

Portal Vein Thrombosis in Patients with Cirrhosis

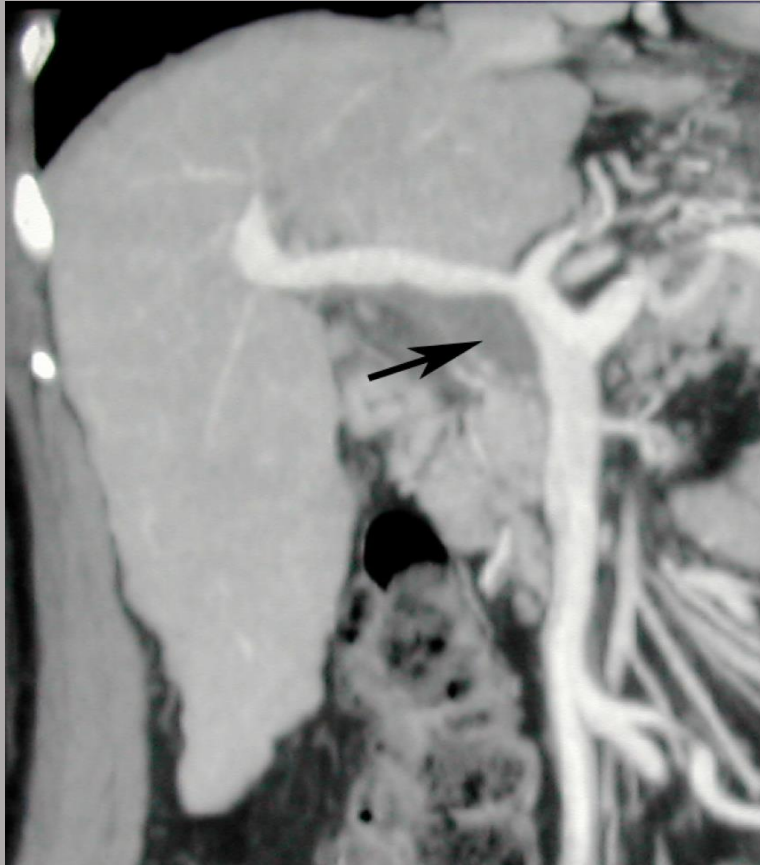
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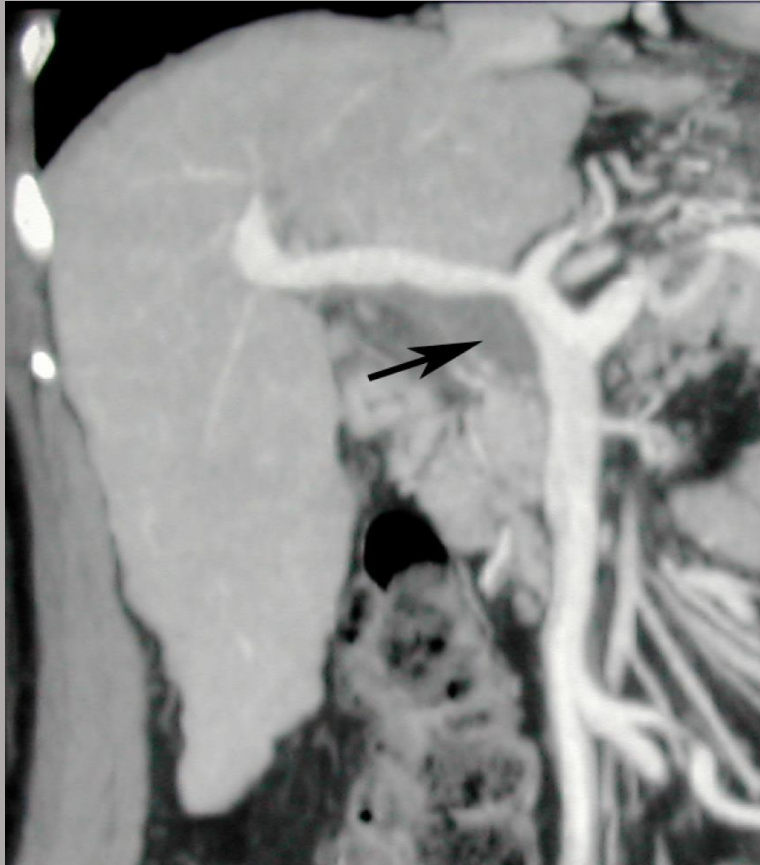
Service d'Hépatologie, Hôpital Beaujon, Clichy, France

Extrahepatic Portal Vein Thrombosis in Cirrhosis



Non Occlusive	Occlusive
10% (5 - 16)	3% (1-4)

Extrahepatic Portal Vein Thrombosis in Cirrhosis



Non-Occlusive	75%
Transient	40%
Recurrent	25%

Trends for spontaneous recanalization

- Occlusion < 50% of lumen occupancy
- Child A vs Child B-C

Portal Vein Thrombosis in Patients with Cirrhosis

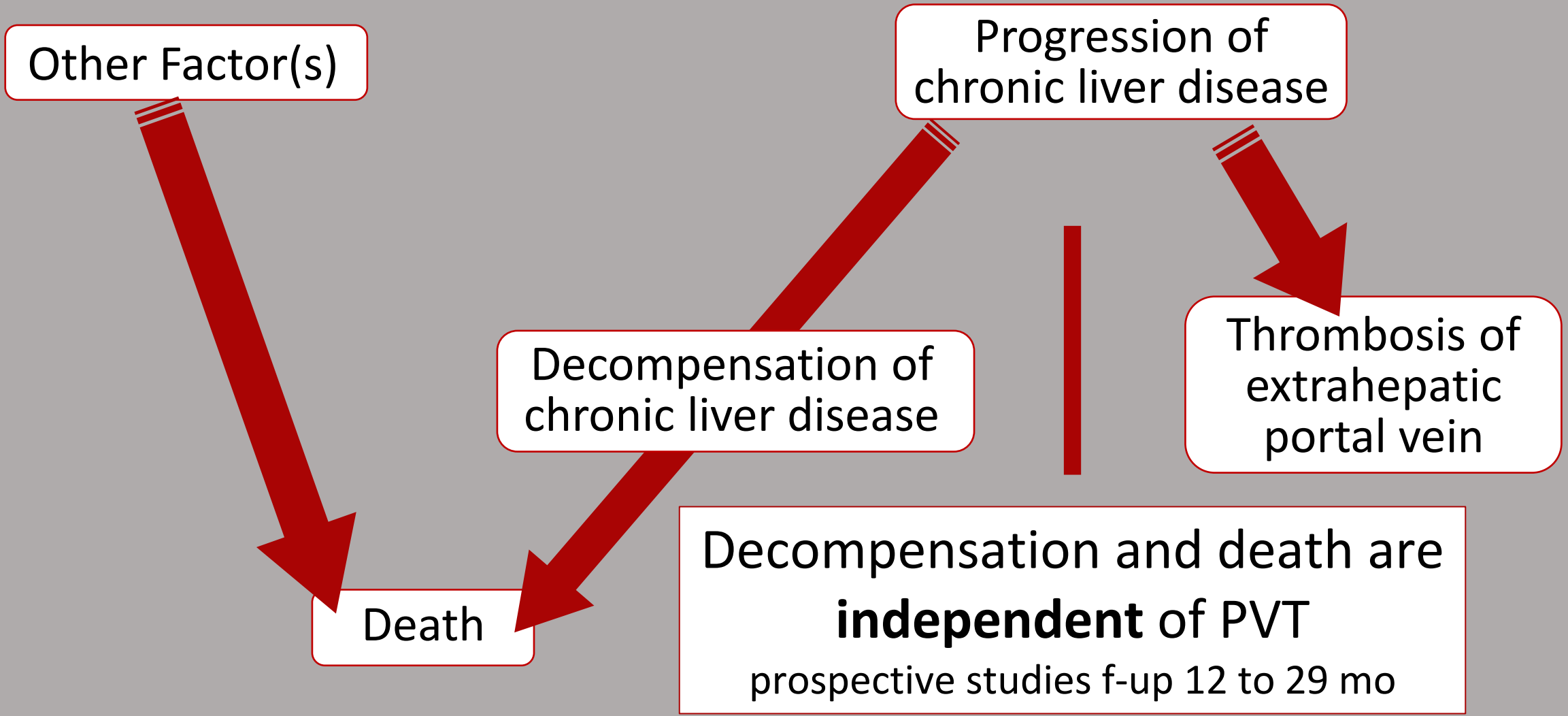
- Whom to treat?
- How to treat?
- How long to treat



