

Outram Community Hospital

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Introduction/Background

Capillary Blood Glucose (CBG) levels play an important part in diagnosing and treating diabetes, and monitoring CBG levels and responding with the appropriate treatment can lower the risk of developing diabetes complications in patients.

OCH was noted to have the highest number of incidents of errors in recording the capillary blood glucose (CBG) levels in patients in SCH. There were 9 errors recorded cases occurring in 2023, which were highlighted during the Nursing Quality Assurance Committee meeting.

The team decided to work on reducing CBG recording errors as it can lead to serious consequences, such as the patient being prescribed the wrong kind of treatment, hence endangering the patient's safety.

Goal/Objective

To reduce the incidence of CBG error of patients in all wards by 50% within 6 months.

Problem Analysis

The team conducted a root cause analysis using a fishbone diagram (Figure 1), followed by Pareto Chart voting (Figure 2). The team decided to focus on the following root causes:

1. Approx 1/3 of the ward patients require CBG monitoring daily (high no. of patients requiring CBG in the ward).
2. No standardised way to hand over CBG tasks leading to missing info.
3. CBG readings that were taken past the pre-lunch timing and STAT order by doctor was not communicated to staff face to face.

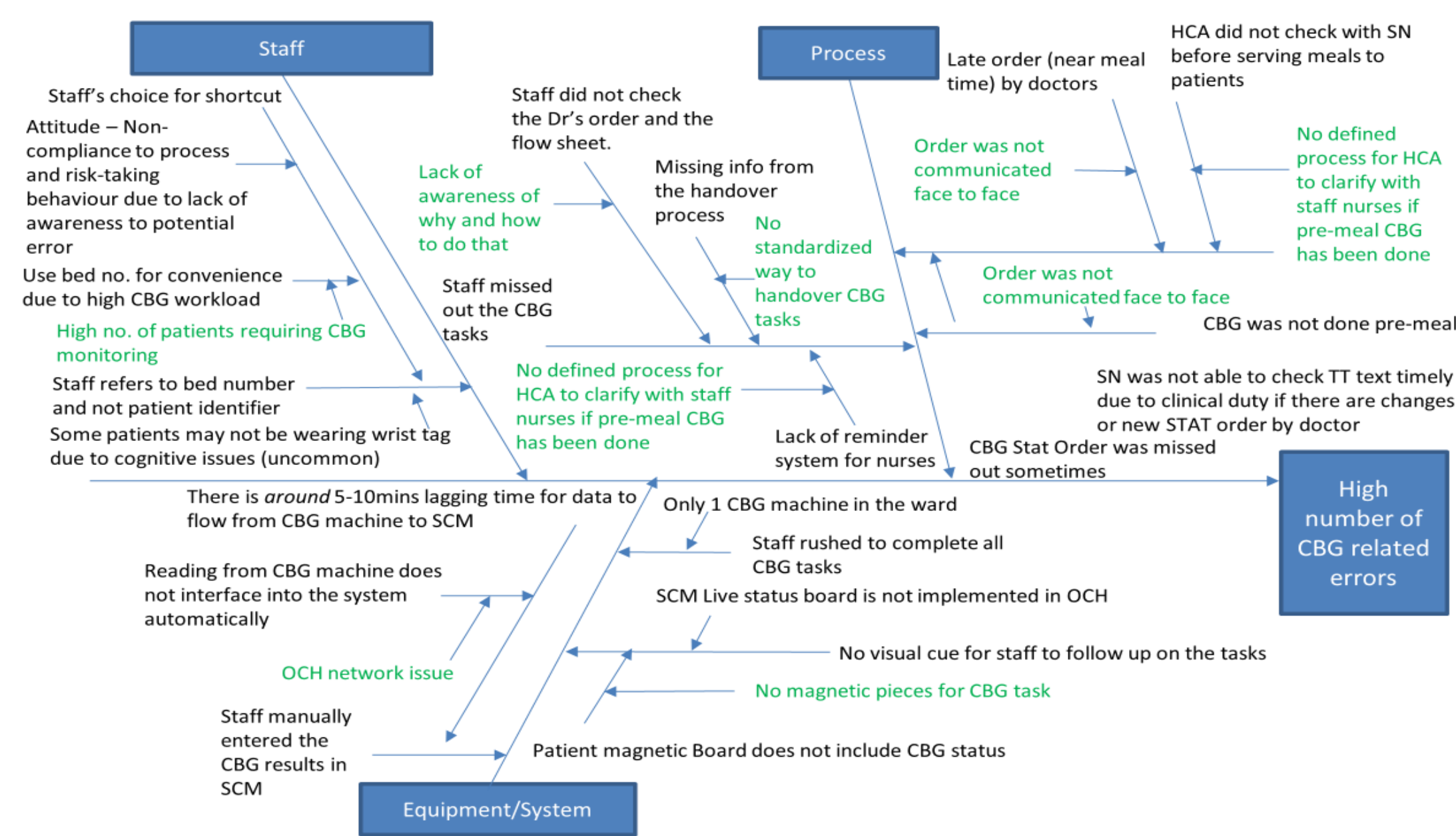


Figure 1: Fishbone diagram

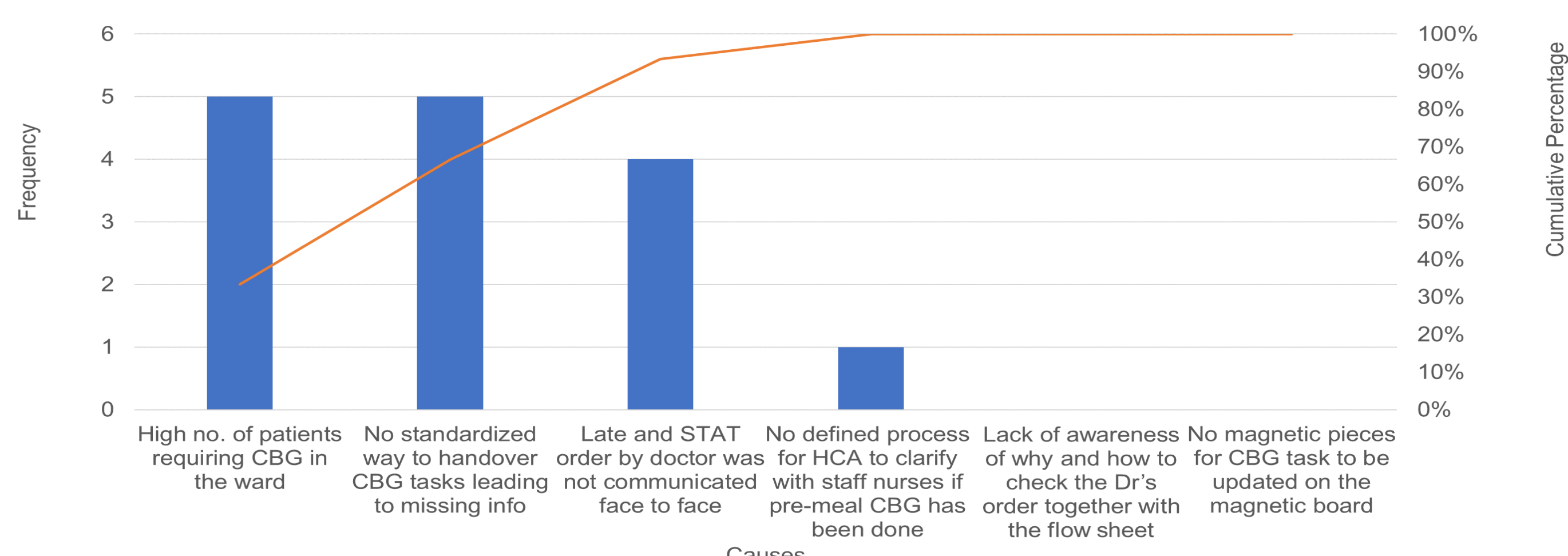


Figure 2: Pareto chart

Along the way, the team also identified several common incidents contributing to errors in the CBG error recordings:

- Staff overlooking certain procedures
- Mistakes in manual transcription of CBG readings

Additionally, the CBG recording system was often slow, forcing staff to borrow faster CBG machines from other wards. This caused significant delays in CBG recording, leading to errors.

The team planned to explore potential solutions for these issues, alongside addressing the three previously mentioned root causes.

Implementation Plan

1. Revised CBG Monitoring Workflow

- Doctors will review current CBG monitoring schedule for patients.
- CBG recording will be taken 2 to 3 times per week for suitable patients instead of daily.
- STAT CBG orders to be conveyed face to face instead of via messaging.
- Pre-dinner CBG monitoring can be conducted if patient misses the pre-lunch monitoring.

2. Standardised Platform to hand over CBG Monitoring Information PDSA 1

- Whiteboards were hung at nursing substations and are to be updated every AM shift.



