Could Regular Supplemental Insulin Order Be the Answer to Glycaemic Control for Inpatients?

A review on change

High-Risk Medicines

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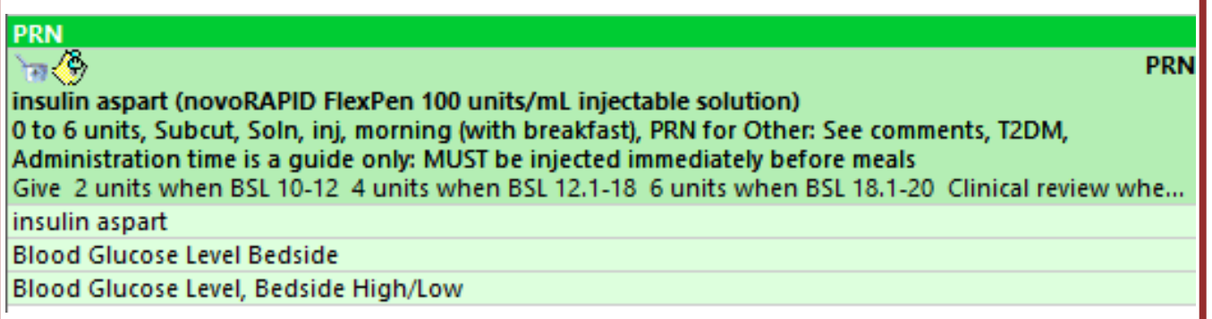
Background

A review conducted within a New South Wales Local Health District suggested supplemental insulin was often omitted when clinically indicated for patients with hyperglycaemia. The Basal Bolus Supplemental (BBS) Powerplan was developed using the electronic medical record (Cerner Millenium) care package released by eHealth which modified the as required (PRN) supplemental insulin order to a regular order. This change aimed to improve cognitively informed administration of insulin and glycaemic control. This change was implemented in a 200-bed Sydney metropolitan hospital to identify gaps in clinical practice prior to district-wide implementation.

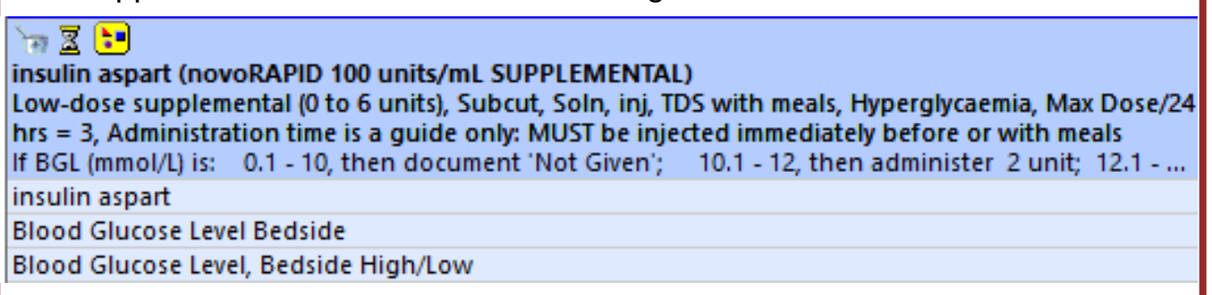
"Old" Insulin Careset

- Supplemental insulin was a PRN order
- Only the low dose option was available for supplemental insulin
- Giant list of all insulin

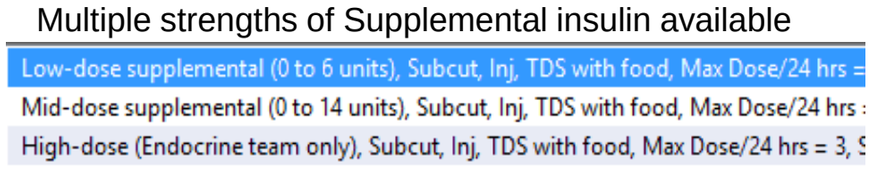


"New" BBS Powerplan

- Supplemental insulin is charted as a regular order



- Multiple strengths of Supplemental insulin available



- Improve decision support and warning for prescribers

Aim

To evaluate regular supplemental insulin orders in improving the administration of supplemental insulin and glycaemic control in patient with type 2 diabetes

Methods

Snapshot audits were performed by a pharmacist at one week pre-, and at weeks one to four and 26 post-implementation of the insulin prescribing tool to review pre-meal and bedtime blood glucose levels (BGL). Each scheduled insulin dose was reviewed to identify whether supplemental insulin was administered when clinically indicated, and if adequate documentation existed when not administered.