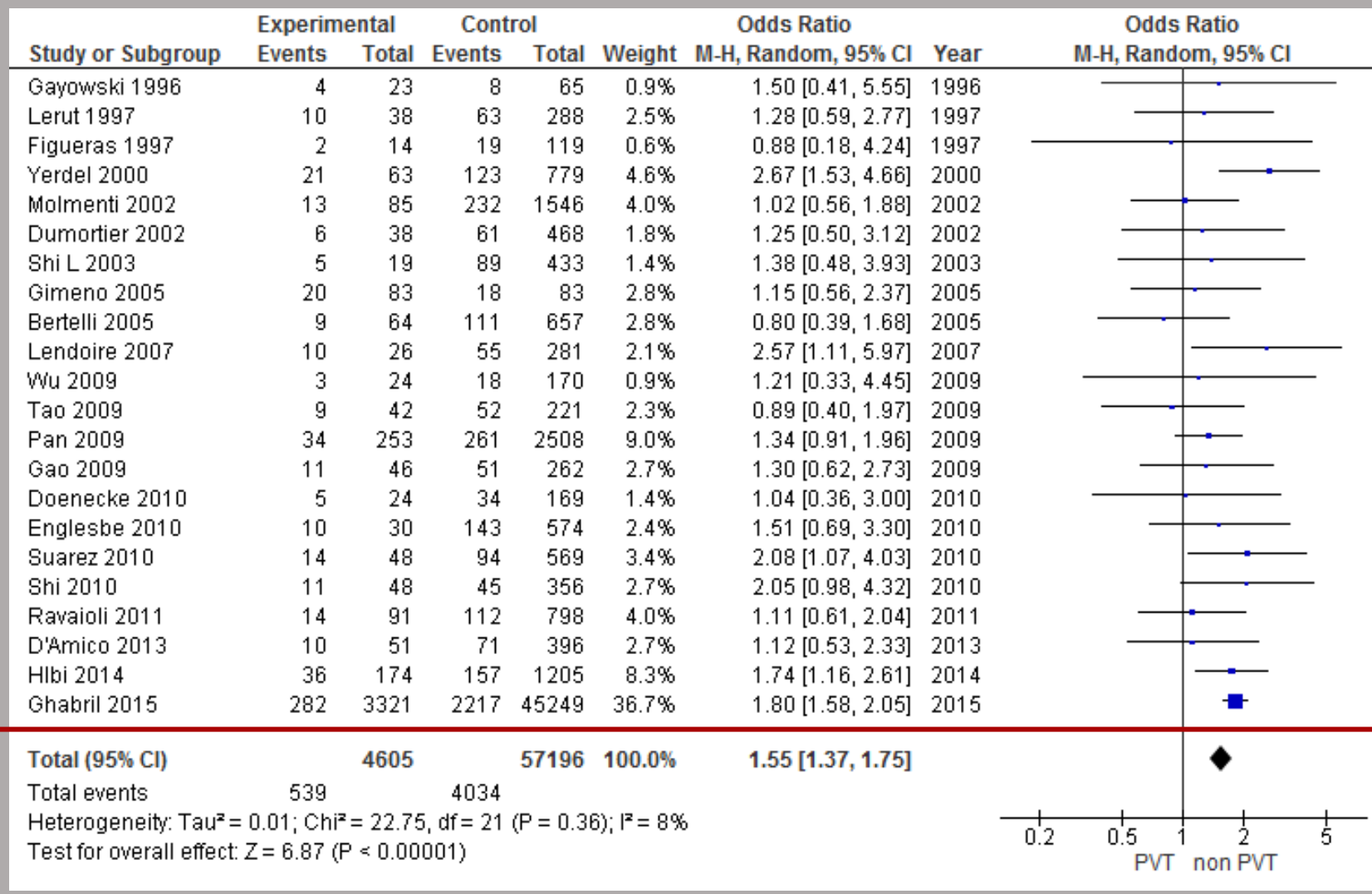
- Who is at risk?
- What are the consequences?

