



# Prophylactic Anticoagulation for Portal Vein Thrombosis in Patients with Cirrhosis: A Systematic Review and Meta-Analysis

Matthew Zhao BS<sup>1</sup>, Calvin Yao MS<sup>1</sup>, Brittney Ibrahim<sup>2</sup>, Sammy Saab MD, MPH<sup>2,3</sup>

[1] David Geffen School of Medicine, UCLA, Los Angeles, CA, USA [2] Departments of Surgery, University of California at Los Angeles, Los Angeles, CA [3] Department of Medicine, University of California at Los Angeles, Los Angeles, CA

## BACKGROUND

- Portal vein thrombosis (PVT) results in significant morbidity and mortality in patients with cirrhosis.
- Data on the safety and efficacy of anticoagulation for PVT prevention is limited, and there remains no consensus in clinical guidelines on the appropriateness of prophylactic anticoagulation for PVT.

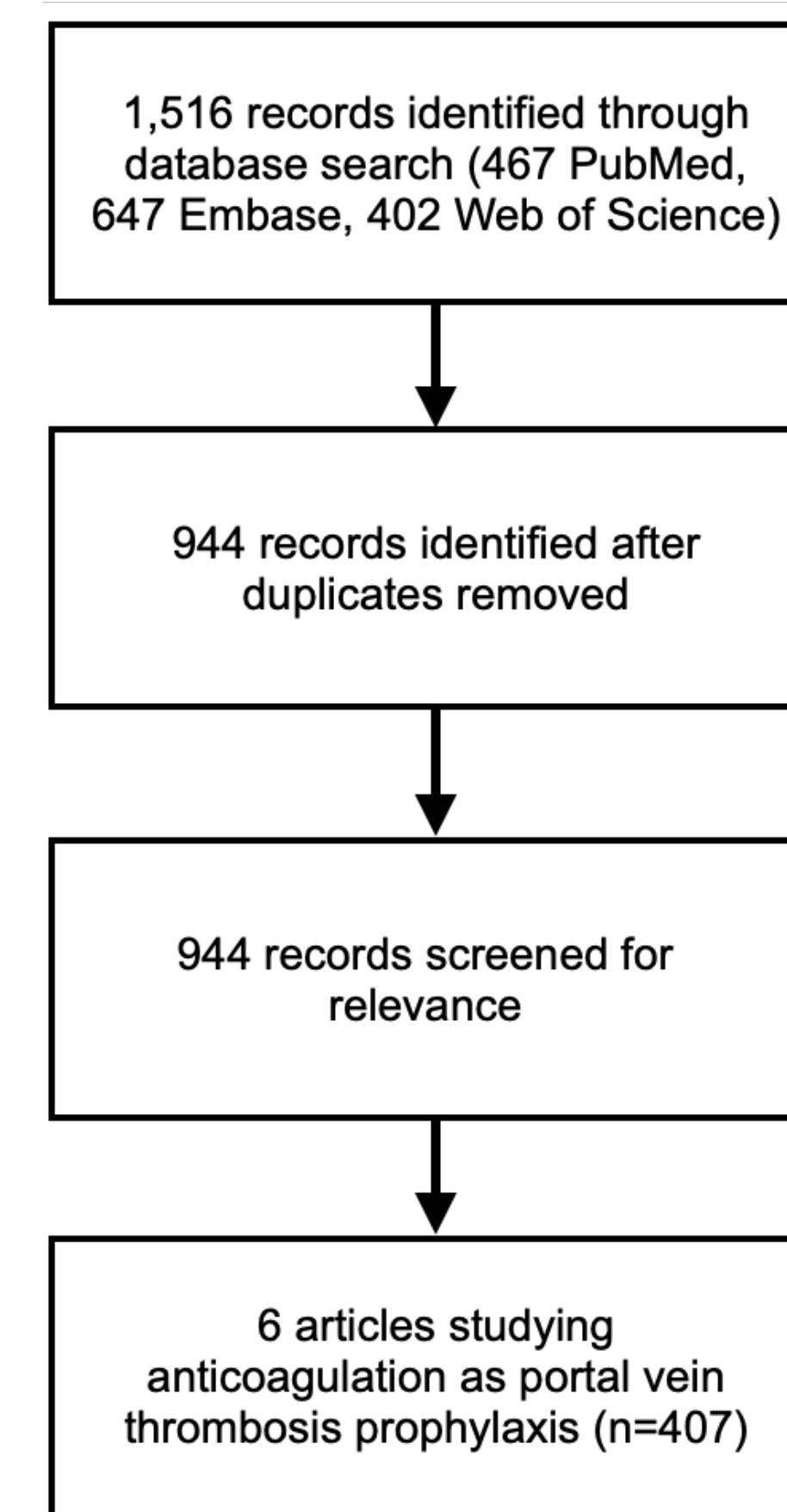
## OBJECTIVES

- To perform a systematic review and meta-analysis on outcomes following the use of anticoagulation as prophylaxis against PVT in patients with cirrhosis.

