

Fighting Antimicrobial Resistance: Review of piperacillin/tazobactam use on a surgical ward

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INTRODUCTION

- The emergence of new drug-resistant pathogens and rise of antimicrobial resistance is a significant threat to modern medicine with one contributing factor being the frequency of inappropriate use of broad-spectrum antimicrobials such as piperacillin/tazobactam.
- An increase of piperacillin/tazobactam use at Northern Health (NH) from Oct-Dec (Q4) of 2021 was identified in the National Antimicrobial Utilisation Surveillance Program (NAUSP) report¹.
- Further analysis revealed Ward 16 (a 32-bed surgical ward at NH's Epping campus) had the highest number of piperacillin/tazobactam supplied compared to other NH wards during this period.

AIM

- The primary endpoint was to assess NH's compliance with guidelines (either nationally or locally endorsed) or directed therapy when prescribing piperacillin/tazobactam.
- The secondary endpoint was to assess indications for antimicrobial use and compliance with restriction program (iGuidance).

METHOD

- A retrospective audit was conducted which analysed data extracted from iPharmacy dispensing software for piperacillin/tazobactam dispensings for Ward 16 patients during Q4 2021.
- This information was compared with medical records, to determine whether prescribing complied with guidelines and if approval via iGuidance (restriction program) was obtained for piperacillin/tazobactam use in accordance with the local Antimicrobial Stewardship (AMS) policy.
- Compliance with guidelines was classified as being compliant to Therapeutic Guidelines, local guidelines or directed therapy.
- Patients who were commenced on piperacillin/tazobactam outside of Ward 16 (including external organisations) were excluded from the study.
- One patient was excluded from the study due to insufficient documentation in their medical records.

RESULTS

Data from Ward 16 Q4 2021 was retrospectively audited

65 patients were included in the data set

Only 9% of piperacillin/tazobactam prescribed was compliant with guidelines

Figure 1. Compliance with guidelines by indication

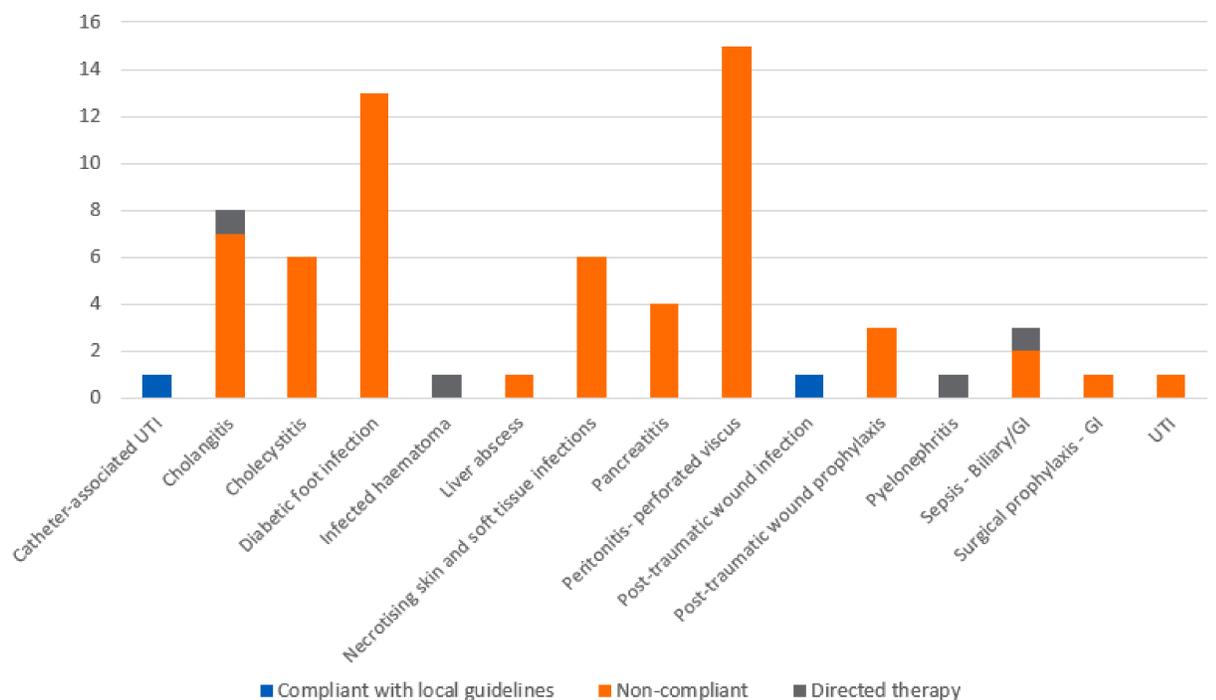
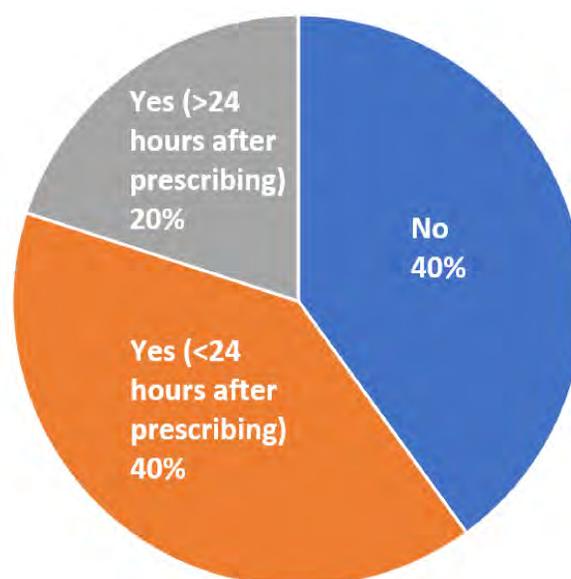


