Monitoring and Management of Gastric Residual Volumes (GRVs) in Critical Care at University Hospital Waterford

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QI Project Aim: To audit the monitoring and management of GRV's in Critical Care in UHW following implementation of GRV Policy.

Background and Context

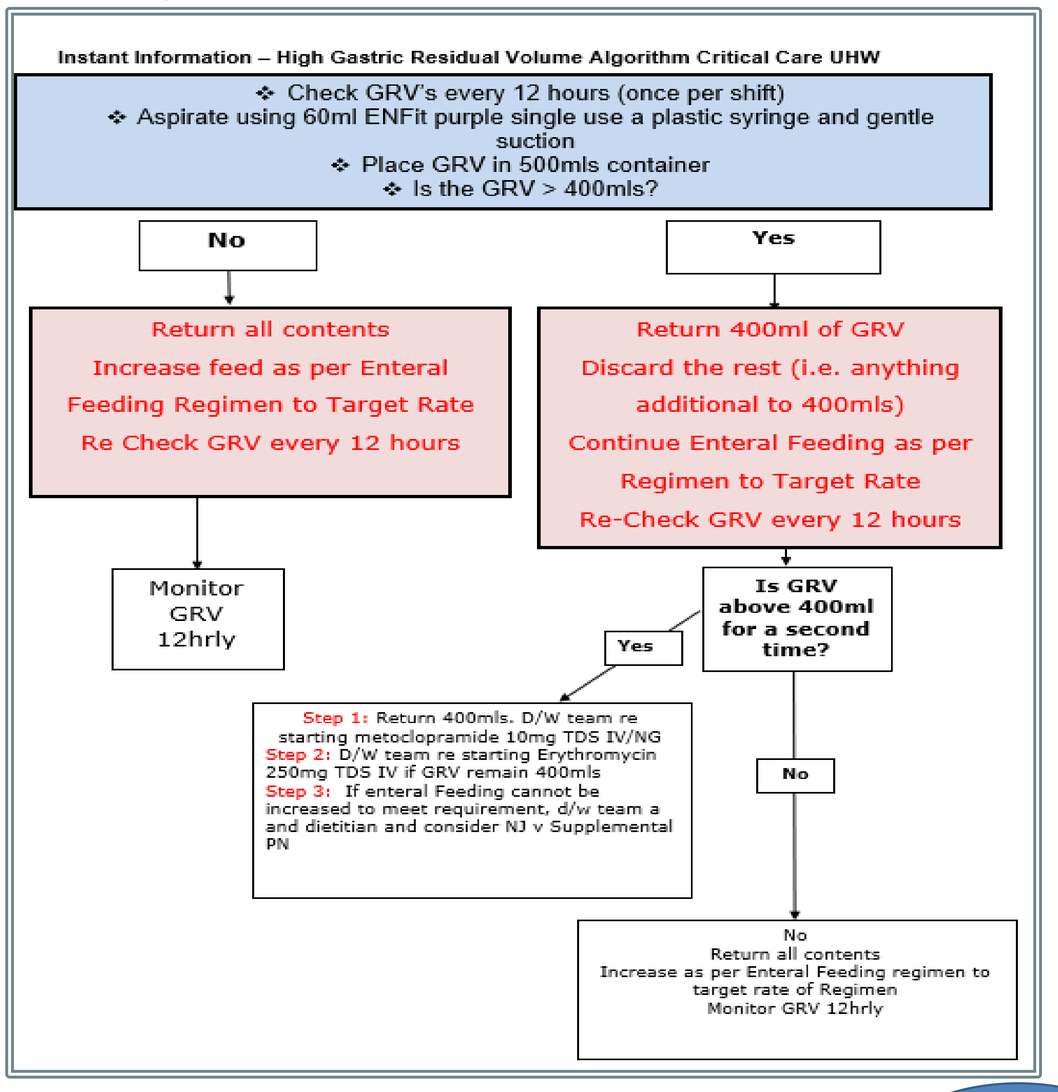
Following attendance at a national conference by our critical care out reach nurse and a visit to Cork University Hospital it was decided to develop a policy for measuring GRV in Critical Care in UHW. Previously in UHW GRV was measured four hourly with an acceptable cut off point of 250ml. It was used as an indicator of enteral feeding tolerance, to prevent aspiration pneumonia, VAP (ventilator associated pneumonia) and abdominal complications. Further studies have now shown that GRV measurement correlates poorly with gastric emptying, incidence of regurgitation and aspiration (Reignier et al 2013). International guidelines now recommend acceptable GRV thresholds between 400ml and 1000ml. Frequent GRV measurement has been shown to reduce enteral nutrition delivery to patients in critical care (Montejo JC et al 2010). An algorithm was developed by the senior dietitians and critical care out reach nurse with consultation with key stakeholders in Critical Care UHW. Education for staff in Critical Care regarding the GRV algorithm was undertaken.

Recommendations:

1.Move from 4hrly GRV measurements to twice daily (every 12 hours).

2. Increase GRV cut off from 250ml to 400ml.

GRV Algorithm



Audit Aims

1. Assess compliance with the UHW GRV Algorithm.
2. Identify prokinetic use and types administered.
3. Record any episodes of vomiting.
4. Determine if patients received their full prescribed feed

What is GRV?
A measure of the amount of fluid present in the stomach at any one time, this can include saliva, gastric secretions and enteral feed.

