

Once Daily Gentamicin Dosing in the Intensive Therapy Unit

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INTRODUCTION

Gentamicin, used to treat serious infections in ITU, is given as a once daily 7mg/kg dose in 100ml 5% dextrose or 0.9% sodium chloride solution administered over 30-60minutes by IV infusion.

AIMS

- To assess dosing and drug blood levels of gentamicin.
- To propose guidelines for once daily gentamicin dosing applicable for the local scenario.

METHOD

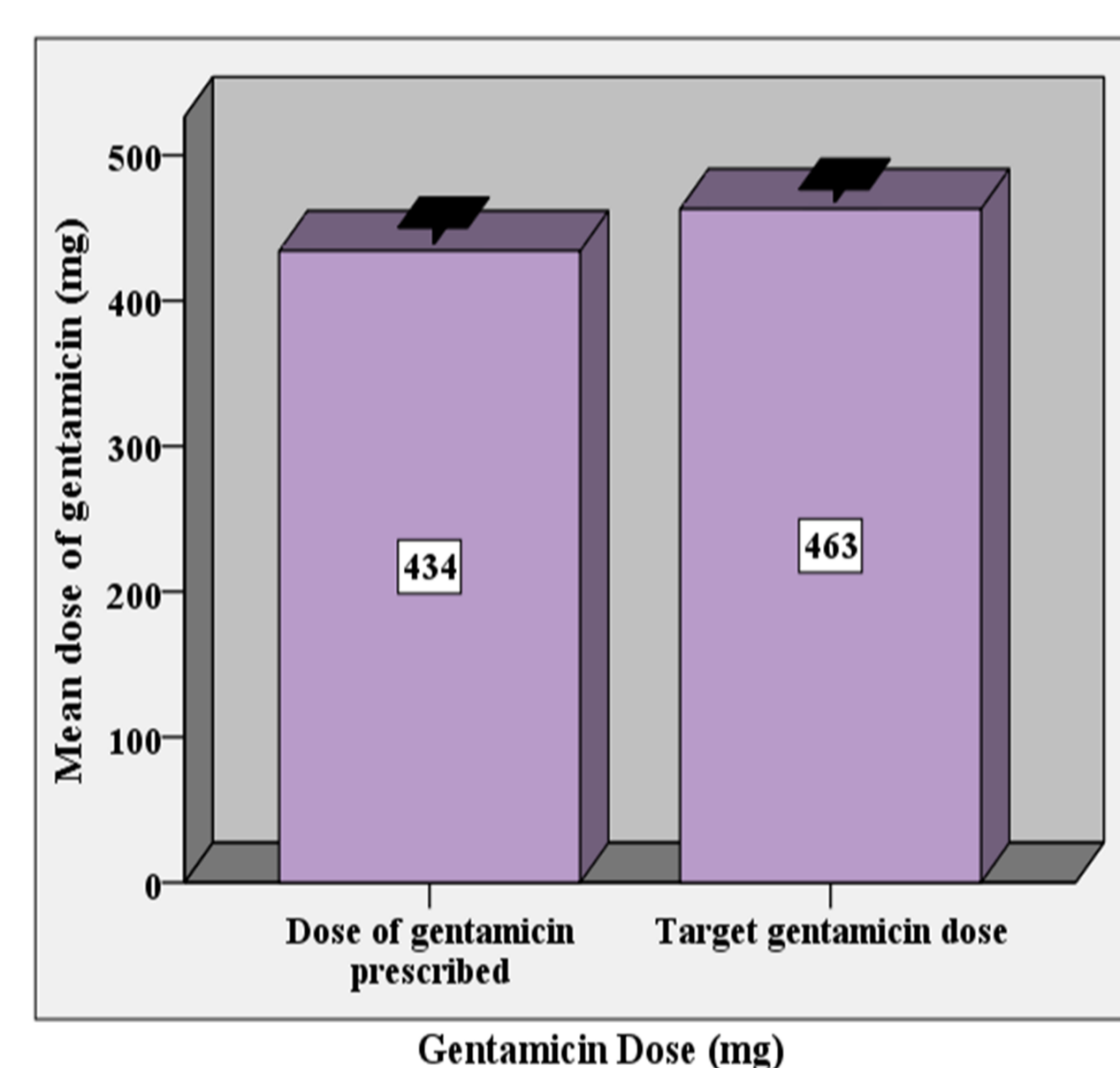
- Ethical approval was granted for viewing the patient information records and blood results at ITU, Mater Dei Hospital.
- A data collection form was developed and validated by 8 health care professionals.
- A total of 42 critically ill adult patients were collected by convenience sampling for patients satisfying inclusion and exclusion criteria and receiving treatment during the study period.

