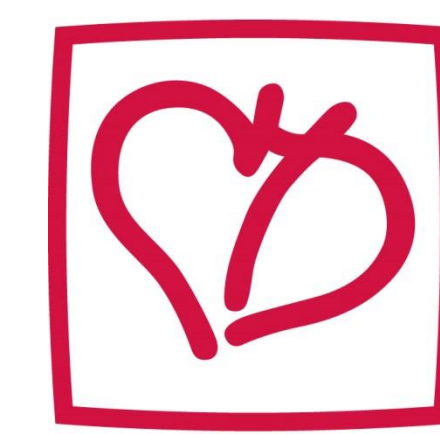




Singapore Healthcare Management 2017

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

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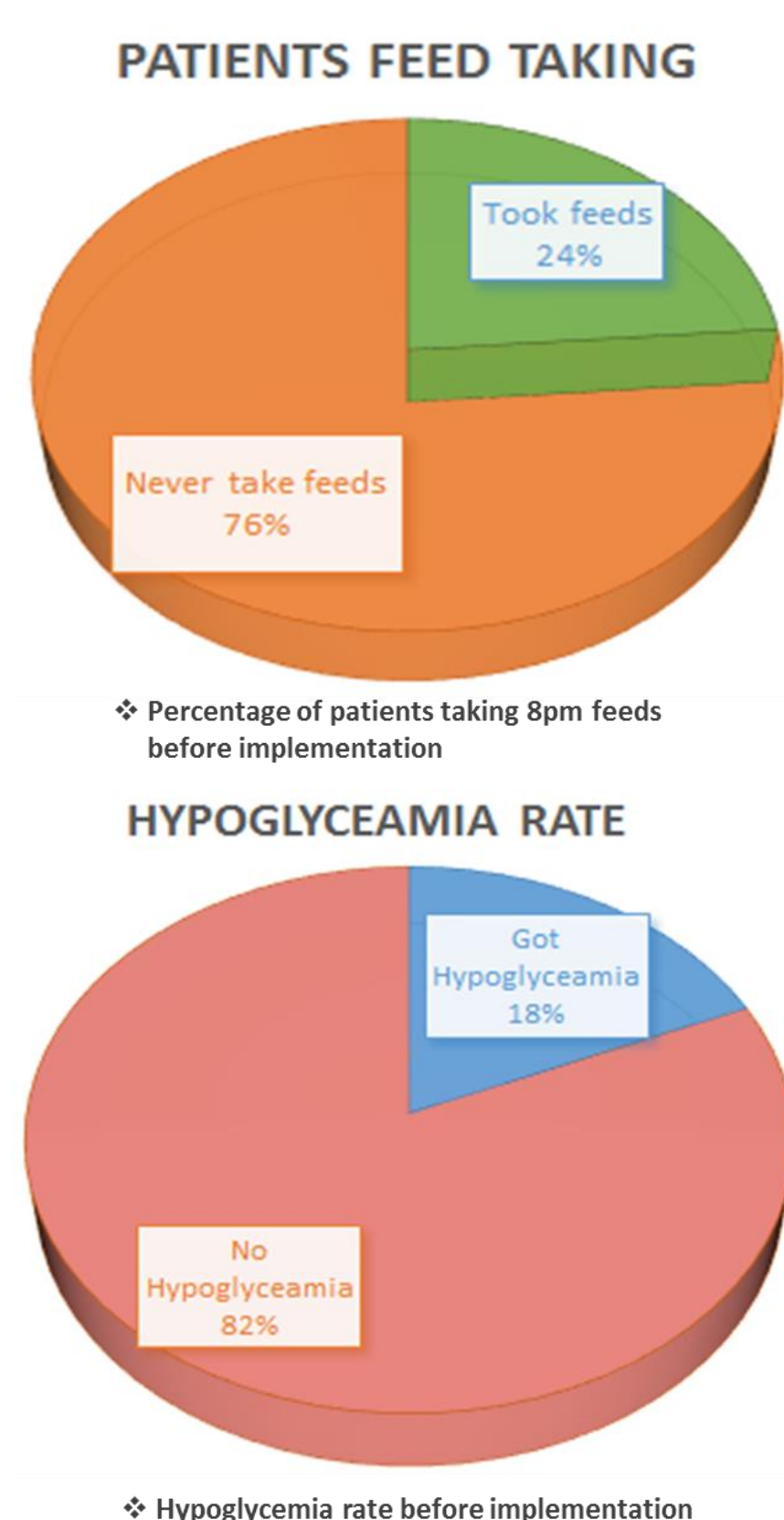
Background

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.

