

To Reduce the Incidence of Hypoglycemic **Events in Post Coronary Artery Bypass Graft** (CABG) Patients with Diabetes Mellitus

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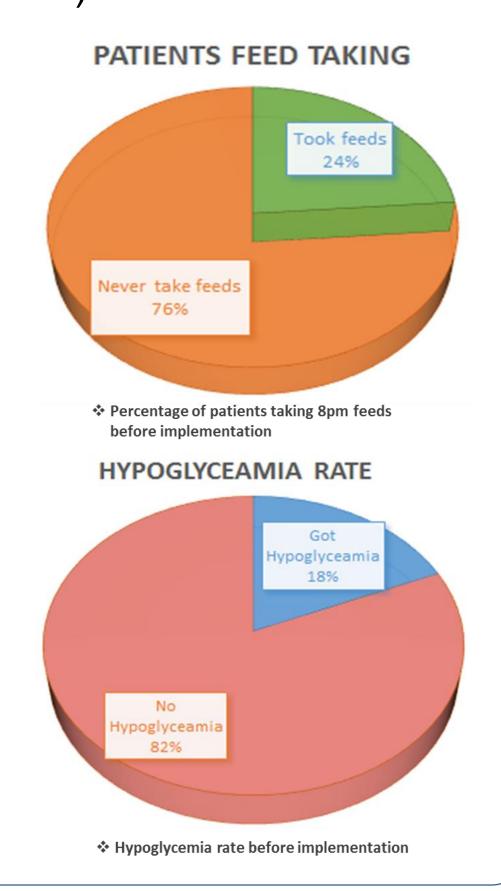
Background

Prevention of adverse outcomes as a result of hypoglycemic events is one of the medication safety initiatives that our team embarked on in NHCS. Based on our observation, there are a significant number of hypoglycemia incidences among the elective post CABG cases with Type 2 diabetes. Hypoglycemia is classified when blood sugar level (BSL) is less than 4mmol/l.

Reports showed that 18% of the post CABG diabetic patients had episodes of hypoglycemia during their hospital stay.

Records showed that ALL the patients who had episodes of hypoglycemia failed to take their night feed before they sleep. While patients who took the night feeds recorded nil incidences; patients with episodes of hypoglycemia makes up 24% of those who did not take their night feeds.

Poor oral intake, aggressive glycaemic control and deterioration in renal function pot-surgery are common causes for hypoglycaemia during the post-surgery phase. Detrimental effects of post-op hypoglycaemia can lead to cardiac arrhythmia, myocardial infarction, stroke and mortality.



Implementation Plan

PDSA 1 PDSA 4 PDSA 2 PDSA 3 A 2nd offer of Educate patients Implementation feeds if patient that the feeds is of the The serving of part of their refused 1st offer standardized the 8pm feeds medication when at 10pm insulin sliding during pre-op BSL of \leq scale orientation 6mmol/L

PDSA 1 Poor appetite post surgery is one of the main factors that led to hypoglycemia for post surgery patients. In addressing this, serving of 8pm milk feeds or biscuits to patient.

PDSA 2 Some patient still refused the

8pm feed/snack despite of encouragement. This population has higher risk of developing nocturnal hypoglycemia. Offering second feed/snack to patient whose BSL < 6mmol/l

at 10pm is implemented.

PDSA 3 Variation in prescribing

the subcutaneous (s/c) sliding scale

post surgery lead to higher risk of hypoglycemic incidences. This intervention is easily accessible for the doctors as it is programmed in the computer.

PDSA 4 Patients are now

educated before surgery that feed/ snack served by the nurses during post surgery are part of their medication that help to prevent hypoglycemia. This is part of NHCS' patient and Family – centered delivery of care.

