

Gentamicin Prescribing

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Introduction to Project & Defining the Local Problem

Gentamicin dosing is often calculated incorrectly, thereby increasing the risk of nephrotoxic and ototoxic side effects. As a group of junior doctors within the Belfast Trust we recognised the potential risks associated with gentamicin dosing and monitoring due to lack of gentamicin charts.

Our aim was to introduce a **user-friendly gentamicin chart** which included prompts, such as ideal body weight, creatinine clearance and monitoring, to help **safe prescribing**. With chart introduction an emphasis was placed on medical and nursing education.

Aim

To increase the safety of gentamicin prescribing by reducing prescription dosing errors by 50% in ward 7b/c in RVH over a 4-month period

Change Ideas & Driver Diagram

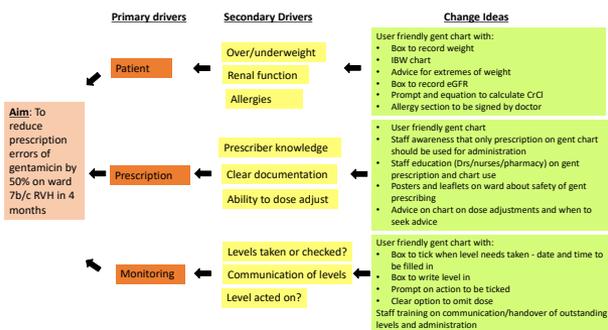


Figure 1: Driver Diagram showing drivers and change ideas to meet Aim Statement.

Figure 2: Front page of Gentamicin Prescription Chart.

| MONITORING | | | | | PRESCRIBING | | | ADMINISTRATION | | | | |
|------------|-------------------------------------------------------------|------------------------------|------------------------------|------------------------------|----------------------------------------------------------|-----------------------------|------------|----------------|-----------------|----------------------|------------------------|----------------------------------------------|
| Date | Pre-dose trough level measured? Tick Y/N | Time for level assay (min) | Date and time sample taken? | Result (mg/L) | Action to be taken: | Results result of response: | Drug | Dose | Time and Staff? | Prescriber signature | Date and time of Admin | Signature Registered Nurse (or second check) |
| | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> Nil | <input type="checkbox"/> Nil | <input type="checkbox"/> Nil | <1 → Give dose 1-1 → Hold dose + reassess in 12 hours | | Gentamicin | | | | | |

Figure 3: Snapshot of second page of Gentamicin Prescription Chart showing how Gentamicin would be prescribed.

Method

Process: Gentamicin prescribing charts, Gentamicin education for both Medical and Nursing teams and MDT involvement

Outcome: Reduce prescription errors

Balance: Resistance from colleagues and potential risk of increasing errors if both Kardex and chart used

A run chart showing the % of correct doses of gentamicin over a 4 month period from December 2020-April 2021.

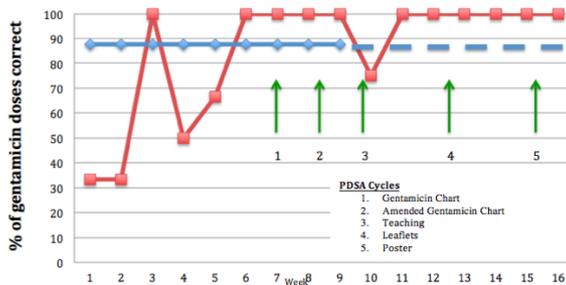


Figure 4: Run Chart showing % if correct doses of Gentamicin prescribed in Ward 7B/C RVH

Confidence Scores Survey

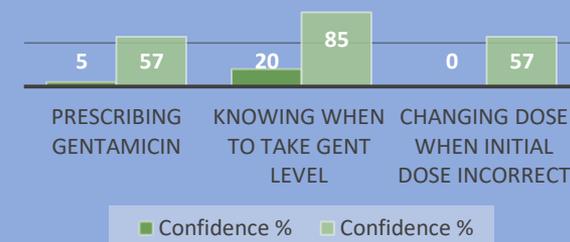


Figure 5: Confidence scores for questionnaires completed before and after the introduction of the Gentamicin Chart

Description

This project identified that a median of 58.33% of Gentamicin doses were correctly prescribed prior to chart introduction. A median of 87.5% was deduced from the first 10-weeks of data with 6 points above the median from weeks 10-16. Following chart introduction there was a large improvement in correct doses which affected the median. **Following chart introduction 100% of doses were correctly prescribed.** This demonstrates an overall increase in gentamicin safety due to a **reduction in prescription errors**. There were no adverse incidents reported relating to Gentamicin use since the chart was introduced which also shows an improvement in **patient safety**. The chart has therefore **increased prescriber confidence** and **decreased the number of adverse incidents**.

The success of this chart can be attributed to working closely with Antimicrobial and Ward Pharmacists, as well as the nurses and doctors on Ward 7B/7C.

What's next for the project?

Our future plan for improving gentamicin prescribing safety would include:

- Expanding the use of the gentamicin chart across the RVH site and hopefully further across the Belfast Trust.
- Additionally, we hope to add **Gentamicin calculator** to the microguide app to aid first dose prescriptions on the ward and in the emergency department.

References

Provost LP, Murray S. The Health Care Data Guide: Learning from Data for Improvement. San Francisco, California: Jossey-Bass; 2011