotic- targets Gram positive organisms
- Can be administered orally or intravenously
- ORAL therapy is used for treatment of **Clostridium difficile**
- IV (focus of this audit) is used for systemic infections e.g. bacteraemia, penicillin allergic patients (second line)
- **TDM** = Therapeutic Drug Monitoring- maintains efficacy and reduces/ monitors possible toxicities
- A loading dose (LD) is required to reach desired therapeutic range faster
- A maintenance dose (MD) is required to ensure therapeutic levels are maintained

Objectives

Prescribing:
-To determine if LD was prescribed every time IV vancomycin prescribed (Rx)
-To determine if vancomycin chart and HEPMA prescribing times match

Administration:
-To determine if vancomycin was administered within 2 hours of prescription time
-To determine the frequency of delayed and missed doses
- DELAYED : dose given after 2 hours of prescription time
- MISSED : doses not administered (e.g. BD dosing 1 dose given= 1 missed dose)

-To determine frequency of treatment doses in the early hours of the day

Monitoring:
-To determine if first level was taken within 48hours of first dose
-To quantify how often levels were taken(trough level/ pre dose)

-95% target of compliance set as 'ideal standard' with senior pharmacists

Ideal standards

- **Prescribing**:- online calculator should be used to determine the LD and MD, times prescribed on HEPMA and paper chart should match
- **Administration**: dose should be given within 2 hours of prescribing
- **Monitoring** :1st level taken within 48 hours & trough level should be taken pre-dose

Method

-Retrospective audit
-Samples collected from 4 random wards – mix of surgical and medical
-20 patients in total
-Between November 1st 2023- January 6th 2024
-Utilised clinical portal and labs

Results

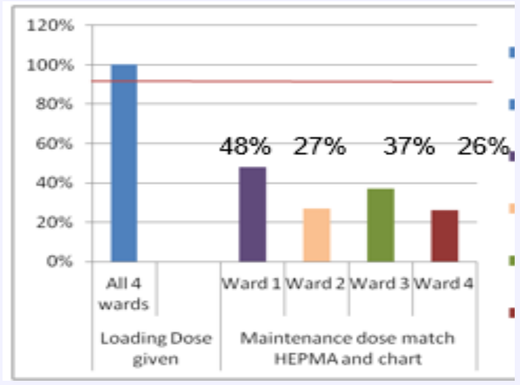

FIGURE 1: Prescribing- % of LD given and % MD doses match vancomycin chart and HEPMA

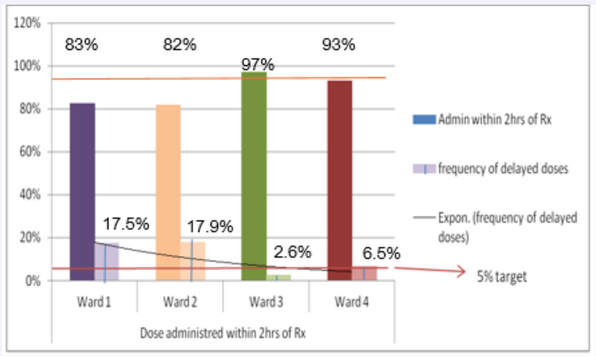

FIGURE 2: Administration-% of doses given within 2 hours of Rx time

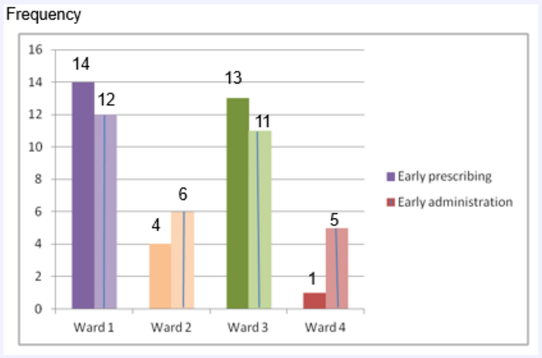

FIGURE 3:Frequency of Early Hour administration (1.00 - 5.59am)

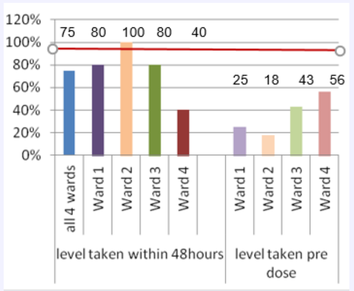

FIGURE 4: Monitoring- % levels taken in first 48hours & levels taken pre dose

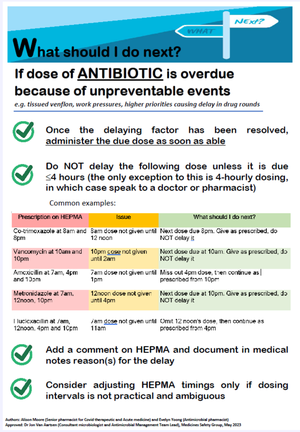

FIGURE 5: QI intervention poster on delayed dose of antibiotics and appropriate action

Discussion

Prescribing:
- LD- good awareness from prescribers and nurse on the need for a load vancomycin dose when first prescribed
- Reasons contributing to why prescription did not match HEPMA and chart:
  2 prescribing system and prescribers often change the timings on vancomycin chart but forget to change on HEPMA

Administration
- Reason contributing to delayed, missed doses or early hours administration: workload, staff shortages, unintended situations (e.g. venflon tissued), lack of communication between staff, fixated ideas on dosing intervals

Monitoring:

- Reasons levels not taken at the correct time:
  levels are taken by phlebotomist with heavy workload , lack of communication and lack of understanding e.g. poor awareness of when levels should be taken

Limitation

- Small sample size
- Time constraints
- Difficulty interpreting or extracting some of the data due to missing charts (not scanned onto file) and illegible handwriting on paper charts

Conclusion

Results show: General practices are poor
- Practices vary between wards
- The 95% standard was met by in terms of:
  - loading dose being given (all 4 ward)
  - dose administered within 2 hours of Rx (on only 1 ward)
  - level taken within 48 hours of first dose (on only 1 ward)

- Vancomycin intermittent infusion
  -Gives rise to delayed doses
  -Early prescribing and administration
  -Difficult to monitor due to contributing factors from the MDT and patient factors

- To improve practices:
  -Education of staff is needed
  -QI Intervention should be introduced on the wards

Further work

To improve this audit further work may include:
- Statistical analysis of results with a robust sample size
- To determine the efficacy of vancomycin treatment on the presenting infection through testing and observation of infection and inflammatory markers (e.g. CRP, WCC, temperature)
- Education of doctors and nurses on the proper prescribing and administration of vancomycin surrounding delayed and missed doses
- Post audit to quantify the efficacy of the QI poster on vancomycin practices