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Introduction

Venous thromboembolism (VTE) represents a major source of preventable morbidity and mortality and is a leading cause of death in the U.S. after cancer surgery. Though guidelines for both inpatient and post-discharge chemoprophylaxis have existed for abdominopelvic malignancies treated by General Surgery, no guidelines for post-discharge chemoprophylaxis existed for Thoracic Surgery until 2021. The purpose of this study is to determine VTE rates for General (GS) and Thoracic Surgery (TS), as well as the association between guidelines and rates of post-discharge VTE chemoprophylaxis use within the VHA.

Methods

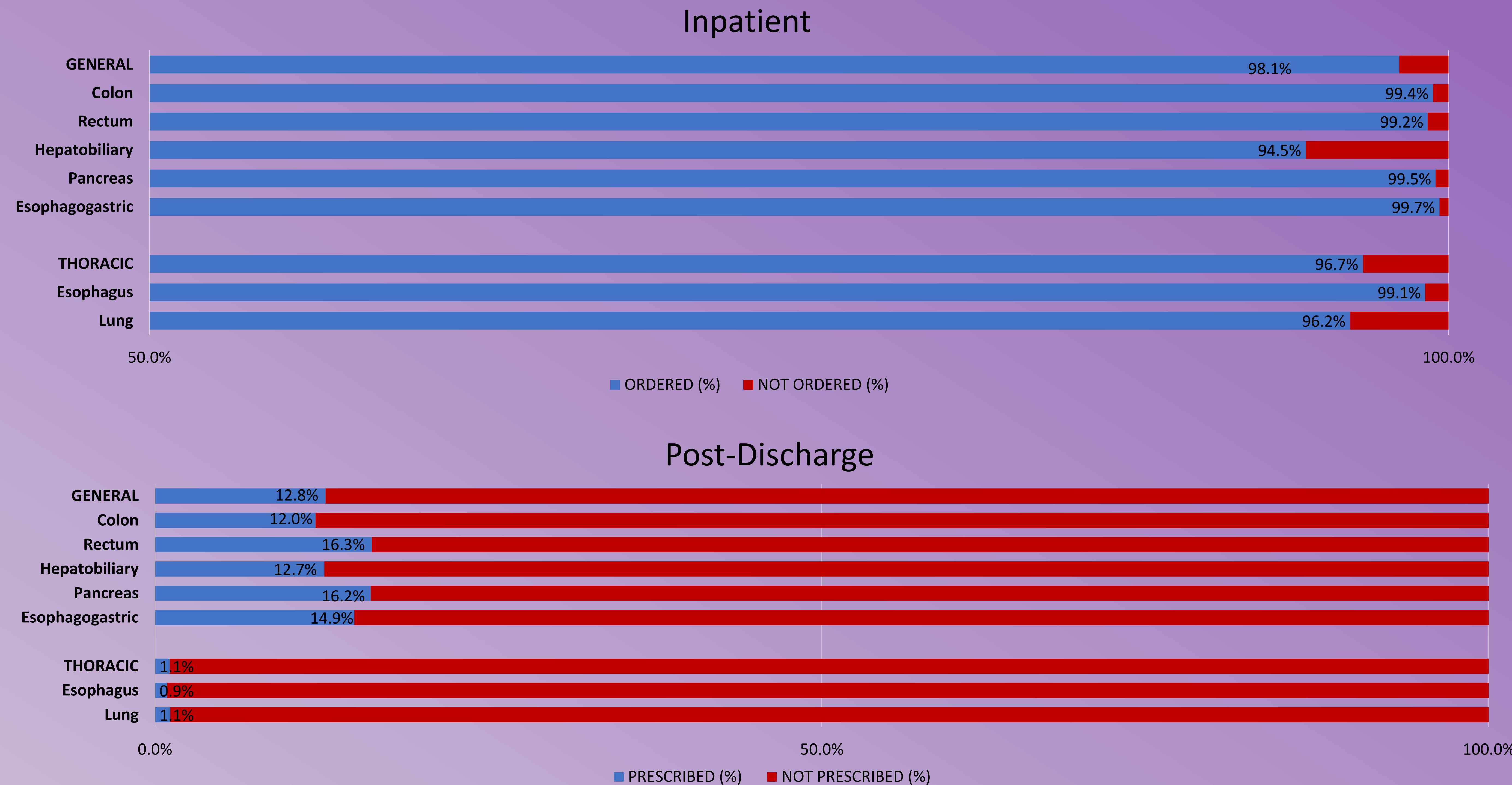
The VA Corporate Data Warehouse, Pharmacy Benefits Management database and the Veterans Affairs Surgical Quality Improvement Program database (VASQIP) was used to identify patients who underwent surgery for cancer with GS or TS between 2015-2018. During the study period, guidelines for post-discharge VTE chemoprophylaxis existed only for GS. Rates of postoperative VTE events within 30 days of surgery and VTE chemoprophylaxis adherence were determined. Multivariable Poisson regression was used to determine incidence-rate ratios (IRR) of post-discharge chemoprophylaxis adherence by surgical specialty.