Risk increases with the severity of portal hypertension and liver dysfunction

PVT is NOT associated with Excess Mortality/Morbidity before LT

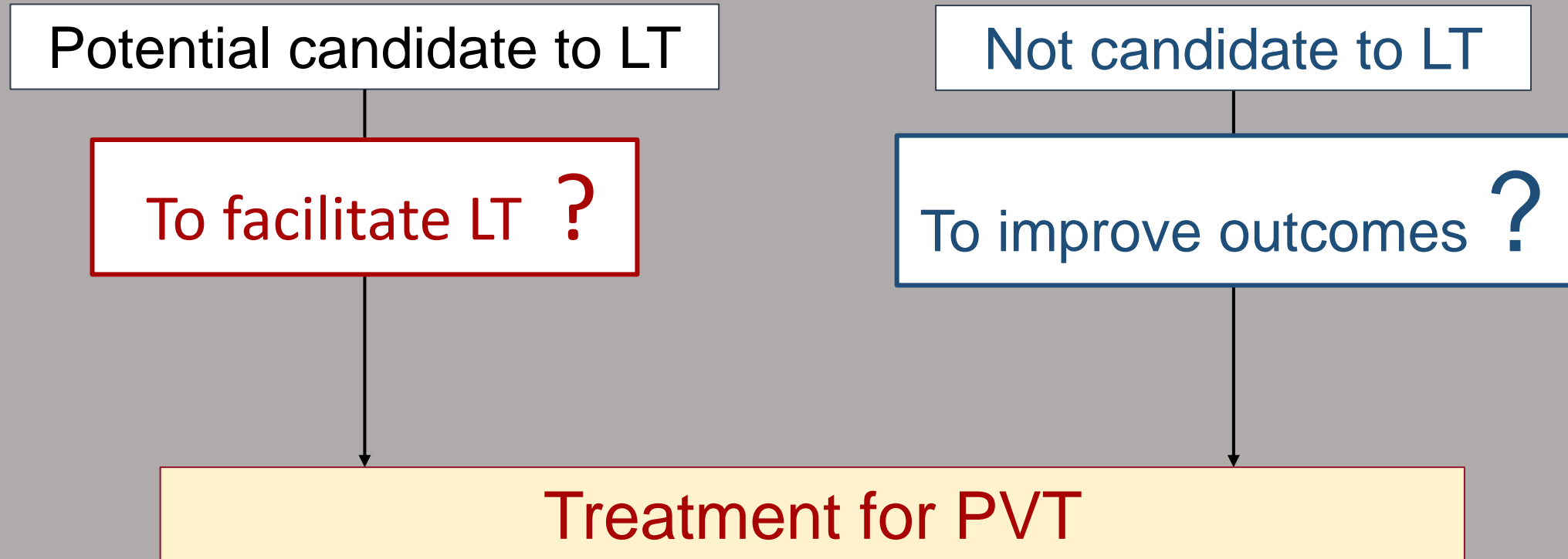


PVT is Associated with an Excess Mortality after LT



1-yr Mortality after LT
OR 1.55 (1.37-1.75)

Indications of Treatment for Cirrhosis with PVT



Portal Vein Thrombosis in Patients with Cirrhosis

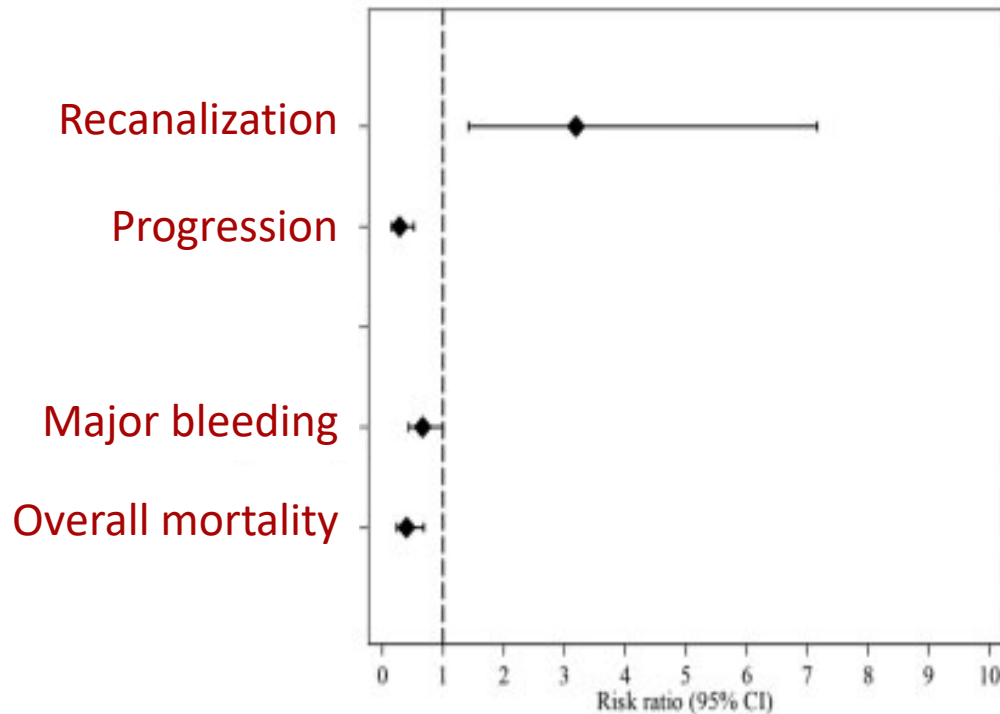
- Whom to treat?
- How to treat?
- How long to treat



- Anticoagulation?
- TIPS & Recanalization?

Efficacy and Safety of Anticoagulation In Patients with Cirrhosis and PVT

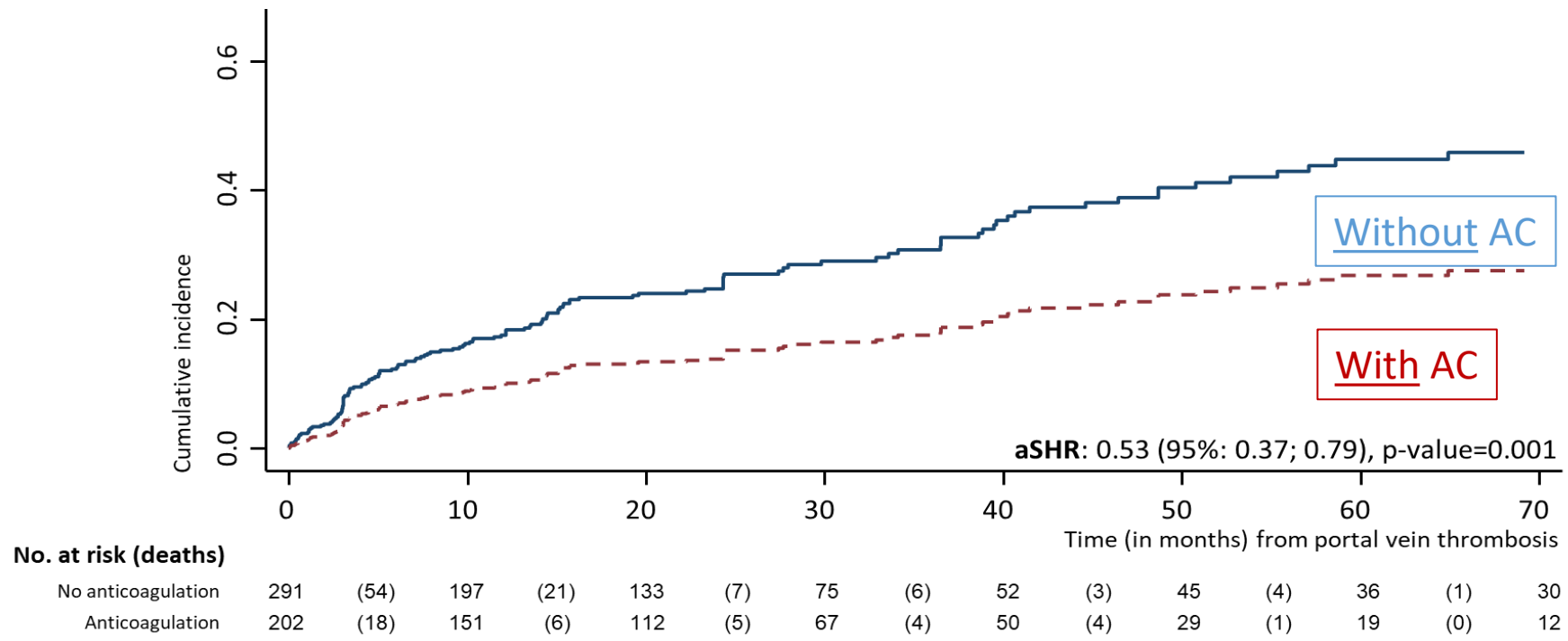
Meta-analysis, 26 studies, 1475 patients, -2019