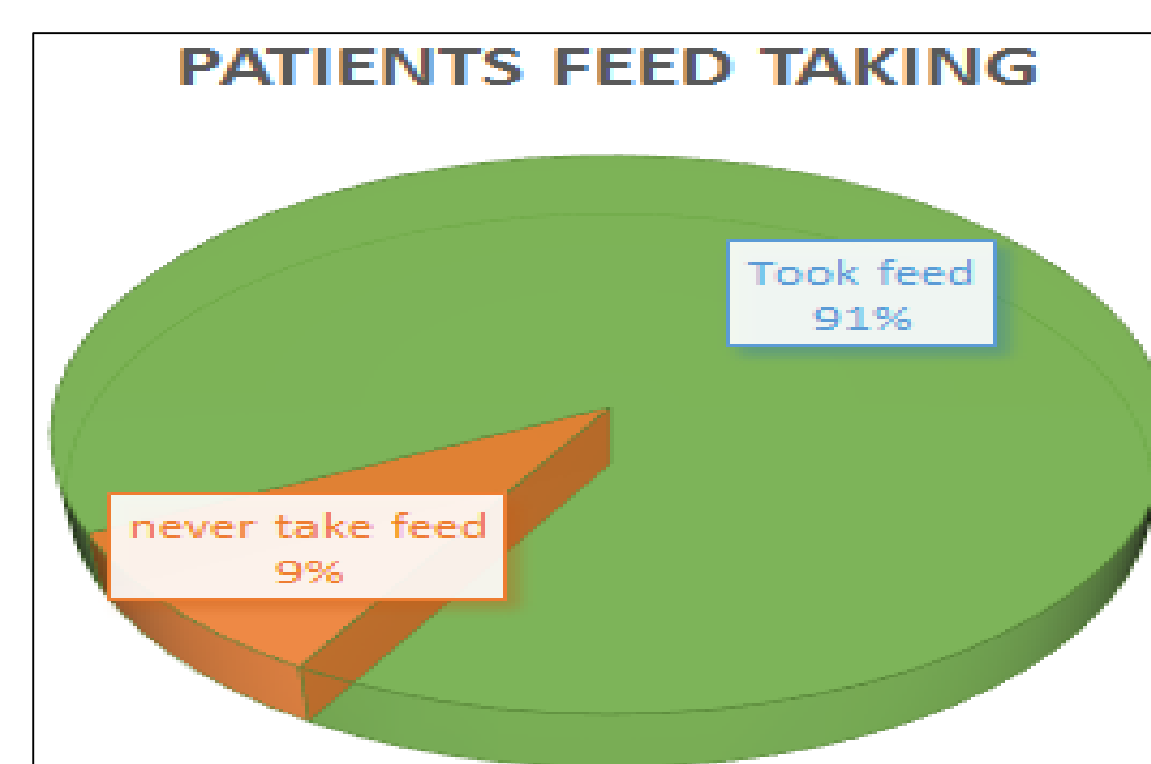
Records showed that ALL the patients who had episodes of hypoglycemia failed to take their night feed before they sleep. While patients who took the night feeds recorded nil incidences; patients with episodes of hypoglycemia makes up 24% of those who did not take their night feeds.

Poor oral intake, aggressive glycaemic control and deterioration in renal function post-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.

