



# CATHETER ASSOCIATED VENOUS THROMBOSIS AMONG VETERANS

Barney ME<sup>1</sup>, Gruber J<sup>2</sup>, Tam A<sup>1</sup>, Mertz M<sup>1</sup>, and Nguyen KP<sup>1,2</sup>

1. Oregon Health and Sciences University, Portland, OR

2. Veterans Affairs, Portland, OR



## INTRODUCTION

- Millions of catheters are inserted each year for reliable venous access.
- Central venous access can be achieved through multiple modes, namely a central venous catheter (CVC) or a peripherally inserted central catheter (PICC).
- RIETE registry study in 2008 suggests that upper extremity deep vein thrombosis (UEDVT) accounts for 4.4% of all acute deep vein thrombosis (DVT) or pulmonary embolism (PE). Of these, 45% were catheter related.<sup>1</sup>

## OBJECTIVES

- Assess rate of catheter associated thrombosis (CAT) post venous catheter procedure in the Veteran population
- Assess rate of mortality of CAT
- Identify possible risk factors for CAT

## METHODS

- Retrospective electronic medical record review.
  - Inclusion:** All adults in the VA VINCI Database who underwent a first-time venous catheter from 10/1/2015 to 6/1/2023.
  - Exclusion:** Patients who had a venous thromboembolism (SVT, DVT, PE) in the previous 6 months to the venous catheter were excluded.
- Catheter associated thrombosis was defined as any upper extremity DVT or SVT occurring within 90 days of venous catheter procedure.