Outcome	Anticoagulated: events (n/N, %)	Untreated: events (n/N, %)	Studies (n)	I ² (%)	RR (95% CI)
SVT recanalization	195/305 (63.9%)	79/282 (28.0%)	9	80	3.19 (1.42-7.17)
SVT progression	16/224 (7.1%)	44/181 (24.3%)	8	0	0.28 (0.15-0.52)
Recurrent VTE	8/92 (8.7%)	10/57 (17.5%)	1	-	-
Major bleeding	14/218 (6.4%)	20/179 (11.2%)	6	0	0.52 (0.28-0.97)
Overall mortality	21/230 (9.1%)	39/186 (21.0%)	6	0	0.42 (0.24-0.73)

Anticoagulants Improve Outcome of Cirrhosis with PVT

Overall mortality



Sub-hazard ratio adjusted (aSHR) by age at diagnosis, etiology, Child, thrombosis extension and localization and variceal prophylaxis

Anticoagulants Improve Outcome of Cirrhosis without PVT

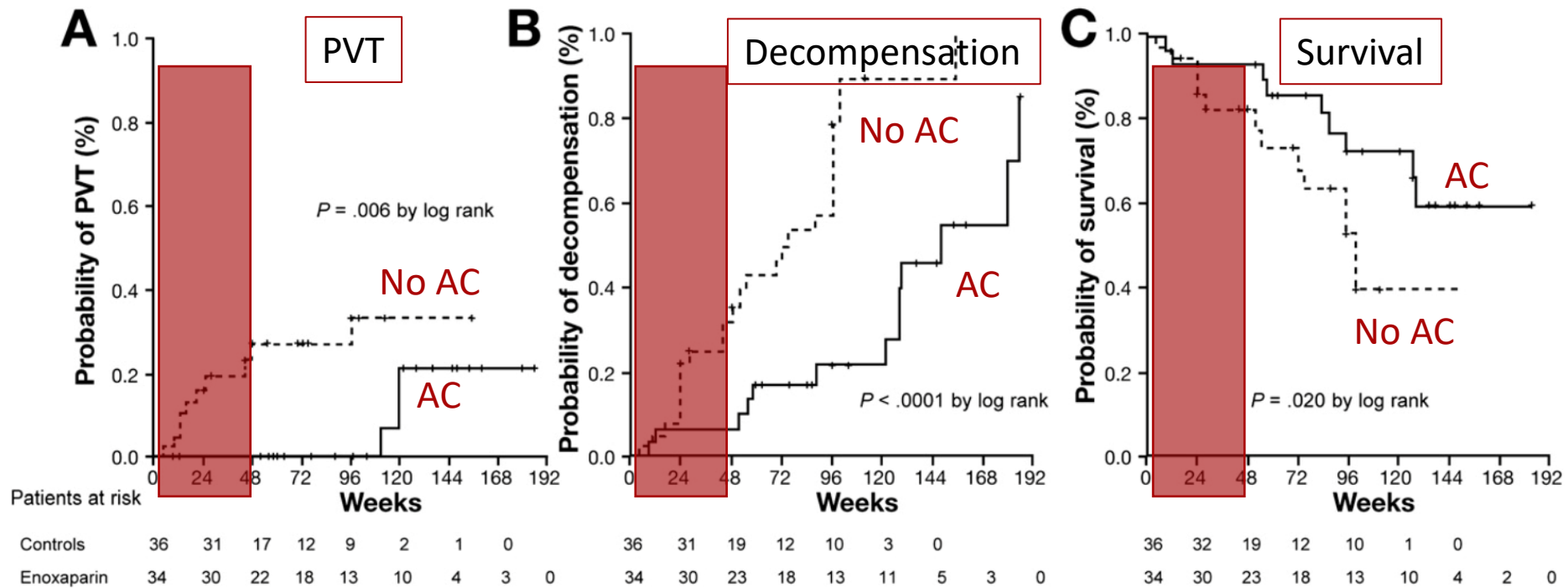
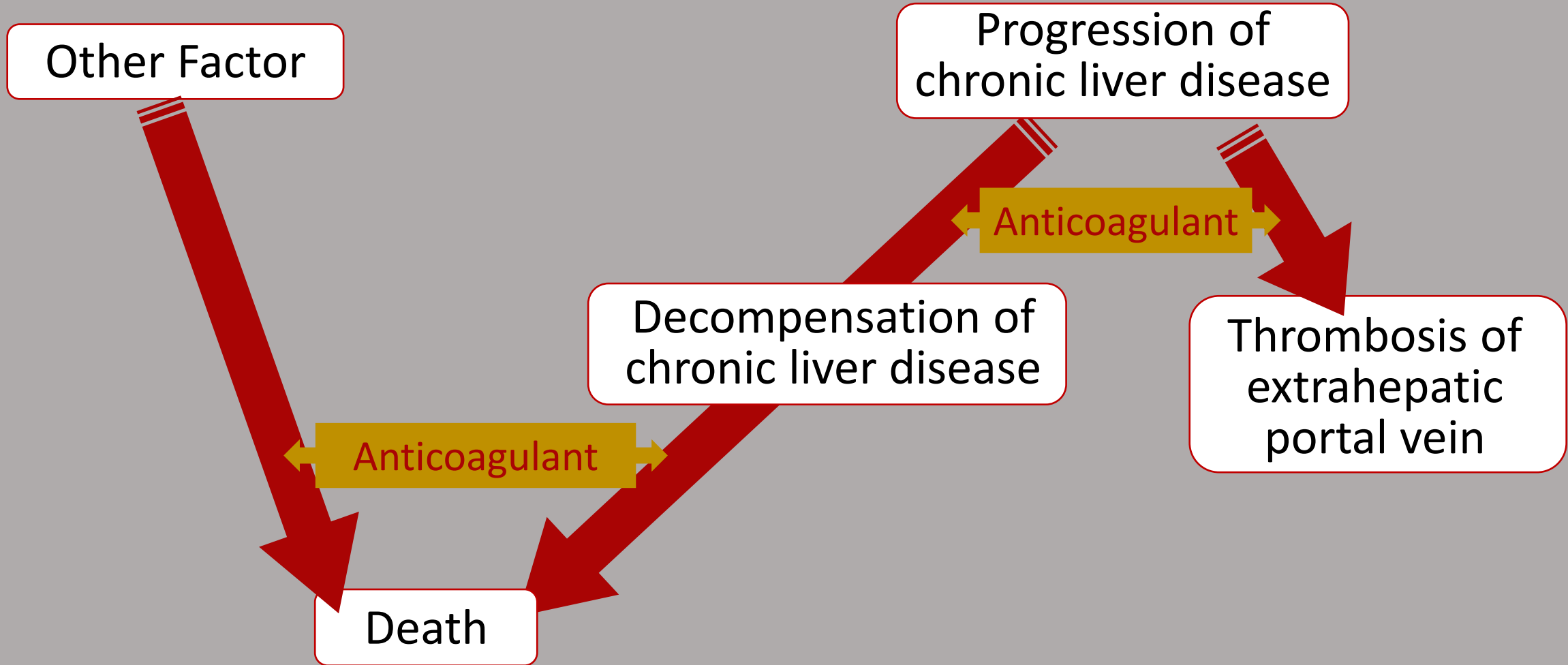
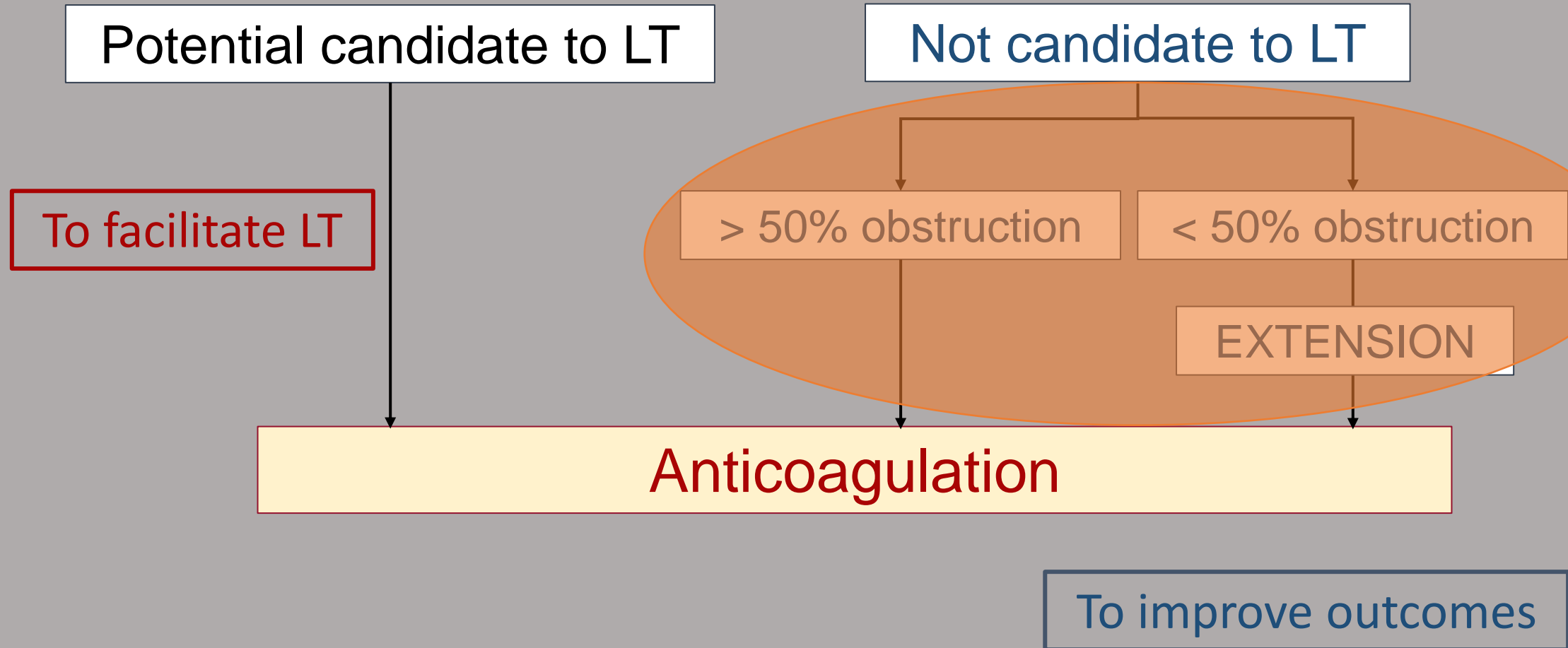


