

Enhancing Nursing Competency in Continuous Glucose Monitoring (CGM) and Insulin Pump Management in Antepartum Diabetic Patients

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Problem & PURPOSE

Problem

- Diabetes technology is increasingly used among antepartum diabetic patients
- Labor and delivery/high-risk obstetric (HROB) nurses play an essential role in safely managing these diabetic devices
- A gap existed in standardized education and staff competency

Purpose

- Use evidence-based strategies to improve nursing competency in CGM and insulin pump management for labor and delivery/HROB nursing staff at a Midwestern Regional Women's Hospital to enhance safety and quality of care tailored towards antepartum diabetic patients



Available Knowledge & Rationale

- CGM and insulin pump technologies improve glycemic management and maternal/neonatal outcomes in diabetic pregnancies
- As use of these devices increases, nurses require ongoing education to interpret glucose trends, recognize concerns, and support safe device management
- Evidence supports brief, targeted education and bedside resources as effective strategies to improve nursing confidence and clinical competency

Framework :Knowledge-to-Action (KTA)

- Framework guided the translation of evidence into clinical practice by identifying the practice gap, implementing an intervention, and evaluating outcomes

Methods

Context

- Conducted in a Midwestern Regional Women's Hospital labor and delivery/HROB unit serving a HROB population
- Over 120 registered nurses provide care for patients with complex medical conditions, including diabetes

Intervention

- Four-week educational intervention was implemented consisting of:**
 - 10–15 minute pop-up education sessions delivered during clinical workflow
 - Bedside CGM and insulin pump reference tool
- Education focused on:**
 - Device identification and differences
 - Basal vs. bolus insulin delivery
 - CGM interpretation
 - Troubleshooting common device concerns
 - Nursing responsibilities and interventions

Study of Intervention

- A pre- and post-intervention quality improvement design was used**
- Participants completed:**
 - Knowledge assessment before and after education
 - Self-reported confidence/competency survey before and after education

Measure

- Knowledge Quiz**
 - 10 multiple-choice questions
 - Score range: 0–10
 - Evaluated objective understanding of CGM and insulin pump management
- Likert-Scale Self-Assessment**
 - 10 statements rated 1–5
 - Score range: 10–50
 - Evaluated confidence, competence, and familiarity with diabetes technology

Data Analysis

- Data was analyzed using Microsoft Excel
- Descriptive statistics (means and standard deviations) were calculated
- Paired-samples t-tests were used to compare pre- and post-intervention self-assessment scores
- Statistical significance was set at $p < .05$



Results

Participant Characteristics

- A total of 20 nurses participated

Self-Reported Competency Outcomes

- Self-reported competency scores significantly improved following the intervention
 - Pre-intervention:** $M = 34.6, SD = 8.2$
 - Post-intervention:** $M = 45.3, SD = 7.1$
 - Statistically significant improvement:** $t(19) = 8.645, p < .001$

Knowledge Outcomes

- Knowledge scores demonstrated improvement following the educational intervention
 - Pre-intervention:** $M = 8.35, SD = 1.53$
 - Post-intervention:** $M = 10.0, SD = 0.0$
 - All participants achieved the maximum post-intervention knowledge score**

Discussion

- The educational intervention significantly improved nurses' confidence, competency, and knowledge related to CGM and insulin pump therapy in antepartum diabetic patients
- Brief, workflow-based education combined with a bedside reference resource provided an accessible strategy for addressing knowledge gaps without disrupting clinical practice
- Improved nursing competency may support:
 - Safer diabetes technology management
 - Timelier clinical decision-making
 - Consistent patient care practices

Conclusions

- A brief, targeted educational intervention successfully improved nursing competency in diabetic devices among antepartum diabetic patients
- This low-cost, sustainable approach can be incorporated into:
 - New nurse onboarding and orientation programs
 - Annual mandatory nursing competency education

Future opportunities

- Expansion to additional units
- Larger sample sizes
- Evaluation of long-term knowledge retention and patient outcomes

Acknowledgements

- ❖ Clinical partner: Midwestern Regional Women's Hospital
- ❖ Nebraska Methodist College Faculty and Project Support Team

References

