

# Drivers of Meropenem: Prescription: A retrospective study at a large district general hospital, East of England, UK

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## Background

Meropenem is often a last resort antimicrobial, and its use must be carefully monitored and limited. There are no clear standards nationally for meropenem prescriptions. At West Hertfordshire Hospitals NHS Trust (WHHT) we noted an increase in meropenem prescriptions from 47.9 to 76.1 DDD/1000 admissions from January to March 2018. The aim of this study was to identify the drivers of meropenem prescription at our hospital, and to develop hospital standards to limit their use.

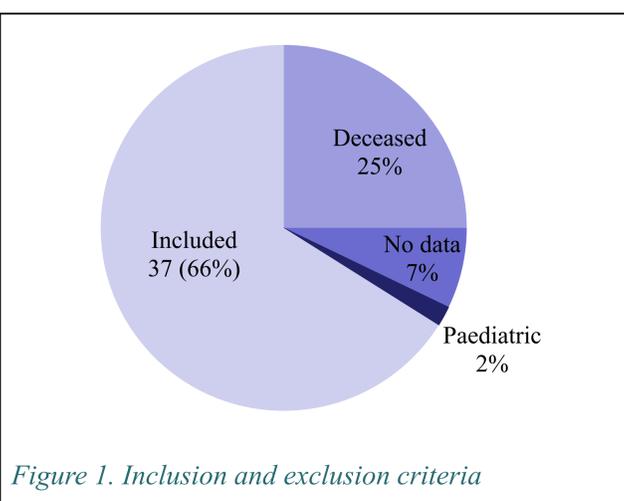
## Methods

A list of all inpatient prescribed meropenem in March 2018 was obtained from the pharmacy system. Paediatric patients, deceased patients. Intensive care patients and patients for whom no admissions summary was available were excluded. Intensive care patients were excluded as these patients prescriptions were reviewed by microbiology team during ITU ward rounds. The reasons for meropenem prescription were grouped into the following categories:

- 1.Documented non-severe penicillin allergy
- 2.Pathogen/susceptibility guided therapy
- 3.Clinical indication for escalation
- 4.Reason unclear/not stated

## Results

37 patients were included in our study. Aspiration pneumonia, urosepsis and urinary tract infection were the main indications for meropenem use.



## Results

For 78% of meropenem prescriptions, a reason was stated for its prescription. In cases where the reason for prescription was given, a majority of these (55.2%) were made due to a clinical indication for escalation to broader spectrum antibiotic. 81% of these were escalated from Piperacillin & Tazobactam (Piptaz).

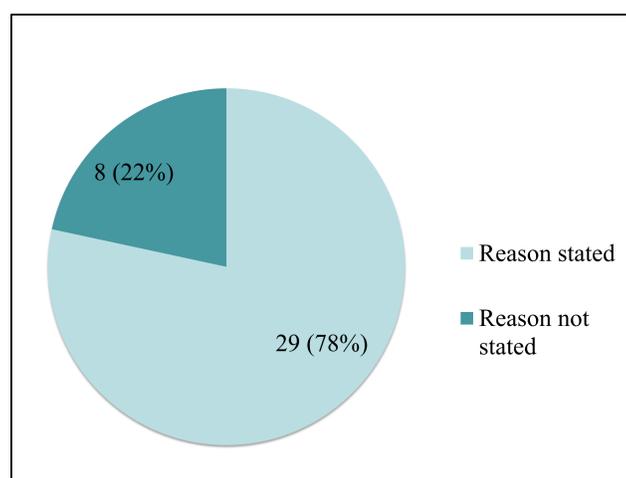


Figure 2. Reason for meropenem prescription stated (N = 37)