Figure 1. Actuarial probability of developing PVT or hepatic decompensation, and probability of survival according to treatment group. Probability of remaining free from (A) PVT, (B) hepatic decompensation, and (C) probability of survival. *Dashed line*: controls; *continuous line*: enoxaparin-treated patients.



Anticoagulation for the Treatment of Cirrhosis with PVT



Portal Vein Thrombosis in Patients with Cirrhosis

- Whom to treat?
- How to treat?
- How long to treat

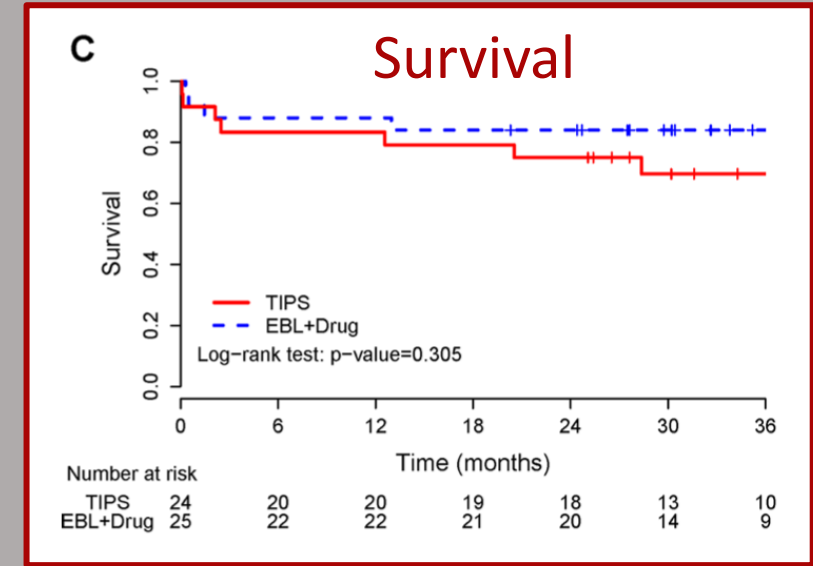
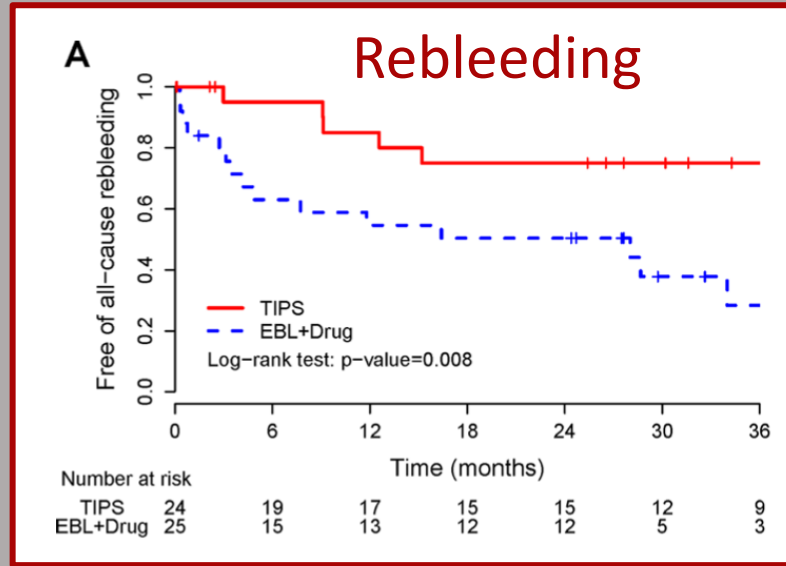
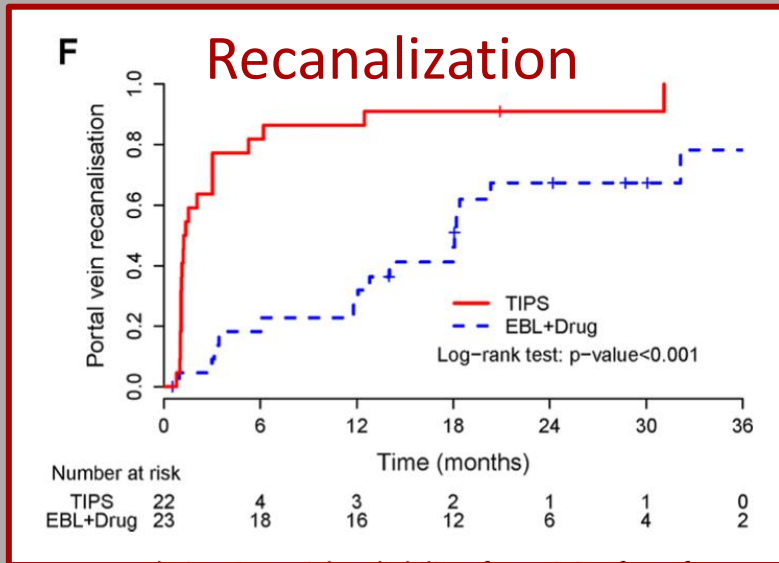


- Anticoagulation?
- TIPS & Recanalization?

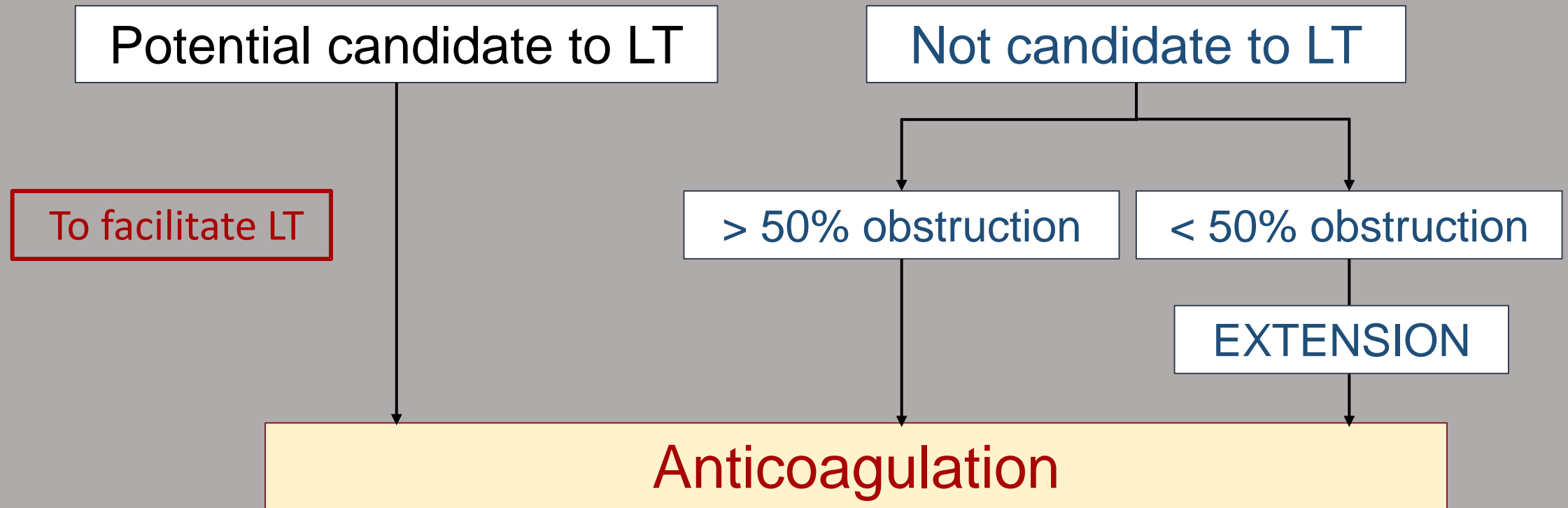
**Feasible in over 95%
of reported cases**

Rodriguez. APT 2018
Thornbul. J Vasc Interv Radiol 2017

TIPS For PVT in Patients with Cirrhosis



TIPS for the Treatment of Cirrhosis with PVT



Minimum 6 months after recanalization or until LT

TIPS/PVR

- in the absence of recanalization at 1-3 months
- or when indicated for recurrent bleeding or ascites

