Vol. 6: Issue 3 - August 2025

MEDwatch *is the e-bulletin for all NHS Grampian Staff who are involved with patients and medicine management.*

Its aim is to improve the safety of medicines by sharing learning, and encouraging adverse event reporting from all staff groups.

Inside This Issue - Spotlight on Intravenous Gentamicin Adverse Events

This month we are going to look at Intravenous (IV) Gentamicin adverse events that occurred within NHS Grampian between May 2024 - April 2025.

What is Gentamicin?

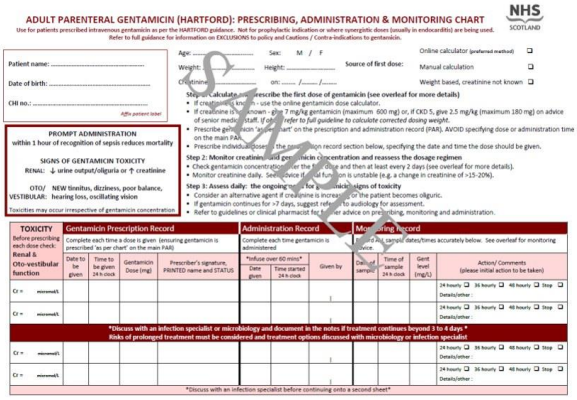
Gentamicin is a life-saving but high risk antibiotic that can be seriously toxic when blood concentrations are too high. It requires blood monitoring and dose adjustment with the aim of achieving an initial high peak concentration to kill the bacteria, but allow the concentration to fall to a trough level between doses to prevent toxicity.

Renal toxicity and ototoxicity are a risk with gentamicin and ototoxicity is irreversible. Patients can be asymptomatic but still have toxic gentamicin levels, and symptoms of toxicity can develop even in patients with normal gentamicin levels. The best way to avoid toxicity is to ensure that treatment duration is no more than 72 hours unless necessary on clinical grounds, therefore, all prescriptions for gentamicin should be reviewed after 72 hours.

110 drug interactions with gentamicin are listed in the BNF, the majority are drugs that also increase the risk of nephrotoxicity or ototoxicity and gentamicin is contra-indicated in patients with Myasthenia Gravis as it may impair neuromuscular transmission.

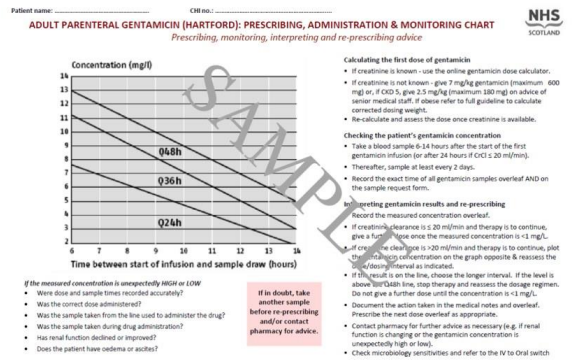
Prescribing IV Gentamicin

With the exception of Endocarditis in Adults which is prescribed solely on HEPMA, IV gentamicin is prescribed on a paper Prescribing and Administration Record (PAR) with a placeholder added to HEPMA as a PRN drug, the example shown below is the NHS Scotland Adult Parenteral Gentamicin (Hartford): Prescribing, Administration & Monitoring Chart, different charts are used within paediatrics and within neonates.