Figure 3: Q card on name plate

- Q card to denote that a patient requires monitoring would be placed at their name plate (Figure 3).

However, staff were over-reliant on this and did not check the doctor's order for the patient, resulting in errors persisting. As such, a second PDSA was conducted.

PDSA 2

- Status board on Sunrise Clinical Manager (SCM) to include CBG information (Figure 4).
- Nurse would key in doctor's order into the insulin flowsheet, which would automatically be transferred onto the status board, making it convenient for nurses to refer to.
- Training was provided to staff on how to check the board

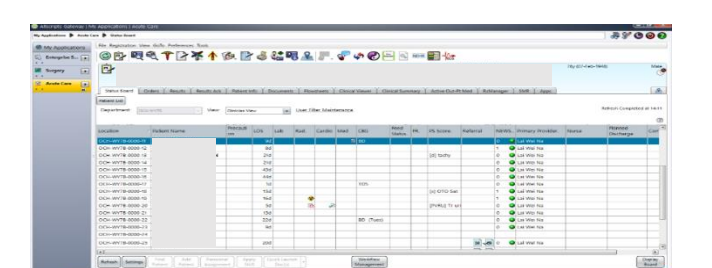


Figure 4: Status board on SCM

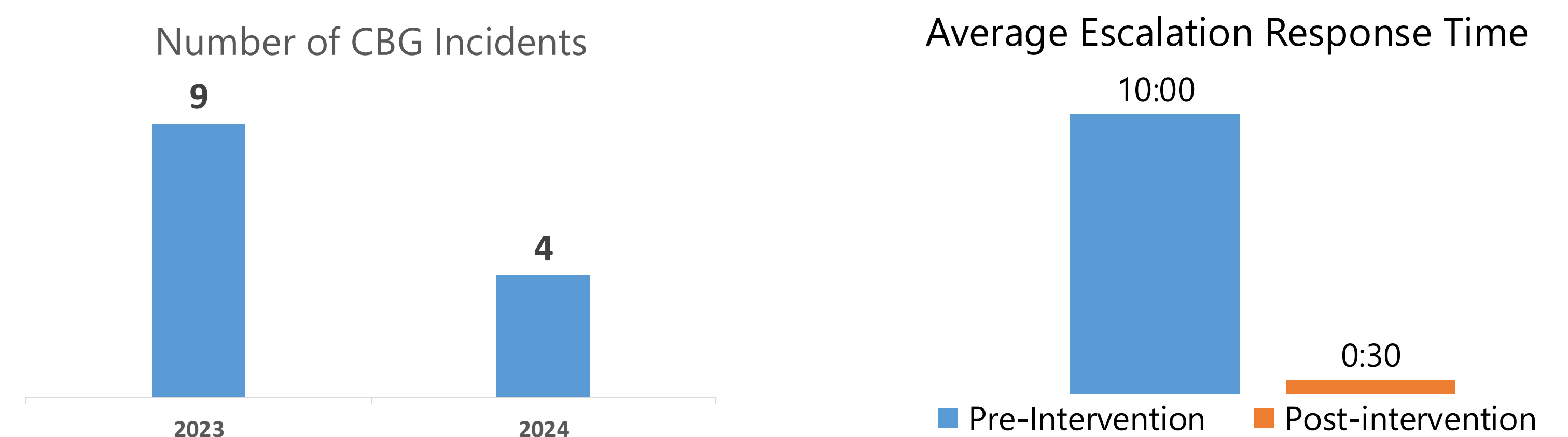
3. Staff Education and Training

- Conducted training and hands-on training sessions on proper CBG monitoring techniques and escalation protocols.

4. Integration of Wireless CBG Monitoring Technology

- Piloted new wireless technology to minimize human errors in data entry and improve real-time monitoring.

Benefits/Results



The results show that the project has been successful in reducing CBG monitoring errors, as shown by a decrease from 9 in 2023 to 4 in 2024. In the event that abnormal readings are detected, our staff are able to escalate it quickly, as shown by a decrease in average escalation response time from an average of 10 mins to 30s for standardization.

Sustainability & Reflections

Throughout the project, the team discovered that education on correct monitoring procedures was crucial for sustaining efforts to improve CBG monitoring, as it ensures staff adhere to the structural changes implemented.

Multiple avenues of education have been set up, such as re-training sessions for staff who have committed errors, a segment on CBG recording included in the nursing staff orientation, and regular refresher training sessions and competency assessments for existing staff. Additionally, the successful wireless CBG monitoring technology will be implemented hospital-wide to ensure an efficient recording process across all wards.