Results

A total of 587 BGL readings from 46 patients were reviewed during the study period.

- Hyperglycaemic events decreased by 31% (78% to 47%) (p=<.001)
- Blood glucose levels maintained in normal glycaemic range increased by 31% (22% to 53%) (p=<.001)
- No hypoglycaemia events were observed in the study period

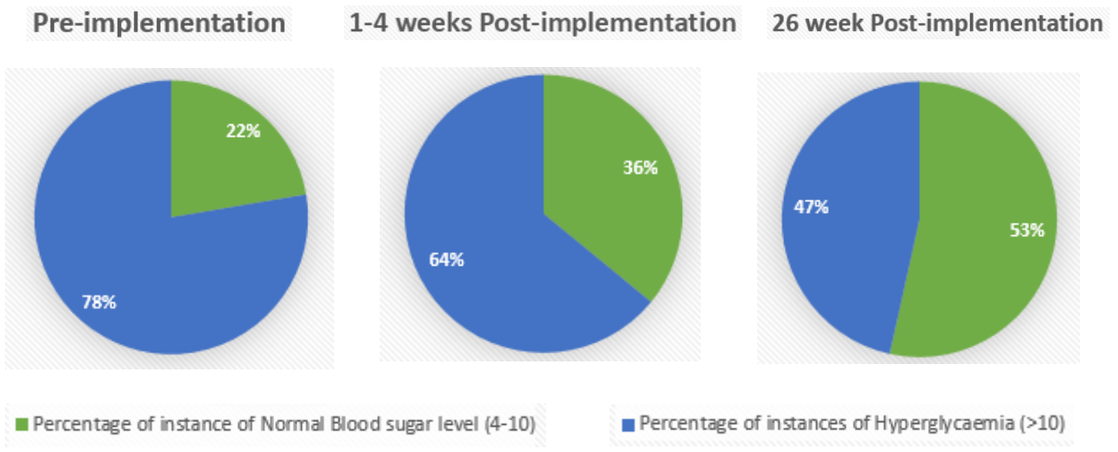


Figure 1. Glycaemic Control Pre and Post implementation

Poor documentation was identified in instances where insulin should have been administer but was not given. The audit also identified significant improvements in documentation from 54% to 100% compliance (p=<.001).

Analysis Hospital Acquired Complications (HACs)

A 5 fold decrease in HACs at Canterbury Hospital was identified post implementation of the Insulin Powerplan (figure 2)

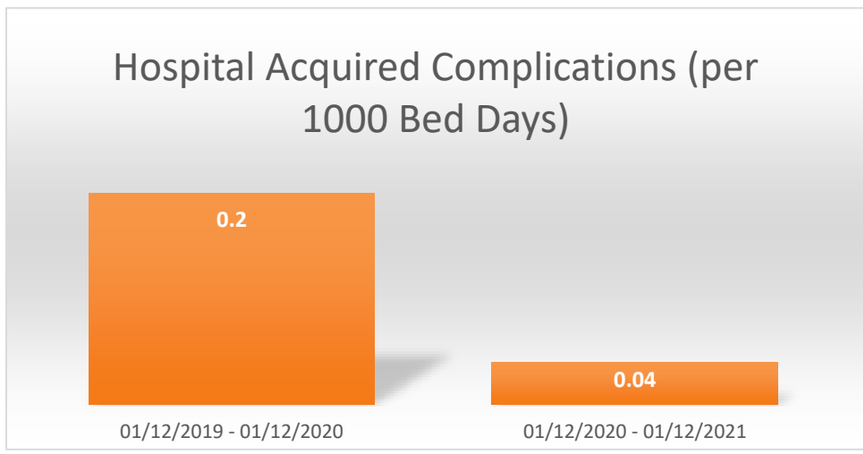


Figure 2. HACs Pre and Post Implementation

Discussion

This study demonstrates the use of a regular supplemental insulin order can improve the use of supplemental insulin resulting in better glycaemic control compared to as-required supplemental insulin orders.

Although this study demonstrates the benefits of a regular supplemental insulin order in an electronic medical record, care must be taken when conducting a similar strategy in a larger facility since other factors such as greater patient variability, supplemental dose ranges, and other complexities with managing glycaemic control may impact its utility.

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