

Use of Vancomycin and Meropenem in Bone Cement for Prosthetic Joint Infection

Yi Ning Ham, Stephanie Fournier
Canberra Health Services, ACT



Objective

To discuss the use of vancomycin and meropenem in bone cement for prosthetic joint infection (PJI) with a background of drug related eosinophilia and systemic symptoms (DRESS) with amikacin and blistering rash with piperacillin/tazobactam.

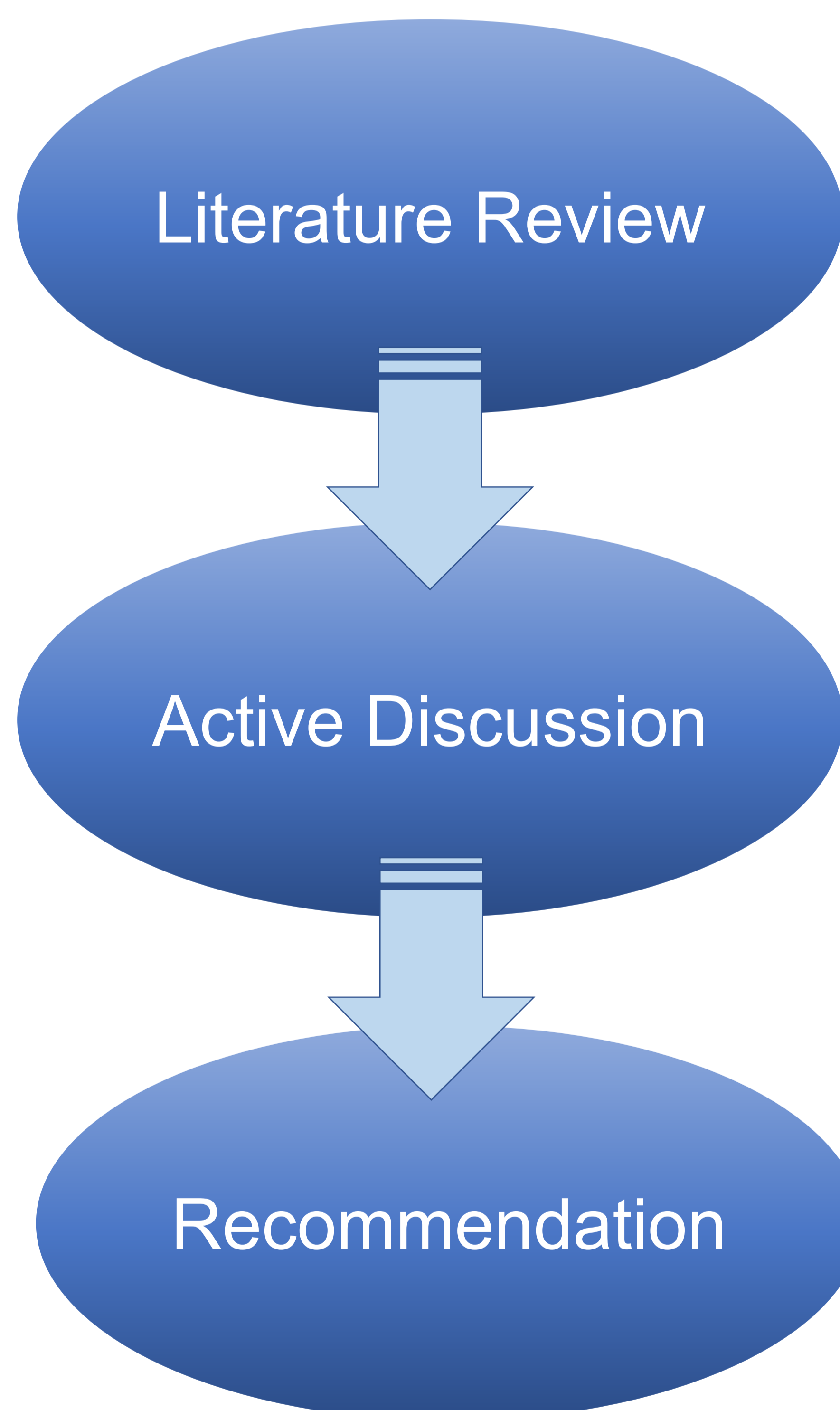


Clinical Features

- Demographics: 53-year-old female
- Allergies: DRESS with amikacin; blistering rash with piperacillin/tazobactam
- Indication: Recurrent left knee PJI after failing multiple antibiotic courses
- Pathogen: *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Peptoniphilus species*, *Staphylococcus epidermidis*



Pharmacist Intervention



- Lack of quality evidence to support the efficacy of antibiotic-loaded bone cement
- Limited research on the combined use of vancomycin and meropenem in bone cement
- Lack of studies on the stability of meropenem powder at a high temperature

- Discussed the options for suitable antibiotics with activity against previously cultured bacteria to use in bone cement
- Engaged senior pharmacist, orthopaedics team and Infectious Disease team for input

- Suggested avoidance of aminoglycosides and penicillin secondary to her severe reactions
- Informed the team regarding the cross reactivity between penicillin and meropenem being approximately 1%
- Recommended a 1:2 ratio of vancomycin to meropenem for the desired antibacterial activities with acceptable compromise in its mechanical properties¹



Discussion

- The case report demonstrates the role of pharmacists in determining the appropriate antibiotics to incorporate in bone cement in the case of multiple drug reactions.
- Future research is needed to investigate antimicrobial stability in bone cement.

References

1. Baleani M, Persson C, Zolezzi C, Andollina A, Borrelli AM, Tigani D. Biological and Biomechanical Effects of Vancomycin and Meropenem in Acrylic Bone Cement. *Journal of Arthroplasty*. 2008; 23(8): 1232-1238. Accessed October 1, 2023. <https://www.clinicalkey.com.au/#!/content/playContent/1-s2.0-S0883540307006055?returnurl=null&referrer=null>

Contact:

YiNing.Ham@act.gov.au



ACT
Government
Canberra Health
Services