ADULT PARENTERAL GENTAMICIN (HARTFORD): PRESCRIBING, ADMINISTRATION & MONITORING CHART

NHS SCOTLAND

SAMPLE


ADULT PARENTERAL GENTAMICIN (HARTFORD): PRESCRIBING, ADMINISTRATION & MONITORING CHART

Prescribing, monitoring, interpreting and re-prescribing advice

NHS SCOTLAND

Concentration (mg/l)

Q48h

Q36h

Q24h

Time between start of infusion and sample draw (hours)

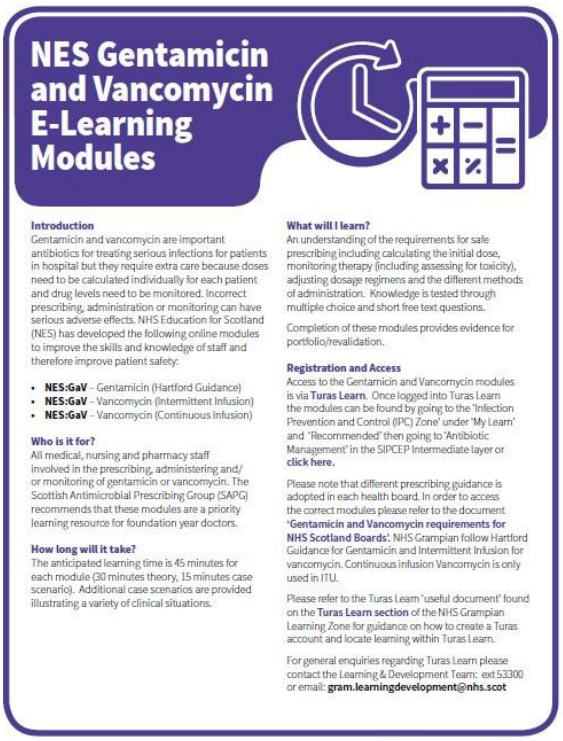
SAMPLE

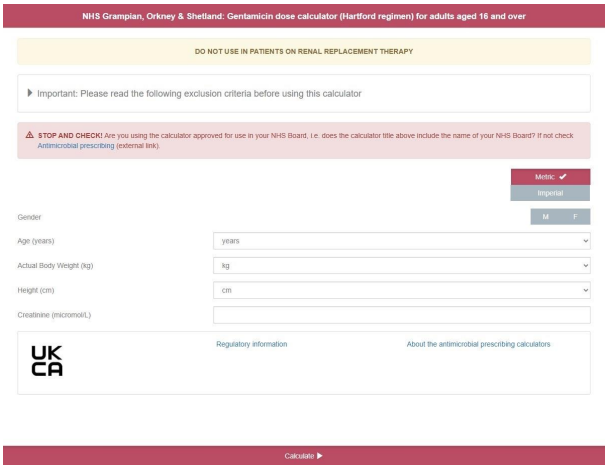
Gentamicin doses are calculated using the [NHS Grampian Gentamicin calculator](), different Health Boards use different calculators, if the wrong calculator is used the dose may not be within the local dosing guidelines, ensure the calculator being used shows 'NHS Grampian' at the top before proceeding (see image below).

Guidance can be found on the [A-Z Antimicrobial policies and guidance webpage]().

Prescriber Education and Training

NES Gentamicin e-Learning modules are available on Turas - this poster gives details of the module NHS Grampian staff should complete.





Adverse Events

The graphs below show collated adverse event data for IV gentamicin within NHS Grampian between May 2024 - April 2025 (click on a graph to enlarge).

Issues/Themes

There were a number of reports relating to the use of the wrong gentamicin calculator and communications on this featured as an NHS Grampian news story in November 2024 and in a MedWatch Newsletter in December 2024. Prescribers were encouraged to report cases where the wrong calculator had been used via Datix and although difficult to extract this

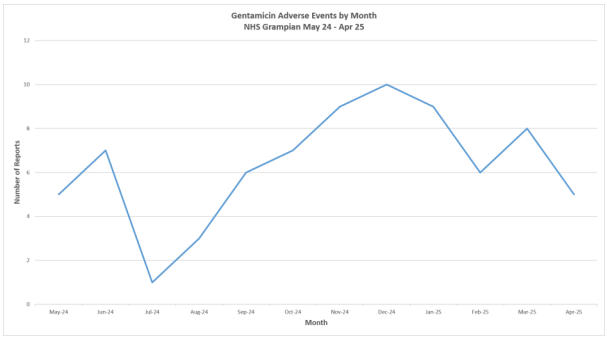
data from Datix it is felt that this is reflected in the number of adverse events reported around this time.