- A scenario analysis of gentamicin dosing in ITU was carried out.
- Patient medical records and drug treatment charts were reviewed for data related to gentamicin therapy.
- Drug blood levels of gentamicin, serum creatinine levels and sensitivity results were reviewed.
- Data was analyzed using SPSS version 20.
- Guidelines were proposed and validated by 8 health care professionals.

RESULTS

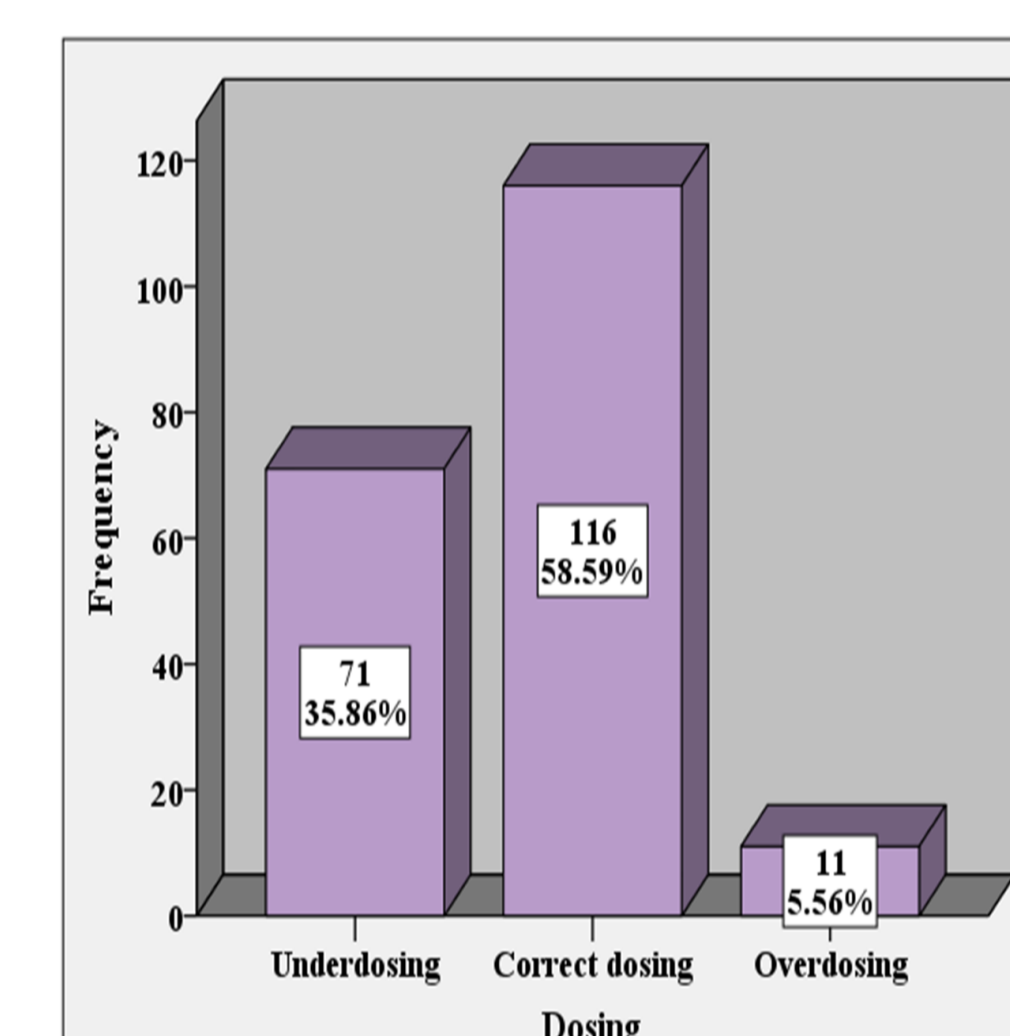
- A total of 42 critically ill adult patients (32 males and 10 females) with a mean age of 54 years were eligible for once daily gentamicin treatment, all had a baseline creatinine clearance of >20ml/min.
- Common indication for gentamicin therapy : sepsis (24 patients) followed by pneumonia (10 patients). Treatment was targeted in 18 patients and empirical in 24 patients.
- Correct dosage interval occurred in 78% of cases (n=200). Correct timing occurred in 82% of cases (n=200).
- Six patients had treatment stopped due to high gentamicin levels and renal issues.
- Validation of developed guidelines indicated that they were user-friendly, comprehensive, practical and beneficial.

