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Characterizing Post-Discharge Venous Thromboembolism Chemoprophylaxis after Colorectal Cancer Surgery Following the Implementation of a Surgical Quality Improvement Collaborative Process Measure

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Background

- Venous thromboembolism (VTE) remains the number one preventable cause of post-operative mortality after abdominopelvic cancer surgery
- Prior research looking at Medicare beneficiaries has demonstrated as low as 1.5% uptake of VTE prophylaxis for patients undergoing colorectal cancer resection[1]
- The Illinois Surgical Quality Improvement Collaborative (ISQIC) implemented a post-discharge VTE chemoprophylaxis process measure in order to improve prophylaxis adherence

Research Objectives

1) Characterize adherence to the process measure after implementation
2) Determine factors associated with low VTE chemoprophylaxis adherence

Methods

- Retrospective review of patients who underwent colorectal cancer surgery between September 1, 2016 and June 30, 2020
- Data from the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) and ISQIC database was utilized
- Adherence to the ISQIC VTE post-discharge chemoprophylaxis process measure was defined as discharge with low molecular weight heparin for 28 days post-operatively
- Patients excluded if indication other than malignancy or if they had an acceptable contraindication to VTE prophylaxis use such as bleeding disorder or concern for active bleeding

Disclosures

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Reference: 1. Merkow RP, Bilimoria KY, Sohn MW, et al. Adherence with postdischarge venous thromboembolism chemoprophylaxis recommendations after colorectal cancer surgery among elderly Medicare beneficiaries. Ann Surg 2014;260:103-8.

Figure I: Trends in Adherence to Process Measure

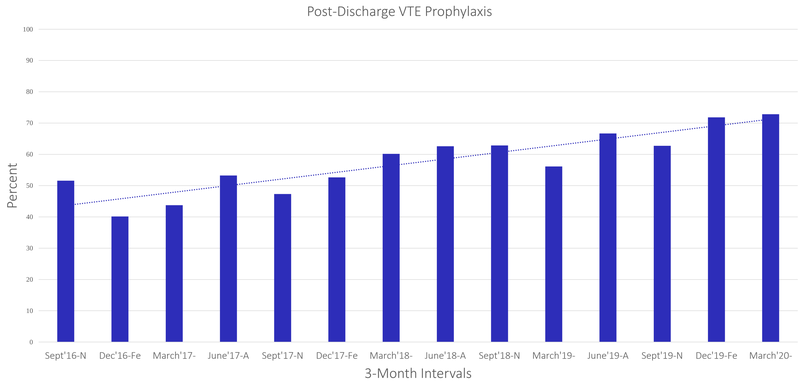

Table II: Predictors of low chemoprophylaxis adherence

	Odds Ratio	95% CI	P-value
ASA Class			
I-II	REF		
III	1.13	(0.94 - 1.37)	0.19
IV-V	1.98	(1.20 - 3.26)	<0.01
Procedure Type			
Colectomy	REF		
Proctectomy	2.26	(1.20 - 4.26)	0.01
Procedure Time			
2-5 Hours	REF		
<2 Hours	0.48	(0.38 - 0.60)	< 0.001
>5 Hours	0.98	(0.75 - 1.26)	0.85
Sepsis	0.42	(0.26 - 0.68)	< 0.001

**Covariates determined a priori with addition of variables with an alpha level of < 0.01 on biivariate analysis. Model also adjusted for age, race/ethnicity, dialysis, disseminated cancer, extent of resection, creation of ostomy, case urgency, operative approach, post-operative ileus, and length of stay.*

Results

- Total study population n = 4,118; 617 were excluded for indication other than malignancy and 608 excluded with acceptable contraindication to VTE chemoprophylaxis
- Majority of patients male (51.4%), non-Hispanic white (75.2%), with a mean age of 64.5 years
- Most procedure were colectomies (92.6%) with the most common operative approach being laparoscopic (65.9%)
- 2,246 patients (54.5%) were discharged with chemoprophylaxis during the study period
- During first three months of implementation, 51.6% of patients had chemoprophylaxis which increased to as high as 72.8% in the last three months of the study period (Figure I)
- Discharge with VTE chemoprophylaxis was associated with ASA class, procedure type (involving proctectomy), procedure time, and post-operative sepsis (Table I)

Limitations

- Study design only demonstrates association, not causation
- NSQIP database and ISQIC process measure only available to hospitals that contribute and participate in both programs which may introduce selection bias

Conclusions

- Adherence with post-discharge VTE chemoprophylaxis in patients undergoing colorectal cancer surgery has steadily improved after implementation of a surgical quality improvement process measure
- Several factors were associated with decreased process measure adherence including higher ASA class, procedure type, and operative times. Continued improvement will require hospital-specific, tailored, quality improvement efforts.

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