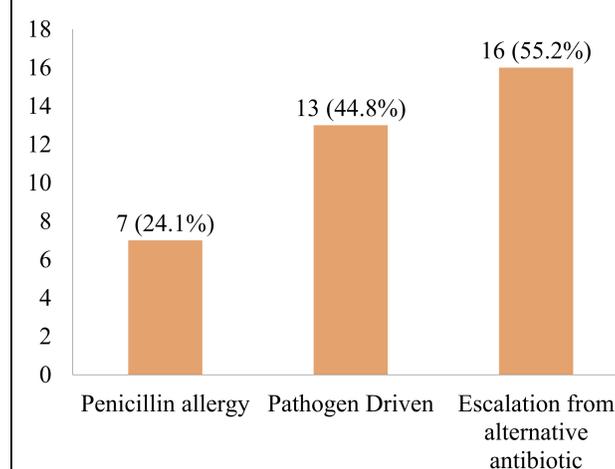


Figure 3. Reasons for meropenem prescriptions (N=29)

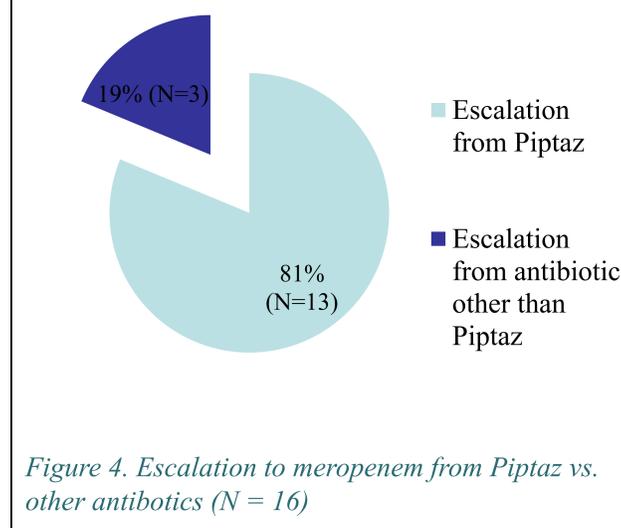


Figure 4. Escalation to meropenem from Piptaz vs. other antibiotics (N = 16)

## Results

Of the 45% of prescriptions that were guided by pathogen sensitivities, 42% were ESBL producing pathogens.

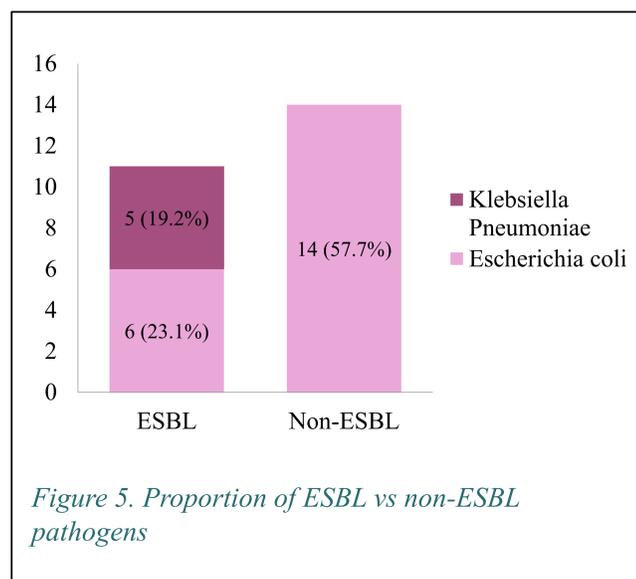


Figure 5. Proportion of ESBL vs non-ESBL pathogens

## Conclusion

1. The commonest driver for meropenem prescription is clinical escalation from Piptaz, followed by multi-resistant pathogens and penicillin allergy
2. The reason for antimicrobial escalation is unclear in a proportion of cases- these could represent inappropriate prescriptions
3. Further study to evaluate the duration of prescriptions and the drivers for this is warranted.
4. We propose the following checklist to guide meropenem prescriptions in our hospital:
  - Penicillin allergy
  - Pathogen resistant to all other antibiotics
  - Clinically appropriate escalation
  - Microbiology discussion documented

## Limitations

Overall 66% of meropenem prescriptions were considered appropriate. However more information on appropriateness of meropenem prescribing may have been available in the patient medical notes were not reviewed in this study.