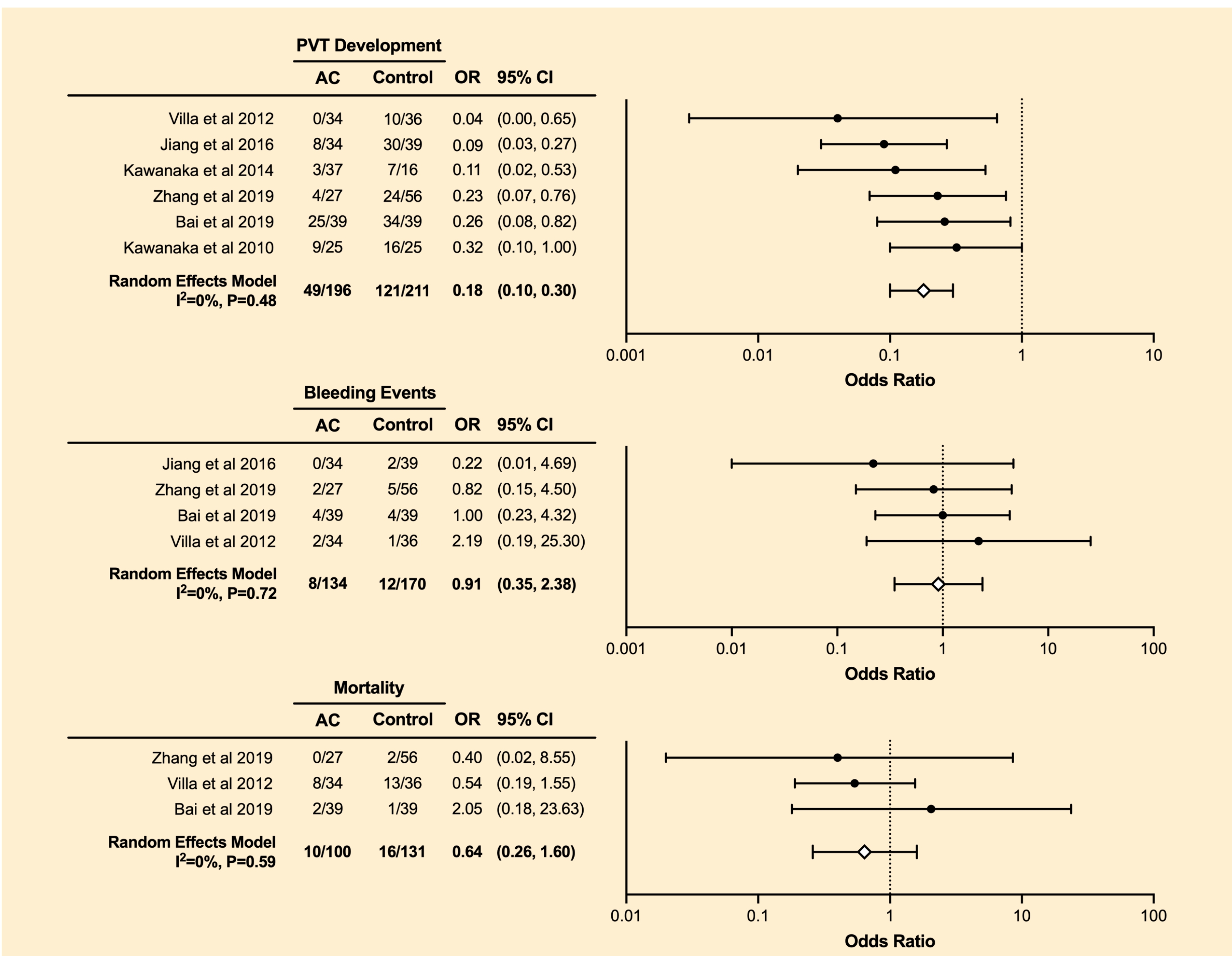
## METHODS

- Pubmed, Embase, and Web of Science were searched from inception to February 13, 2022 for relevant studies.
- Full length studies comparing anticoagulation to other modalities as prophylaxis against PVT in cirrhosis with at least n=10 patients were included for analysis.
- Pooled odds ratios (OR) were calculated using a random-effects model for PVT development, bleeding events, and all-cause mortality.
- Heterogeneity was assessed using I<sup>2</sup> statistics and Cochran Q test. Low heterogeneity was defined as I<sup>2</sup> <50% and Cochran Q p value >0.10.
- Bias was assessed with the Cochrane risk-of-bias tool for randomized trials (RoB2) and the Risk of Bias in Non-randomized Studies - of Interventions (ROBINS-I) tool.

## RESULTS



Study Design	Concurrent Procedures	Time to follow up	Total Patients (n)	Anticoagulation Group					Non-Anticoagulation Group					
				Patients (n)	Prophylaxis Type	PVT [n(%)]	Mortality [n(%)]	Complications	Patients (n)	Prophylaxis Type	PVT [n(%)]	Mortality [n(%)]	Complications	
Kawanaka et al (2010)	Prospective	Laparoscopic Splenectomy	7 days	50	25	AT III concentrates	9 (36.0%)	N/A	N/A	25	None	16 (64.0%)	N/A	N/A
Villa et al (2012)	Randomized Controlled Trial	None	2 years	70	34	Enoxaparin	0 (0.0%)	8 (23.5%)	N/A	36	None	10 (27.8%)	13 (36.1%)	N/A
Kawanaka et al (2014)	Prospective	Laparoscopic splenectomy	3 months	53	37	AT III, danaparoid sodium, warfarin	3 (8.1%)	N/A	N/A	16	None	7 (43.8%)	N/A	N/A
Jiang et al (2016)	Retrospective	Laparoscopic Splenectomy	90 days	73	34	Warfarin	8 (23.5%)	N/A	variceal bleeding	39	Aspirin	30 (76.9%)	N/A	variceal bleeding