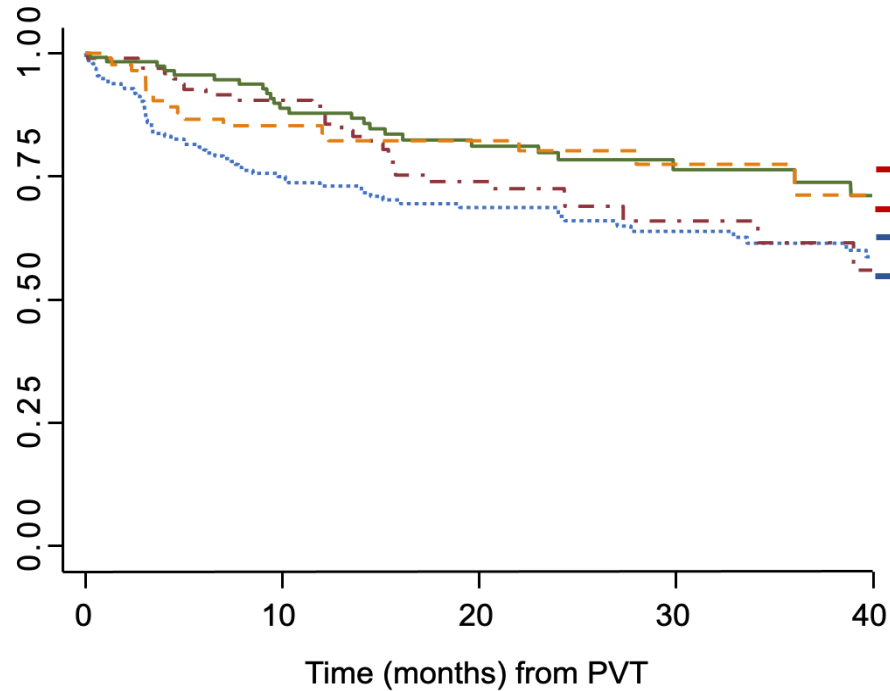
Portal Vein Thrombosis in Patients with Cirrhosis

- Whom to treat?
- How to treat?
- How long to treat

- Recurrence is frequent after recanalization and interruption of AC
- AC improve the outcome of cirrhosis independent of PVT
- TIPS improve recanalization without impacting survival.

IMPORTANT: Overall survival and PVT recanalization

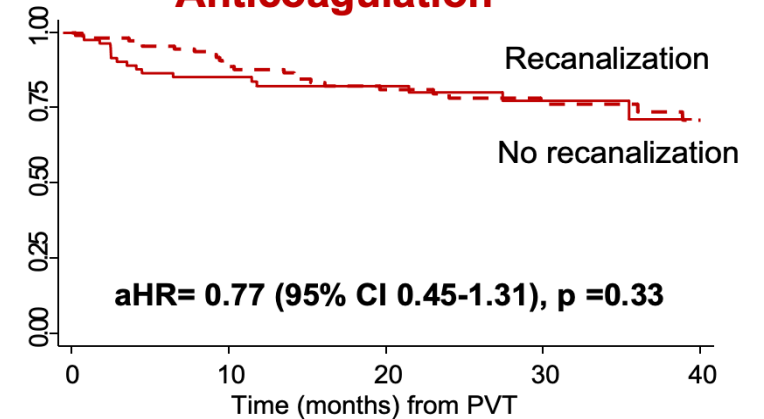
Interaction anticoagulation- recanalization, $p = 0.70$



No R No T	195	(46)	119	(9)	80	(5)	57	(4)	43
R No T	98	(9)	79	(13)	55	(4)	19	(2)	10
R T	115	(12)	90	(7)	64	(3)	37	(2)	24
No R T	87	(12)	60	(2)	46	(2)	27	(2)	23

..... No recanalization | No anticoagulation
 - - - No recanalization | Anticoagulation
- - - Recanalization | No anticoagulation
 — Recanalization | Anticoagulation

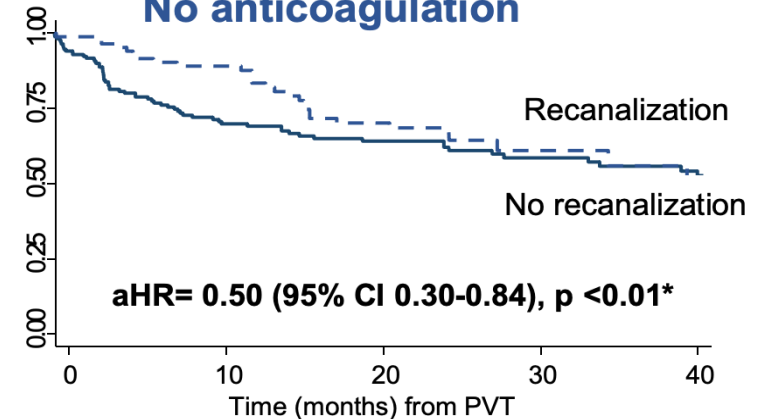
Anticoagulation



aHR= 0.77 (95% CI 0.45-1.31), $p = 0.33$

No recanalization	87	(12)	60	(2)	46	(2)	27	(2)	23
Recanalization	115	(12)	90	(7)	64	(3)	37	(2)	24

No anticoagulation



aHR= 0.50 (95% CI 0.30-0.84), $p < 0.01^*$

No recanalization	195	(46)	119	(9)	80	(5)	57	(4)	43
Recanalization	98	(9)	79	(13)	55	(4)	19	(2)	10

Portal Vein Thrombosis in Patients with Cirrhosis

- Whom to treat?
- How to treat?
- How long to treat

Anticoagulation as long as not contraindicated

- Recurrence is frequent after recanalization and interruption of AC
- AC improve the outcome of cirrhosis independent of PVT
- TIPS improve recanalization without impacting survival.

