

An Audit of Electronic Prescribing and Monitoring of Amikacin in a large Dublin Hospital

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Introduction

- Amikacin is the first line aminoglycoside at St James's Hospital for empiric use in sepsis and serious infections caused by Gram negative bacilli.
- Weight-based dosing and therapeutic drug monitoring is essential to ensure therapeutic efficacy and to avoid toxicities such as nephrotoxicity and ototoxicity.
- E-prescribing using the electronic patient record (EPR) was introduced into St James's hospital in 2019.
- The aim of this audit was to identify if amikacin dosing and monitoring was in line with local antimicrobial guidelines and if there was an improvement in with the introduction of e prescribing. A similar audit of 25 patients was completed in 2017 prior to the introduction of e prescribing.

Methods

Retrospective data was collected from the Electronic Patient Record (EPR) from 120 patients who were admitted in the last quarter of 2020, excluding ICU patients. Data was collected as follows: gender, weight, serum creatinine, indication, duration of therapy and whether trough levels were taken. Each patient's creatinine clearance was calculated using the Cockcroft-Gault equation. Appropriateness of dosing regimen and monitoring was compared with local hospital guidelines

Results

120 patient records were reviewed. The mean age of patients was 68 (median 71.5 range age 28 -93) and 51.7% were male. The mean creatinine clearance was 63.7 ml/ min (median 59.4 ml/min; range 10-223 ml/min). The indication for amikacin (see Fig.1) was urosepsis/pyelonephritis in 19.2%, genitourinary infections 16.7%, sepsis 14.2%, hospital/ community onset pneumonia 17.5 %, intra-abdominal 10.8%, neutropenic sepsis 8.3%, and 'other' in 8.3%.

32.5% of patients received greater than one dose. Of these patients who had > 1 dose, 10.2% did not have a trough level taken or was taken at an inappropriate time. Initial trough levels were within the recommended range in 87.9% patients.

The initial target dose was charted 15 mg/kg in 57.5% of patients, 10 mg/kg in 30.8% of patients, 4 mg/kg in 5.8% of patients, 2 mg/kg in 2.5%. 2.4% were not prescribed initial weight based doses. Allowing for weight and creatinine clearance the correct dose was prescribed in 78.3% of patients.

In the 2017 audit, amikacin doses were correctly prescribed in 61.5% of patients and 15% did not have trough levels or were taken at an inappropriate time.

Conclusion

- This audit showed promising results in amikacin prescribing with the introduction of e-prescribing.
- E-prescribing is safe in both terms of calculating correct doses and also in terms of therapeutic drug monitoring.
- It has also highlighted the importance of correct weight documentation on admission, in order that correct initial doses are prescribed in line with protocol. your information, graphs and images to this section.

Fig.1 Indication for Amikacin