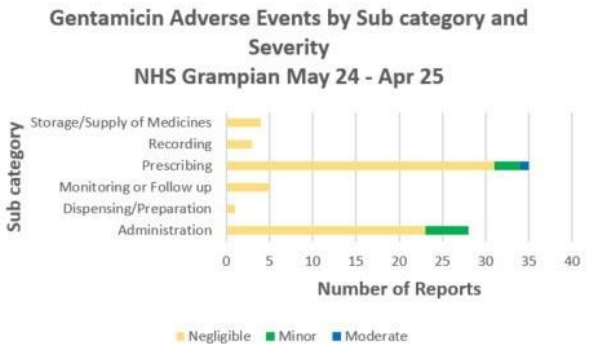
Commonly reported prescribing adverse events are:

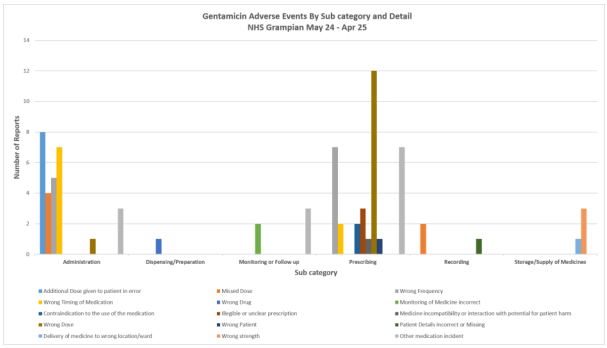
- not prescribed when it should have been
- dosage interval was wrong
- wrong dose (both lower and higher)
- prescribed for the wrong patient
- duplicate dose prescribed (doses have been prescribed on two separate charts)
- contraindicated
- missing demographics on the prescription chart.

Commonly reported administration adverse events include:

- wrong timing
    - dose timings have been adjusted based on bloods but the dose has been given at the time in the original prescription e.g. 12noon instead of 12 midnight
    - confusion between 24, 36 or 48 hourly dosing e.g. given 12 hours early
    - 48 hourly dosing given 24 hours early
    - prescriptions have been partially written while awaiting blood results but doses are administered
- Duplicate doses
    - two prescription charts in use (adjusted dose has been prescribed on a new chart) resulting in two doses being given
    - during transitions of care e.g. given in both theatre and the ward
- Missed/delayed doses
    - delay in getting a cannula sited resulting in a delay in administration
    - delay in the availability of IV trained staff to administer the dose.







Learning

Common themes that contribute to the adverse event occurring included lack of communication regarding adjusted doses or the timing of monitoring resulting in the incorrect dose being prescribed/administered or doses given at the wrong time.

Teams are encouraged to consider ways to share information on high risk medicines that require monitoring and dose adjustment, this could be on a white board in the Doctors room or utilising the safety brief. Some areas have introduced a ward round checklist to highlight when high risk medicines have been prescribed and prompt review.

Another common theme in the reports is that staff are often distracted or interrupted when prescribing, preparing or administering Gentamicin. It is important for staff to feel empowered to politely challenge the person interrupting them and say that they are in the middle of something that requires their full attention. If you are interrupted it is important to re-start the process from the beginning, for example, if you are interrupted part way through writing a prescription the prescriber should check all parts that have already been prescribed before continuing on to complete the prescription. Likewise if you are

interrupted while preparing to administer gentamicin you should start to checking process from the start after the interruption.

Summary

Gentamicin is a high risk medicine which is complex to prescribe and can cause significant harm. Areas are encouraged to share learning and local procedures implemented to improve communication relating to the prescribing and monitoring of Gentamicin. Please continue to submit Datix reports, doing so allows us to have an understanding of what goes wrong, identify root causes and areas for improvement.

Contact

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