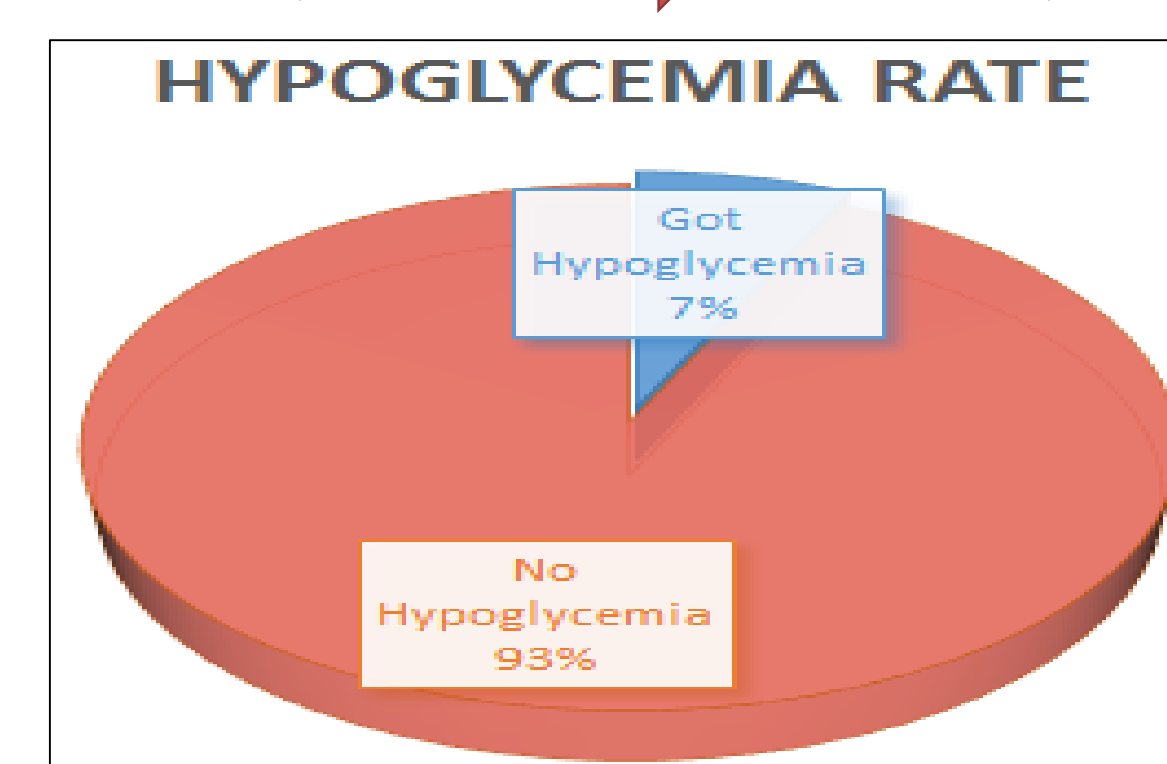


Results

The percentage of patient taking feeds **INCREASED** from **24%** → **91%**



The number of Hypoglycemia cases **REDUCED** from **18%** → **10%**



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 hospital bed days each year and saves \$52,000 which includes medication costs.

Stages	Average Length of Stay (LOS)	Average Cost
Pre Implementation	10 days x \$104	\$1040 (in B2 GW)
Post Implementation	8 days x \$104	\$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.

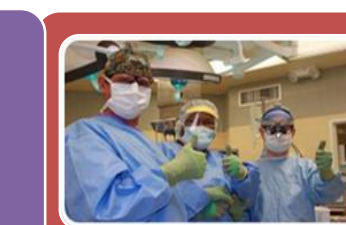
Intangible Benefits



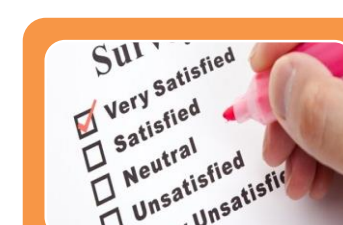
Enhanced Staff Morale



Patient Safety



Increase Work Efficiency and Job Satisfaction



Improved Patient & Care Giver Experience



Cross Department Teamwork

Implementation Plan

PDSA 1

The serving of the 8pm feeds

PDSA 2

A 2nd offer of feeds if patient refused 1st offer when at 10pm BSL of ≤ 6mmol/L

PDSA 3

Implementation of the standardized insulin sliding scale

PDSA 4

Educate patients that the feeds is part of their medication during pre-op orientation

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

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

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.

Acknowledgement

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