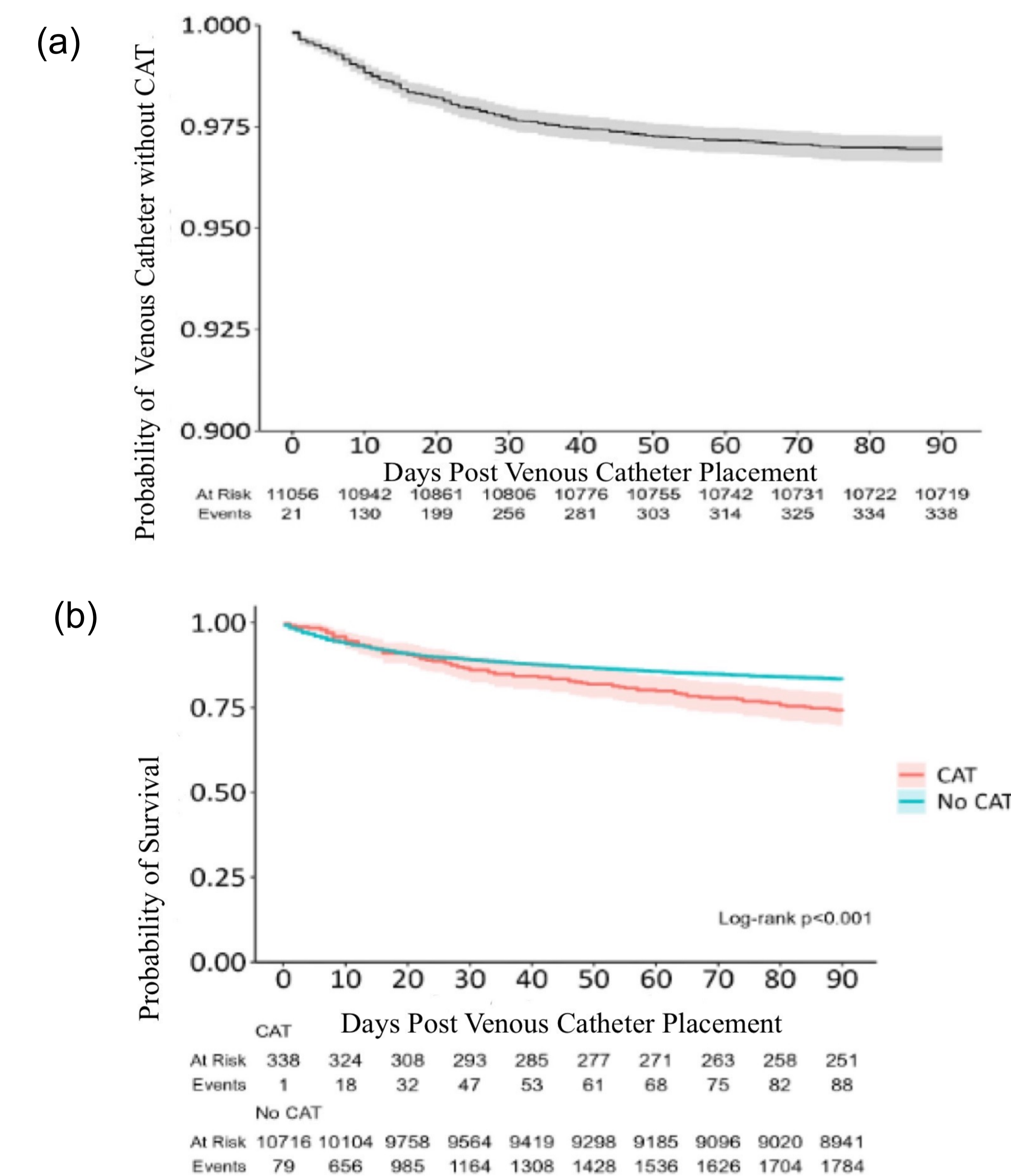
## RESULTS

**Table 1: Cohort's demographic and clinical characteristics.**

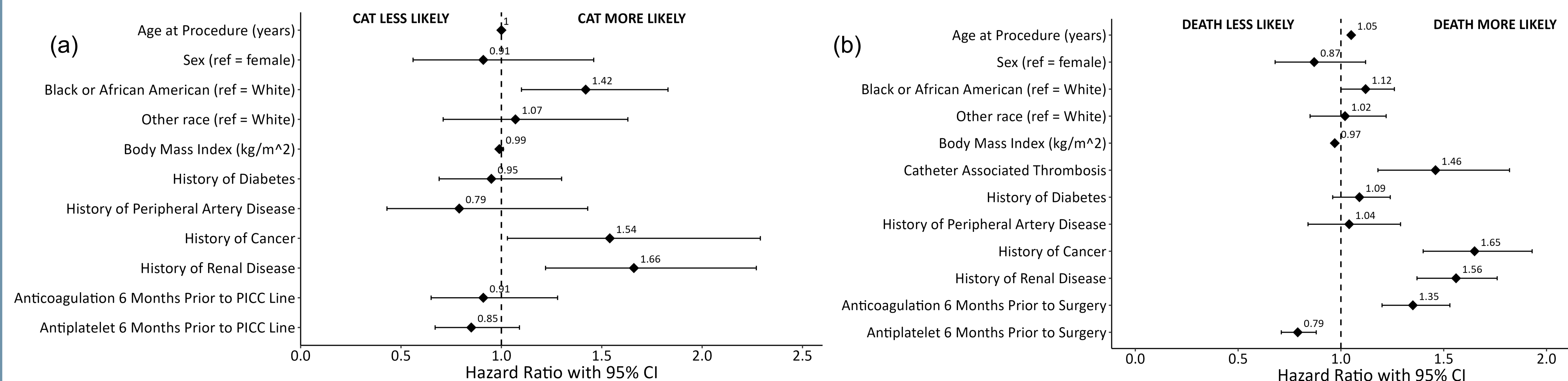
Demographic and Clinical Characteristics	Total (N=11,056)	No CAT (N=10,718)	CAT (N=338)	P-value
	$\mu(\sigma)$	$\mu(\sigma)$	$\mu(\sigma)$	
Age (years)	68.9 (11.5)	68.9 (11.4)	68.6 (12.2)	0.643
Body Mass Index (kg/m <sup>2</sup> )	29.7 (7)	29.7 (6.9)	29.6 (7.5)	0.687
	N(%)	N(%)	N(%)	
Males	10503 (95)	10184 (95)	319 (94.4)	0.686
Race				
American Indian or Alaska Native	65 (0.6)	62 (0.6)	3 (0.9)	0.464
Asian	57 (0.5)	54 (0.5)	3 (0.9)	0.332
Black or African American	2256 (20.4)	2163 (20.2)	93 (27.5)	0.004
Mixed Race	79 (0.7)	75 (0.7)	4 (1.2)	0.299
Native Hawaiian or Other Pacific Islander	58 (0.5)	57 (0.5)	1 (0.3)	0.554
Unknown	621 (5.6)	605 (5.6)	16 (4.7)	0.474
White	7920 (71.6)	7702 (71.9)	218 (64.5)	<0.001
History of Diabetes	2041 (18.5)	1969 (18.4)	72 (21.3)	0.195
History of Renal Disease	1753 (15.9)	1673 (15.6)	80 (23.7)	<0.001
History of Peripheral Arterial Disease	427 (3.9)	414 (3.9)	13 (3.8)	1.000
History of Cancer	560 (5.1)	532 (5)	28 (8.3)	0.009
Anticoagulation	1414 (12.8)	1374 (12.8)	40 (11.8)	0.652
Antiplatelet Therapy	3446 (31.2)	3351 (31.3)	95 (28.1)	0.240

Note: Patients were included in the anticoagulation and antiplatelet therapy groups if they were on these medications within the previous 6 months.

**Figure 1: The progression of the probabilities of venous catheter placement without (a) and survival (b) within 90 days of the procedure.**



**Figure 2: Forest plots with adjusted hazard ratios for the likelihood of CAT (a) and death (b) after venous catheter placement.**



## CONCLUSIONS

- Variables that increase the risk of developing CAT include:
  - Black or African American race
  - History of renal disease
  - History of cancer
- CAT increases the likelihood of death after venous catheter placement
  - Additional research on the benefit of prophylactic anticoagulation is warranted
- Prevention
  - Patients with UEDVT and a history of venous catheter placement were more likely to have a history of recent hospitalization, surgery, severe infection, intensive care unit discharge, intubation, or fracture<sup>2</sup>
  - Important to consider prevention while managing patients with long-term intravenous access

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