QI Methodology and Tests of Change

- All patients commencing enteral feeding via nasogastric tube in the Critical Care Unit at UHW between 1st October and 17th October 2025 were included.
- Patients were followed for up to 7 days or until discharge.
- Exclusion criteria included:
  - Small bowel obstruction.
  - Post-op ileus.
  - SMA (Superior Mesenteric Artery Syndrome).
  - Patients established on nasogastric feeding prior to commencement day.
  - Patients under 18 years old.

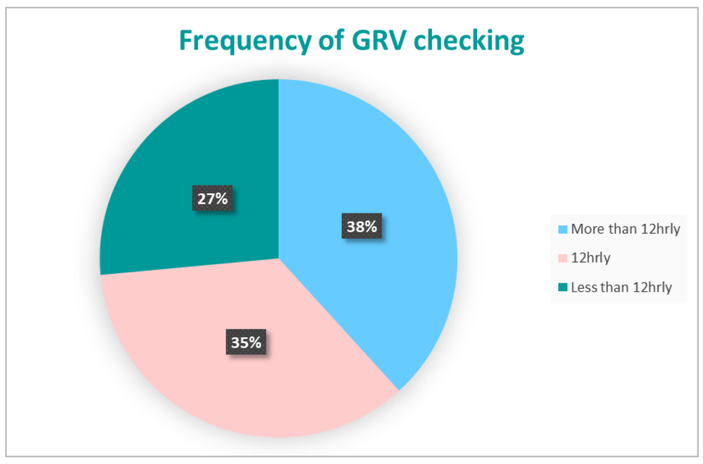
PDSA Test #	Plan	Do	Study	Act
1	An audit tool was developed based on Cork University Hospital's audit tool and after discussions with QPS.	The audit tool trialled on one patient in ICU prior to commencement of audit to test the feasibility.	Standardised questions were developed for each audit aim.	Tool was updated to reflect the changes required post trial to standardise each response.

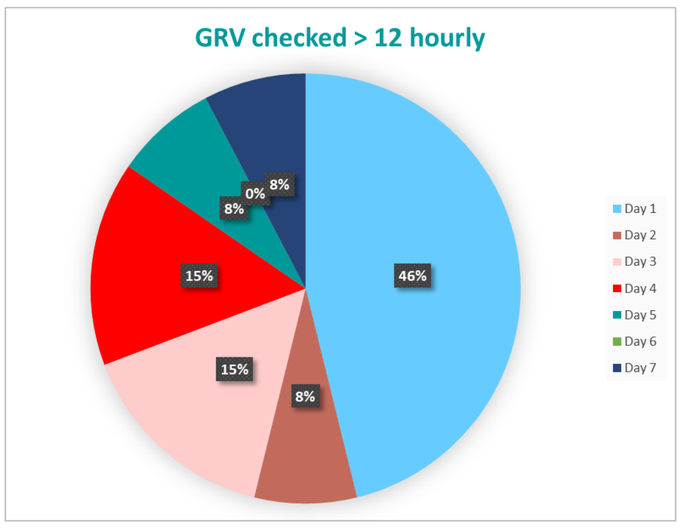
Results to Date

- 9 patients were included in the audit, 5 male and 4 female. 7 patients were >60 years old.
- 2 patients were followed for 7 days, 1 patient was followed for 6 days, 1 patient was followed for 4 days, 2 patients were followed for 3 days and 2 patients were followed for 1 day (34 days total).

- 34 days of GRV measurements were collected in total. Of these, 35% were completed in accordance with UHW algorithm.

- In patients where GRV was measured more frequently than 12 hourly, 46% occurred within 24hrs of commencement of enteral feeding.





Aspirates and vomiting

- One patient had 2 episodes of vomiting within 24 hours of commencing enteral feeding, this patient was commenced on metoclopramide and erythromycin.
- This patient also had one GRV measurement greater than 400ml.
- All other GRV measurements were less than 400ml and no other patient had an episode of vomiting.

Amount of enteral feeding received

- On average, the patients received ~87% of targeted energy and ~80% of targeted protein intake.

Reflections and Learning

Opportunities

- There was broad stakeholder acceptance to the change in practice.
- Positive working ethic of the team undertaking the task with clear ownership.

Challenges

- The longevity of the existing practice reflects its historical integration into organizational processes.
- Difficult to disseminate information across a large nursing team.
- Due to the short audit duration the findings may not fully capture practices involving patients with complex health needs nor the underlying reasons for the incomplete adoption of the new practice.

Learnings

- Changing long standing clinical practices is challenging. Early engagement, transparent communication, and ongoing feedback can help promote acceptance. Extending the audit period may identify barriers to consistent practice.

Future Change Ideas

- Greater emphasis on early engagement and transparent communication with clinical staff may facilitate broader acceptance of the QI initiative.
- Extending the audit timeframe may uncover patterns or challenges that contribute in resistance to changing current gastric residual volume management.

Sustainability and Spread

- Continued regular auditing and feedback to staff.
- Recognise progress in achieving targeted calorie intake.
- Provide ongoing training and support to staff using available resources.
- Share and discuss findings with other acute hospitals within in the same IHA and national critical care conferences.

References

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