Bai et al (2019)	Randomized Controlled Trial	Laparoscopic Splenectomy	2 years	78	39	Warfarin	25 (64.1%)	2 (5.1%)	variceal bleeding	39	Aspirin	34 (87.2%)	1 (2.6%)	variceal bleeding
Zhang et al (2019)	Retrospective	TIPS	24 months	83	27	Warfarin	4 (14.8%)	0 (0.0%)	hemorrhina, gingival hemorrhage	56	None	24 (42.9%)	2 (8.3%)	N/A



Study	Confounding	Selection of participants into the study	Classification of interventions	Deviations from intended interventions	Missing data	Measurement of outcomes	Selection of the reported result	Overall
Kawanaka et al (2010)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk
Kawanaka et al (2014)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk
Jiang et al (2016)	Low risk	Low risk	Low risk	Low risk	Moderate risk	Low risk	Low risk	Moderate risk
Zhang et al (2019)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk

Study	Randomization	Deviations from intended interventions	Missing outcome data	Measurement of the outcome	Selection of the reported result	Overall
Villa et al (2012)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk
Bai et al (2019)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk

## CONCLUSIONS

- Anticoagulation is effective as prophylaxis against the development of PVT in patients with cirrhosis.
- Although **anticoagulation was associated with lower rates of PVT development**, there were no observed differences in bleeding event occurrence or survival.

## ACKNOWLEDGEMENTS

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