Figure 2. Compliance with iGuidance



DISCUSSION

- Diabetic foot infections and peritonitis (perforated viscus) were the most common indications for antimicrobial use, of which all of the prescribing was not compliant with guidelines. The Therapeutic Guidelines² recommends 6-hourly dosage of piperacillin/tazobactam for diabetic foot infections, however 8-hourly dosage was most commonly prescribed. Furthermore, there are no available guidelines for diabetic foot infections in the local protocol.
- In the case of perforated viscus, local guidelines recommend using ceftriaxone and metronidazole as pre-operative empirical therapy which was not adhered to.
- iGuidance approval was obtained for 60% of piperacillin/tazobactam prescribed with 40% of approvals occurring within 24 hours of initial prescribing. This presents room for improvement and increased awareness and accessibility of the restriction program.

LIMITATIONS

- Given the relatively small sample size of the study, the data generated may not be generalisable to other hospitals and Northern Health wards or campuses.
- Potentially eligible patients may have been missed from this study if the piperacillin/tazobactam was sourced from outside of pharmacy (such as after-hours borrowing from another ward).
- The local antimicrobial restriction program (iGuidance) does not display historical data for patients who are deceased, therefore, patients who met the inclusion criteria during the specified timeframe of the study but have since died did not have iGuidance data available to include in the data analysis.

CONCLUSION

- The prevalence of non-compliance to guidelines suggests the need for increased prescriber education and revision of current local guidelines.
- Improving compliance to guidelines as well as prompt and routine use of iGuidance will assist in optimising antimicrobial use at Northern Health.

REFERENCES

1. Australian Commission on Safety and Quality in Health Care. Antimicrobial Stewardship Clinical Care Standard [Internet]. ACSQHC; 2020. Available from: https://www.safetyandquality.gov.au/sites/default/files/2020-11/saq10001_ccs_antimicrobial_v4_film_web.pdf
2. eTG Complete [Internet]. Therapeutic Guidelines Ltd; 2020. Diabetic foot infection; 2022. Available from: <https://tgldcp.tg.org.au.acs.hcn.com.au/viewTopic?etgAccess=true&guidelinePage=Antibiotic&topicfile=diabetic-foot-infection>