Figure 1 : Dose of gentamicin prescribed and target gentamicin dose (n=198)



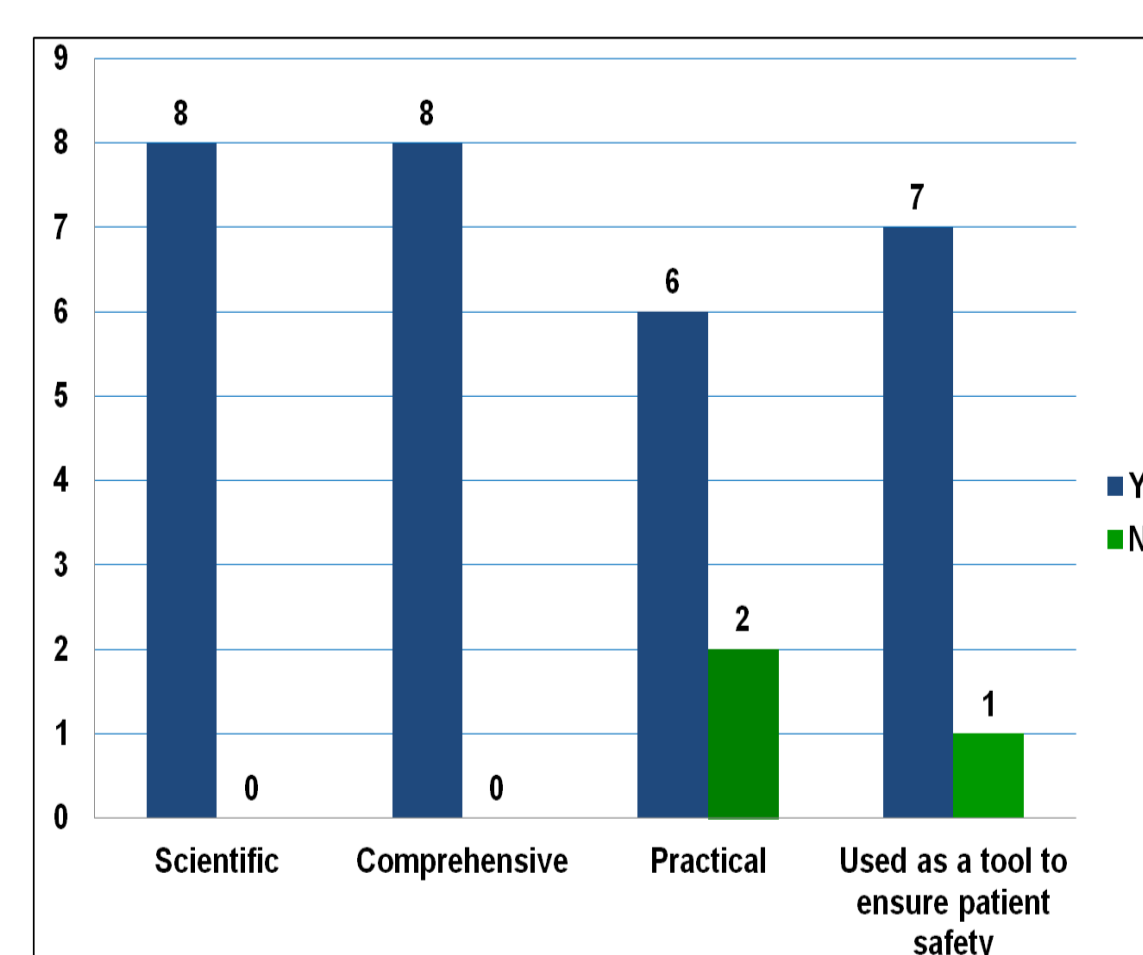
There is a significant difference between the mean dose of gentamicin prescribed (434mg) and the mean target gentamicin dose (463mg) since the p value (>0.001) exceeds the 0.05 level of significance.

Figure 2 : Dosing (n=198)



Correct Dosing (59%), Underdosing (36%), Overdosing (6%).

Figure 3: Information presented in the guidelines (n=8)



All participants (n=8) agreed that information presented in the guidelines was scientific and comprehensive. Six participants decided that it was practical and 7 respondents agreed that it could be used as a tool to ensure patient safety.

CONCLUSION

Underdosing or overdosing is still occurring and this highlights the relevance of the developed guidelines. Incorrect dosing occurred most frequently either because the patient's weight and height were not taken or due to incorrect weight and height estimation, incorrect dosage adjustments and use of an inaccurate or outdated weight in medical records. Both patient's weight and height are important information to calculate the appropriate dose.

Acknowledgement(s) Staff at the Intensive Therapy Unit

Reference(s) Calderdale and Huddersfield NHS Foundation Trust Antibiotic Guidelines [Internet]. 2007. Available from: http://www.formulary.cht.nhs.uk/pdf_doc_files_etc/MMC/066_Antibiotic%20Guidelines%20-%20Dr%20Booklet/Gentamicin.pdf