Results

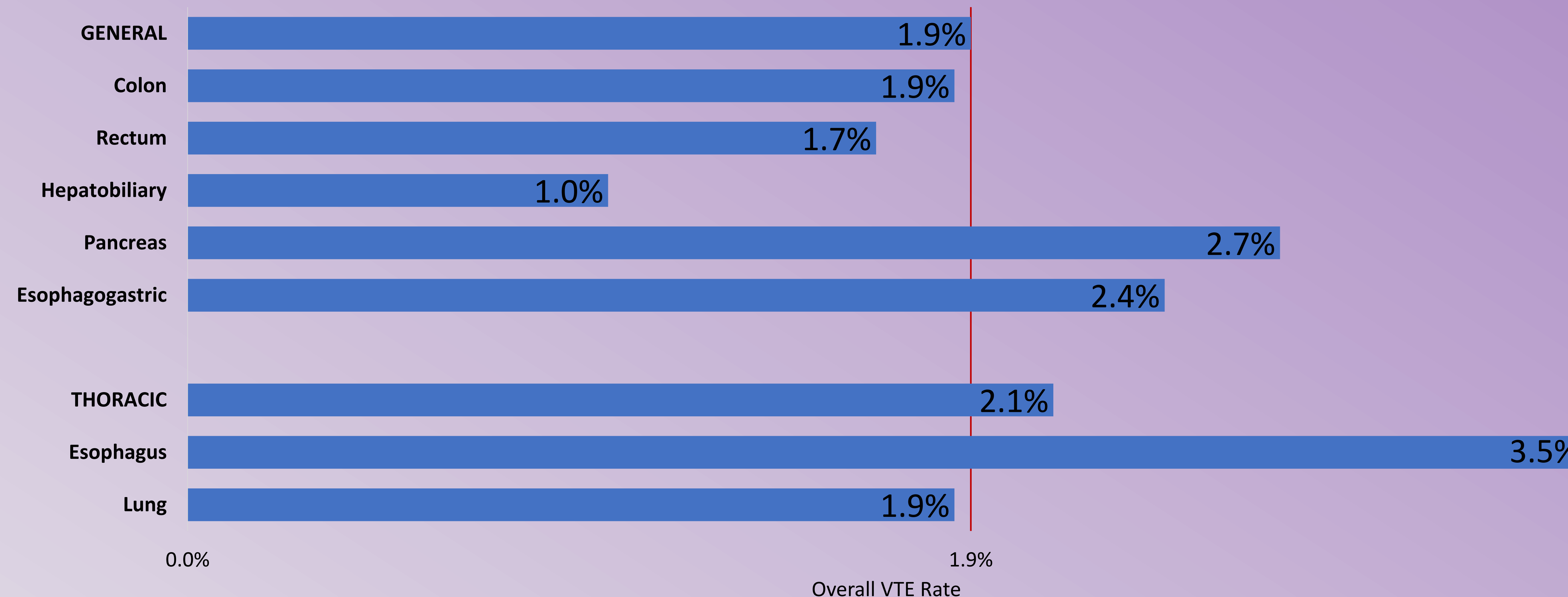
Overall, 6,314 patients treated at 90 hospitals nationwide were included. All patients were high-risk for VTE, with an overall postoperative VTE rate of 1.9% (n=121). Specialty-specific VTE rates were similar for GS (1.9%) and TS (2.1%). Overall, 10.1% of patients received post-discharge chemoprophylaxis. GS (12.8%) prescribed post-discharge chemoprophylaxis more commonly in accordance with guidelines than TS (1.1%) did in absence of specialty-specific guidelines (p<0.001). Also, VTE rates were higher among patients who received esophageal surgery with TS (3.5%) than esophagogastric surgery with GS (2.4%) (p<0.001). Further, only 0.9% of patients who underwent esophageal surgery with TS received post-discharge chemoprophylaxis compared with 14.9% of esophagogastric surgery patients treated by GS (p<0.001). In adjusted multivariable analysis, TS was much less likely to prescribe post-discharge chemoprophylaxis to patients (IRR 0.08, 95% CI 0.02-0.26 versus GS).



Venous Thromboembolism Chemoprophylaxis Rates



Venous Thromboembolism Rates by Specialty and Procedure Site



National VHA Cohort Patient Characteristics by Specialty: 2015-2018

Parameter	GS n=4,848 N (%)	TS n=1,466 N (%)	P Value
Age (years)			<0.001
41-60	890 (18.4)	216 (14.7)	
60-74	2,901 (59.8)	1,035 (70.6)	
75 or greater	1,057 (21.8)	215 (14.7)	
Race and Ethnicity			<0.001
Non-Hispanic White	3,249 (67.0)	1,102 (75.2)	
Non-Hispanic Black	861 (17.8)	196 (13.4)	
Hispanic	310 (6.4)	61 (4.2)	
Asian, Other or Unknown	428 (8.8)	107 (7.3)	
Body Mass Index (BMI)			<0.001
Underweight	149 (3.1)	37 (2.5)	
Normal	1,465 (30.2)	488 (33.3)	
Overweight	1,693 (34.9)	520 (35.5)	
Obese	1,541 (31.8)	421 (28.7)	
Operative Time Quartiles (hours)			<0.001
1-2.9	1,790 (36.9)	399 (27.2)	
>2.9 to 3.9	1,085 (22.4)	431 (29.4)	
>3.9 to 5	844 (17.4)	311 (21.2)	
>5	1,129 (23.3)	325 (22.2)	
VTE Rates			
Overall VTE	90 (1.9)	31 (2.1)	0.199
Inpatient VTE	58 (1.2)	18 (1.2)	<0.001
Post-discharge VTE	32 (0.66)	13 (0.89)	0.077

Conclusions

The postoperative VTE rate within the VHA is variable by procedure-site. Compared to General Surgery, prescribing of post-discharge chemoprophylaxis by Thoracic Surgery was rare in absence of specialty-specific guidelines. Implementation of new post-discharge chemoprophylaxis guidelines for Thoracic Surgery may reduce VTE rates among high-risk patients.

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