



EVALUATING NURSE AND PATIENT PERCEPTIONS ASSOCIATED WITH INPATIENT CGM IMPLEMENTATION AT STANFORD HEALTHCARE



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Introduction

- Continuous Glucose Monitoring (CGM) use has become more prevalent among diabetes patients and is the preferred mode of glucose testing for patients admitted to the hospital with these devices.
- The CNS student during her clinical experience was closely involved in the final implementation phase and evaluation of outcomes of an inpatient CGM Protocol at an academic medical center in the Bay Area, California.
- Empirical evidence supports CGM use over capillary blood glucose (CBG) with benefits such as real-time glucose trending and prevention of hypo- and hyperglycemia events at a faster rate (Irace et al., 2023).
- However, the use of these devices is often confounded by concerns for accuracy and reliability, Stanford Healthcare created a validation process to ensure the safety of these devices for treatment decision-making.
- Patient and Nurse satisfaction was paramount to the success of implementation and sustainability of CGM use in the hospital.

Purpose

This project aimed to evaluate the perceptions of nurses and patients regarding the implementation of the inpatient protocol for CGM use.

Methods

Improvement Process

Baseline → Intervention #1: Workflow & Order Set → Intervention #2: Awareness Campaign

Provider Order Set

RN Workflow

- Accuracy Validations
 - %20/20 criteria compared with FSBG
- Patient Acknowledgement
- CDCES Consultation
- Nursing Education
 - Just-In-Time Learning
 - Link to Detailed Protocol
- Contraindications
 - Unsuccessful validation
 - CGM >350 mg/dl
 - SpO2 <92%
 - Hgb <7 mg/dl
 - Interfering substances
 - Incongruous symptoms
 - Imaging
 - Surgery

Continuous Glucose Monitoring (CGM) - Inpatient Workflow

Purpose: To provide guidance for proper validation of CGM values with a POCT device to ensure safe insulin dosing when using CGM glucose values.

SITUATION: Patients with CGMs prefer to continue their use in the hospital to minimize frequent fingersticks. There is no current validation process to ensure CGM safety when BG values are used for insulin dosing.

RECOMMENDATIONS: Please follow this workflow for successful validation of CGM before using it for insulin dosing.

- STEP 1: Confirm that patient has a working CGM and adequate supplies.
- STEP 2: Confirm provider order for CGM use.
- STEP 3: Complete CGM/POCT validation worksheet.

BACKGROUND: Advances in CGM is making it the preferred method of glucose.

Procedure Title: Continuous Glucose Monitoring (CGM)

Departments Affected: Inpatient Nursing, Emergency Services, Interventional Platform (IP)

PURPOSE: The purpose of this procedure is to provide guidelines for continuation and safe use of Continuous Glucose Monitors (CGM) for established CGM users at Stanford Health Care (SHC).

Who May Perform: Registered Nurses (RN)

DEFINITIONS:

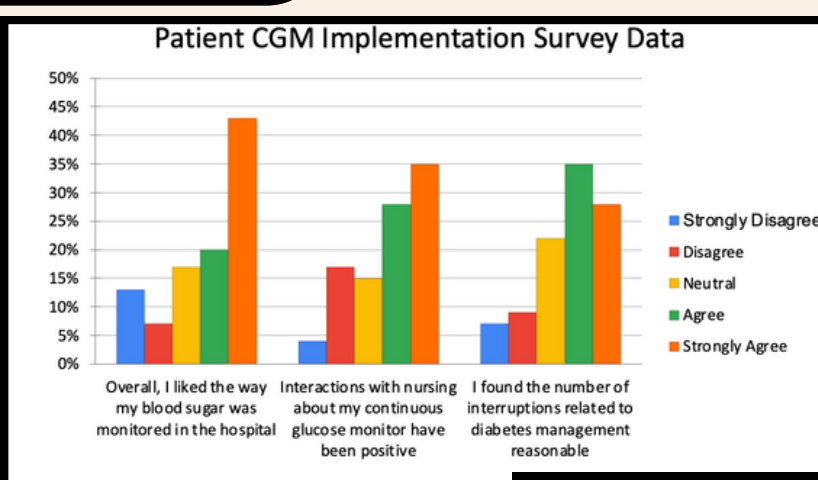
- Continuous Glucose Monitor (CGM):** A device that regularly measures and reports an individual's interstitial glucose. CGMs include a wearable sensor and a receiver (such as a reader, phone, or tablet) to report the glucose level, trend, and alerts.
- CGM Validation:** A method of confirming CGM accuracy by comparing CGM value to a point-of-care testing (POCT) measurement.
- Licensed Independent Practitioner (LIP):** Any practitioner permitted by law and the organization to provide care and services, without direction or supervision, within the scope of the practitioner.

