Initiating Early Education for Patients at High-Risk for New Insulin Dependency

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Introduction

Postoperative impaired glucose tolerance and/or insulin dependency is a possible negative health outcome following a distal pancreatectomy (DP) or pancreaticoduodenectomy (PD).[1,3] While data is limited, certain preoperative factors may increase the likelihood of requiring self-management skills (checking home glucose and/or administering insulin) before discharge.[3] Identifying patients at higher risk on an earlier date allows for a longer duration of time for education and reinforcement during their index hospitalization.

Outcomes

The purpose of this quality improvement project was to improve glucose self-management knowledge and increase the length of time for inpatient education.

Aim 1: Examine the rate of patients at high risk for developing new insulin dependency following pancreatic surgery using a tailored checklist developed in IRB00183236.

Aim 2: Increase glucose self-management knowledge in patients identified by the checklist through initiating education within 24-48 hours after admission onto surgical-oncology unit.

Methods

Study Design

Pretest-posttest quality improvement project

Setting

36 bed surgical oncology unit at a major academic institution

Sample

Out of 74 total DP or PD patients, 11 (15%) were flagged as "high risk" by the checklist (Figure 1). Three (4%) of patients were discharged with new insulin requirement, and three (4%) of patients were discharged monitoring their glucose at home. Baseline characteristics of the final study sample in Table 1.

Table 1. Baseline characteristics of high-risk patients

Demographic characteristics	***(N = 11)***
Age, median (IQR)	68 (9.3)
Sex, n (%)	
Male	3 (27)
Female	8 (74)
Procedure, n (%)	
Distal pancreatectomy	4 (36)
Pancreaticoduodenectomy	7 (64)
Length of stay, median (IQR)	9 (9)
Length of education, median (IQR)	6 (4)

IQR = Interquartile range

Intervention

- "High risk" DP and PD patients were identified before admission onto the unit through chart review.
- Validated Diabetes Knowledge Test (DKT2) 9-item insulin use subscale questionnaire[2] was administered in person within 24-48 hours of admission. Standardized nurse-led diabetes education was initiated and integrated during hospitalization.
- Patients discharged with new insulin dependency or glucose monitoring were contacted within 1 week after discharge for a post-assessment DKT2 9-item score.
- Descriptive analysis was performed at the conclusion of the 11-week implementation period.

1. Pre-op diagnosis of Diabetes
2. Hemoglobin A1c >6.5%
3. Pre-op DM medication use
4. Pre-op insulin use
5. 24 hr POCT glucose >180mg/dL
6. 24 hr insulin administration >10 units

Total score >3 considered "high risk"

Figure 1. "High risk" checklist

Results

- Small sample size limited analysis to descriptive analysis
- "High-risk" checklist captured all patients (n=6) requiring insulin/glucometer education before discharge (Table 2).

Table 2. Characteristics of patients discharged with new insulin dependency or blood glucose monitoring

	New insulin requirement (N=3)	**New glucometer use (N=3)**
Checklist score, median	4	2
Procedure type		
Distal pancreatectomy	2	1
Pancreaticoduodenectomy	1	2
Length of stay, median	16	9
Length of education, median	8	7
DKT2 score		
Pre-education, median	6	5
Post-education, median	7.5	3

Summary & Conclusion

Discharges with new insulin requirement or close glucose monitoring at home are more complex. Identifying high risk patients at an earlier postoperative date can increase the length of time to educate/ reinforce knowledge.

Hemoglobin A1cs can strongly aid in identifying these patients, yet 78% of all DP/PD patients did not have this value within 3 months prior to admission.

Dissemination

Project to be presented to unit staff and DNP symposium. Plans to integrate findings into separate manuscript.

References

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3. Maxwell, D. W., Jajja, M. R., Tariq, M., Mahmooth, Z., Galindo, R. J., Sweeney, J. F., & Sarmiento, J. M. (2019). Development of diabetes after pancreaticoduodenectomy: results of a 10-year series using prospective endocrine evaluation. *J Am Coll Surg, 228*(4), 400-412.