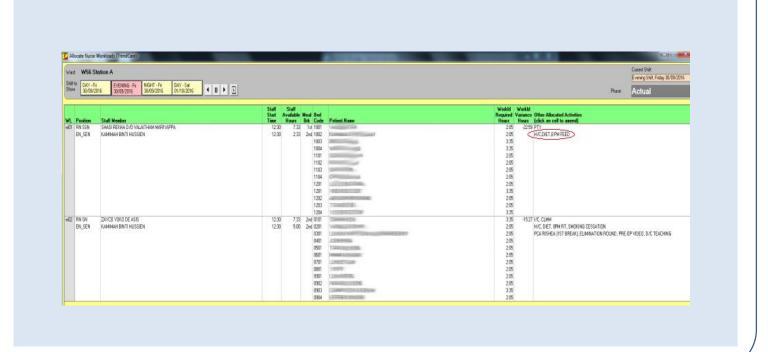
Refinements

Standardised Insulin Sliding Scale for **Doctors:**

- 2 tier sliding scale
- Online ordering of scale

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	* 3 Simvastatin Tablet					7.40	0.00	11.30	14.00	17.30	7	20.00
P0	PO 40 mg, ON	No Known Aller	30-Sep-2016 20:00	Scheduled							pld	
P0	+ 0a Tolbutamide Tablet PO 500 mg, BD Take immediately before food.	No Known Aller	30-Sep-2016 20:00	Scheduled		mfe						pld
CTS.SC	Insulin Sliding Scale.NHC											
Sub-C	**ACTRAPID (Insulin Soluble) Injection Sub-Cutaneous 2 unit i Capillary Blood Glucore (inmol/L) 101 - 14 4 unit 1 Capillary Blood Glucore (inmol/L) 14 1 - 18 6 unit 1 Capillary Blood Glucore (inmol/L) 18 1 - 22. TDS full Capillary Blood Glucore (inmol/L) 18 1 - 22. TDS Call Dodarf CBB 44 mind or 3 22 mmol Refigueate, do not freeze. (Ward Stock)	No Known Aller	30-Sep-2016 17:30	Scheduled			mfe	mfe		pld		
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P0	Amiodarone HCI (CORDARONE) Tablet PO-200 mg_BD Take with or after food.	No Known Aller	01-Oct-2016 20:00	Scheduled		mfe						
P0	Amiodarone HCI [CORDARONE] Tablet PO 200 mg, OM Take with or after food.	No Known Aller	10-Oct-2016 08:00	Scheduled								
P0	Bisoprolol Fumarate Tablet PO 2.5 mg, OM	No Known (No Kr	nown Allergies 08:00	Scheduled		mfe						
PO	Calcium Carb 450mg, Vitamin D 200 unit Tablet PO 2 tablet, OM Take with or after food.	No Known Aller	03-Oct-2016 08:00	Scheduled		√ mfe						

System to monitor ward nurses assigned to serve night feeds on NHCS online TrendCare

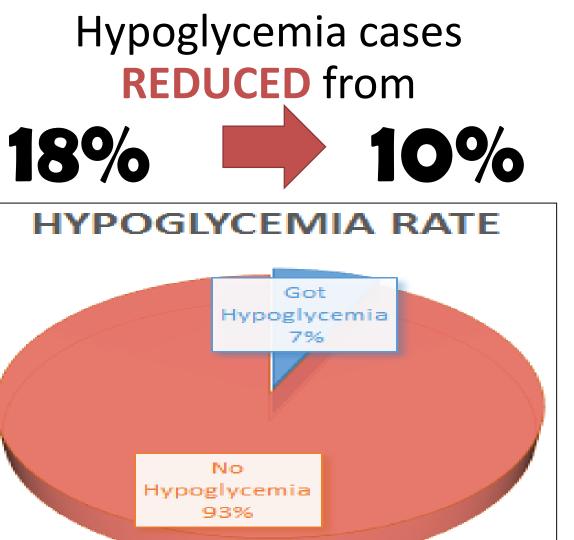


Ms Ho Ai Lian (Chief Nurse)

Results

The percentage of patient taking feeds **INCREASED** from

PATIENTS FEED TAKING Took feed 91% never take feed



Cost Savings

The number of patients extending their hospital stay because of hypoglycemia incidences had been reduced with the implementation of the new processes. Our data showed that post-operative patients with better hypoglycemia management have shorter length of stay compared with those whom with hypoglycemia. Their average length of stay is approximately 2 days shorter. We have an estimated 250 Elective CABG patients with Diabetes Mellitus per annum. This helps free up 500 hospitals bed days each year and saves \$52,000 which includes medication costs.

Stages	Average Length	Average Cost			
Pre Implementation	10 days x \$104	Reduced		\$1040 (in B2 GW	
Post Implementation	8 days x \$104	2 days		\$832	
Average Savings	2 days x \$104			\$208	

- ✓ Estimated **250** patients planned for elective CABG operation annually
- ✓ Total hospital bed saved annually = 2days x 250 = 500 bed days

Hospitalisation Cost Savings of

\$52,000 per annum!



Reducing length of stay will release capacity in the hospital system, including beds and staff time. This increase in capacity will help to minimise waiting times, maximise productivity and improve the patient experience.

Intangible Benefits



Enhanced Staff Morale

Patient Safety



Increase Work Efficiency and Job Satisfaction





Cross Department **Teamwork**

Sustenance

- Hypoglycemia incidence data is submitted to SHINe committee monthly.
- Bi-annual audits are conducted by SHINe auditors.
- Daily monitoring of hypoglycemia incidence by Diabetes Nurse Educator (DNE) and ward Nurse Clinicians



Conclusion

The Project contributes to two organization KPIs, Clinical Excellence (Safety) and MOH Patient Satisfaction Survey. Prevention of adverse outcomes as a result of hypoglycemic events will lead to better Patient & Caretaker experience hence improving the Survey results. The reduction in Hypoglycemia cases will contribute to better clinical and safety excellence for the institute.

The project brought about cost savings by reducing the length of stay for patients and time savings for doctors and nurses who will attend to lesser hypoglycemia incidences in the wards; benefiting both the organization and patients.

