

Improving the Use of Variable Rate Intravenous Insulin Infusions

(VRILs) on the Surgical Emergency Unit

Rajinder Singh Andev, Olivia Goldberg, Cate Leon, Clare Crowley

Background

Insulin is a high priority medicine that is prone to prescription, administration and monitoring errors. At OUH, there is a Medicines Information Leaflet for its use

Aim

Reduce the prescribing and monitoring errors of VRILs on the Surgical Emergency Unit

Methods

Data were collected retrospectively in March & April 2018:

- Patient MRN
- VRIL indication
- Insulin dose, VRIL regime and fluids prescribed
- Monitoring of capillary blood glucose (CBG) hourly

Staff questionnaires:

- Awareness, location and implication of guideline
- Familiarity, use and suggested improvements to guideline (free text)
- Knowledge of long-acting insulin use
- Practical limitations to monitoring CBG hourly

Results

Retrospective data:

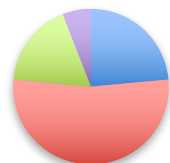
Objective	% patients in whom achieved
Appropriate insulin regime prescribed	70 (n=7)
Insulin rate correct for given CBG	50 (n=5)
CBG measured hourly	30 (n=3)
Regime altered if CBG more than 12 for 3 consecutive readings	0
Baseline U&Es obtained	80 (n=8)
U&Es measured at least daily	0
Usual long-acting insulin prescribed if applicable	75 (n=3)

Staff Questionnaires:

Are you aware that there is a Medicines Information Leaflet (MIL)?		
	Yes	No
Prescribers	100% (n=11)	0% (n=0)
Nurses	90% (n=9)	10% (n=1)

Do you think the MIL is easy to interpret?

- Very easy
- Somewhat easy
- Neither easy or difficult
- Somewhat difficult
- Very difficult



Suggested Improvements to MIL	
Simplify/improved clarity	9
Increase publicity	2

Implementations

Variable Rate Intravenous Insulin Infusions (VRIL) in Adults - Prescribing on SEU

VRIL is indicated for patients:

1. With acute severe pancreatitis and capillary blood glucose (CBG) is over 12 mmol/L
2. Who are going to miss two or more meals and are either:
 - a. Taking insulin for diabetes or
 - b. Have T2DM and CBGs have been over 12 mmol/L for more than 2 hours
3. Have an HbA1c of over 69 mmol/mol (8.5%) and surgery cannot be delayed

Prescribe on ePMA
Use the "Insulin - Adult Variable Rate Infusion PowerPlan" on ePMA to guide prescribing the following aspects of the prescription:

- Choose regimen based on patient's usual 24 hourly insulin requirements
- Prescribe Glucose 20%, 75 mL intravenous PRN
- Prescribe supportive glucose containing intravenous infusions depending on electrolyte levels and fluid status

Review drug chart

- Make sure patient's usual long acting insulin is prescribed and continued for duration of VRIL
- Suspend all other diabetes medicines (insulins, oral hypoglycaemic agents, other subcutaneous hypoglycaemic agents)

Monitor:

- Review U&E's daily and adjust IV fluids accordingly
- Ensure patient always has a prescription for a source of glucose
- Increase the prescription
 - If CBG over 12 mmol/L for three or more readings and the CBGs are not falling by at least 3 mmol/L per hour (ask Inpatient Diabetes Team for advice if already on increased regimen)
- Reduce the prescription:
 - If treatment for hypoglycaemia is given and CBGs remain below 4 mmol/L after 15 minutes, change to lower regimen
 - If CBG between 4-6 mmol/L on two or more consecutive hourly readings, consider reducing to a lower regimen
- Review need for VRIL daily
- If VRIL required for more than 48 hours, refer to the Inpatient Diabetes Team

1. Creation of simplified posters to place on the ward
2. Provision of short educational sessions
3. Run PDSA cycle again
4. Further: alter guidelines/MIL