Meropenem prescribing: a service evaluation to assess correct indication, documentation and review of meropenem prescriptions to comply with AMR CQUIN 2016/17

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Background
Carbapenem resistance is rising globally (1) resulting in a case of K. pneumoniae resistant to all available antimicrobials in the USA (2).

It has long been known that antimicrobials provide a selection pressure for resistant bacteria (3). Antibacterial stewardship is a key component of a multifaceted approach to preventing emergence of antibiotic resistance (4).

One of the aims of the UK 5 year Antimicrobial Resistance (AMR) strategies is to ‘conserve and steward the effectiveness of existing treatments’. (5)

This has been followed by a 2016/2017 CQUIN. This gives a financial incentive to NHS trusts to reduce their antimicrobial usage by 1%. (6)

- Part A—reduction in antibiotic consumption per 1000 admissions (particularly focussing on carbapenem)
- Part B—empirical review of antibiotic prescriptions

Objectives
To audit guideline compliance for meropenem prescriptions at a large Birmingham teaching hospital, Heart of England Teaching Hospital (HEFT).

Proposed standards:
- 80% of our Meropenem prescriptions should be guideline compliant or started on micro/ID advice
- 80% of patients on meropenem should have:
  - A documented indication
  - A stop date
  - A sample sent to the laboratory <72hrs
  - A review at 72hrs

Method
A prospective review of 50 patients in the month of November 2016 was undertaken using electronic and paper records as per the standard operating procedure (SOP) below.

Active intervention allowed the changing of prescriptions if it was deemed not guideline compliant, with education of the physician involved.

Demographics
50 Patients
Admitted 30/10/16-20/11/16
22 Male, 28 Female
Mean 69 years old (26-96yrs)

Discussion of results
- A high proportion of the 50 prescriptions monitored were not guideline compliant (30%)
- Indication compliance was up to standard, this corroborates other pharmacy audits.
- Other performance indicators such as stop dates and 72hrs review were not as high
- There seems to be a positive correlation between guideline compliance and good clinical practice/documentation.

Interventions
- Consultant education at induction with PowerPoint slide produced to educate about carbapenem stewardship
- Microbiology team review of cases to discuss alternatives to carbapenems
- FY2 Monday screening of weekend meropenem prescriptions for consultant review (see SOP at the top of the poster)

Other interventions at HEFT for the AMR CQUIN:
- Daily Infectious Diseases physician review of patients on tazocin/meropenem in AMU
- Review of guidelines to reduce reliance on carbapenems
- Daily tazocin ward round

Notes:
This review of 50 patients resulted in 16 (32%) of meropenem prescriptions being changed.

References

Indication compliance

![A Pie chart to show the indication for meropenem by number (n=50)](chart1.png)

A more detailed review of each inappropriate case gave further information, hopefully showing areas that need to be further addressed:
- Respiratory infections (8/15) were a large proportion of inappropriate prescriptions.
- It seems particularly difficult to stop carbapenem near end of life.
- Of the 3 inappropriate prescriptions that were still going by day 3, 2 had not been reviewed at 72 hours.
- Clinicians are unwilling to stop prescriptions that are started by other clinicians.

![A Bar Chart to show the proportion (%) of prescriptions that were changed <24hrs after admission](chart2.png)

![A Bar Chart to show the proportion (%) of prescriptions that had documented indication, documented stop date, sent relevant samples within 72hrs, and for those still on at D3 (n=25) if a 72hrs review was documented](chart3.png)

![A Pie chart to show the number (n=16) of alternative antibiotics that were used instead of meropenem](chart4.png)