Data Collection: November 2022 to August 2023

- Hospital-wide CGM protocol implementation for patients to be able to utilize their at-home CGM device in the hospital for blood glucose (BG) monitoring throughout their hospital stay.
- As part of the rollout, surveys were given to patients and staff nurses by the diabetes CNS.
- Eligibility criteria for nurses included interaction with the CGM protocol through providing direct care for patients on CGM and the criteria for patients requiring the use of a personal CGM under the inpatient protocol.
- Likert-based questionnaires were used in the surveys.
- The nurse survey included four questions: How (1) effectively, (2) easily, and (3) efficiently they felt their patient's glucose was managed throughout the shift, and (4) their preference toward using CGM versus CBG.
- The patient survey included three questions: (1) rate their overall satisfaction with the way their BG was monitored using CGM in the hospital, (2) the positivity of their interactions with nursing about CGM, and (3) the reasonability of interruptions tied to diabetes management.
- Responses were collected electronically, directly into Qualtrics.

Results

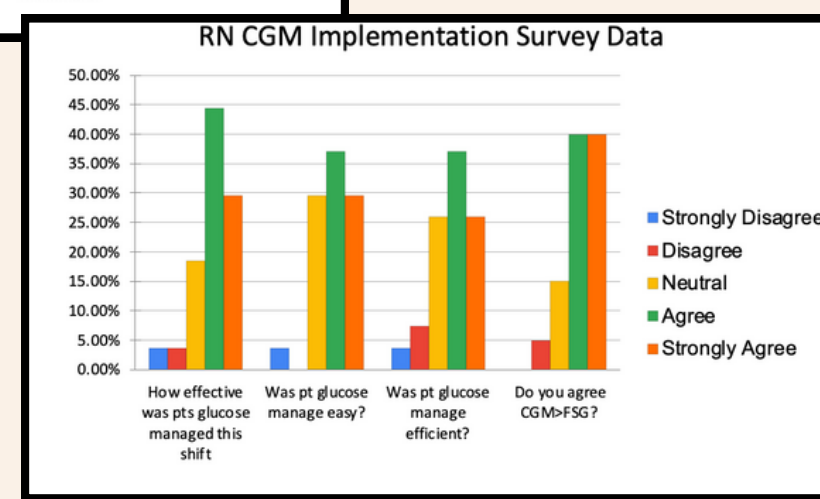
- Total number of participants: 70
 - Number of nurses: 24
 - Number of patients: 46
- **74%** of nursing staff who participated positively responded to CGM effectively managing patient glucose levels in the hospital setting. Similarly, **66.6%** of nurses concurred that CGM was easily manageable throughout the hospital stay, and **62.9%** found CGM use efficient in glucose management. Notably, **80%** of nurses agreed that CGM was preferable to CBG.
- The patient survey results indicated that **63%** of patients were content with how their blood sugar was managed using CGM in the hospital, had positive interactions with nursing staff managing their CGM, and found interruptions related to CGM use in the hospital to be reasonable.
- **4 out of 5** nurses who participated exhibited a clear preference for CGM in place of CBGs.
- Nearly **two-thirds** of patients reported substantial satisfaction with CGM utilization within the hospital and positive interactions with nursing staff during the application process.



Survey form for RNs using CGM



Survey form for patients using CGM



Conclusion

- An overall positive experience by both patients and nurses of CGM protocol implementation for monitoring patients' BG in the hospital.
- A structured protocol implementation of CGM use in the inpatient allows for a streamlined BG check process which is preferable for both patients and nurses when compared to traditional CBGs.
- Patients and nurses positive experiences are paramount to the sustainability of CGM use in the inpatient.

References

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