Conclusions

Portal Vein Thrombosis in Patients with Cirrhosis

- Whom to treat?
- How to treat?
- How long to treat

Most patients with PVT

#1- Anticoagulants

#2- TIPS/recanalization pre-LT

AC as-long-as not contraindicated



Service d'hépatologie, Hôpital Beaujon, circa 1994



AASLD annual meeting, Boston, 2002

EASL Governing Board and Office, 2011



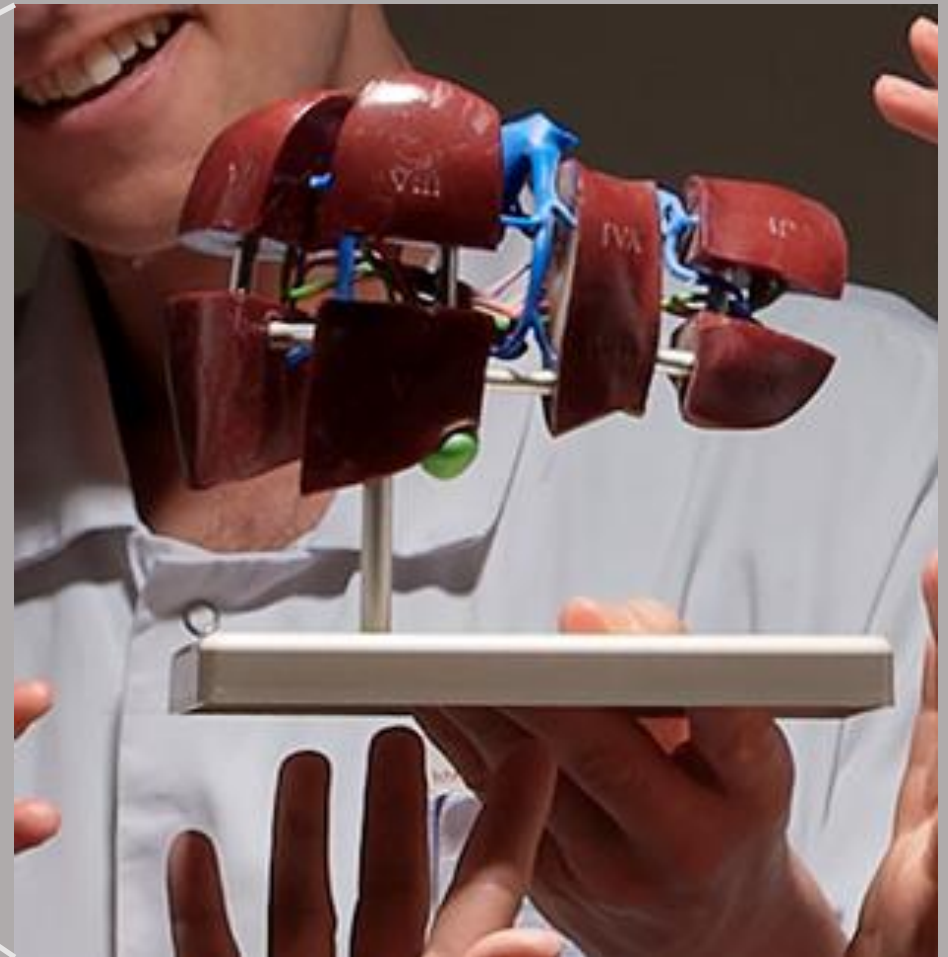
EASL Masterclass, Milan-Pavia, 2015





ILC, Vienna, 2023.
VALDIG Meeting





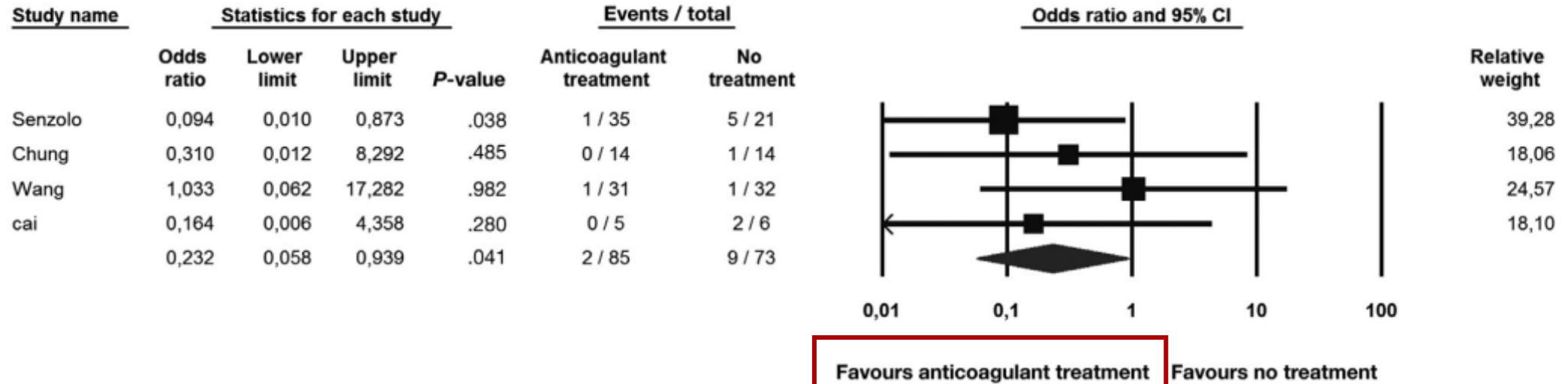
CRMVF*
Resourcing Team Session
2020

*Centre National de Référence des Maladies Vasculaires du Foie

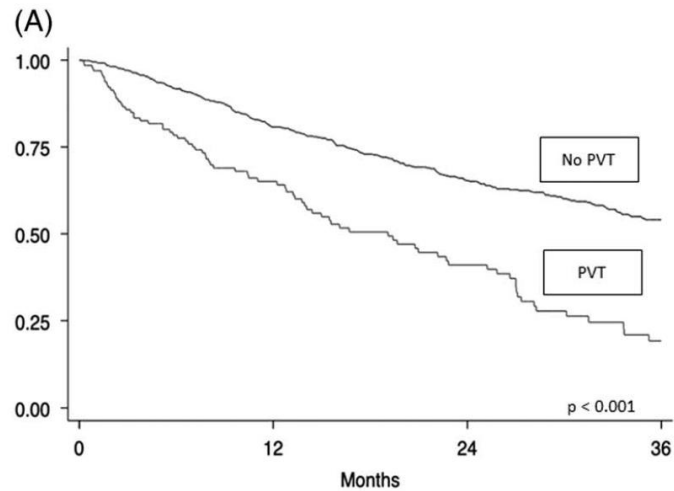
Meta-Analysis: Anticoagulants and Cirrhosis with PVT

C

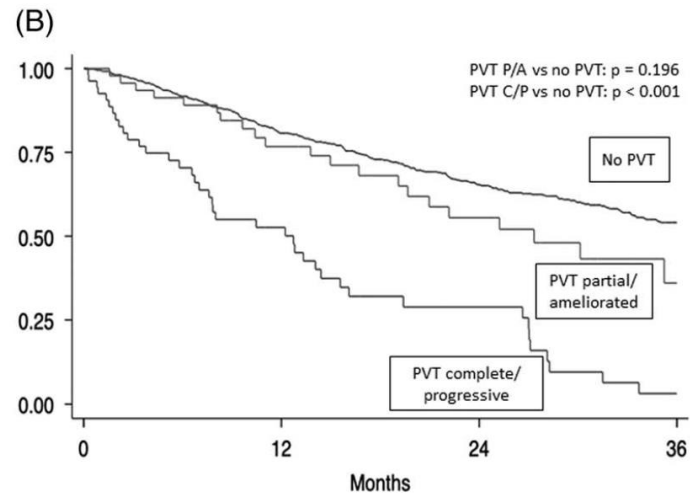
Variceal bleeding



Portal vein thrombosis in patients with HCC



Number at risk				
No PVT:	616	413	280	170
PVT:	134	65	34	11



Number at risk				
No PVT:	616	413	280	170
PVT P/A:	46	29	17	5
PVT C/P:	56	21	19	1

FIGURE 2 Kaplan-Meier estimates of survival probabilities according to the presence of PVT (A) and according to the presence of PVT and its evolution pattern (B). Abbreviations: C/P, complete/progressive; PVT, portal vein thrombosis; P/A, partial/ameliorated evolution pattern.

PVT independently associated with tumor volume and portal hypertension

PVT, particularly when complete or progressive, independently associated with lower survival

Which anticoagulant?

Low molecular weight heparins

- Largest experience, including RCTs
- half-life ~ 4h, dose-independent elimination
- renal excretion
- 90% bioavailability
- *but* injection

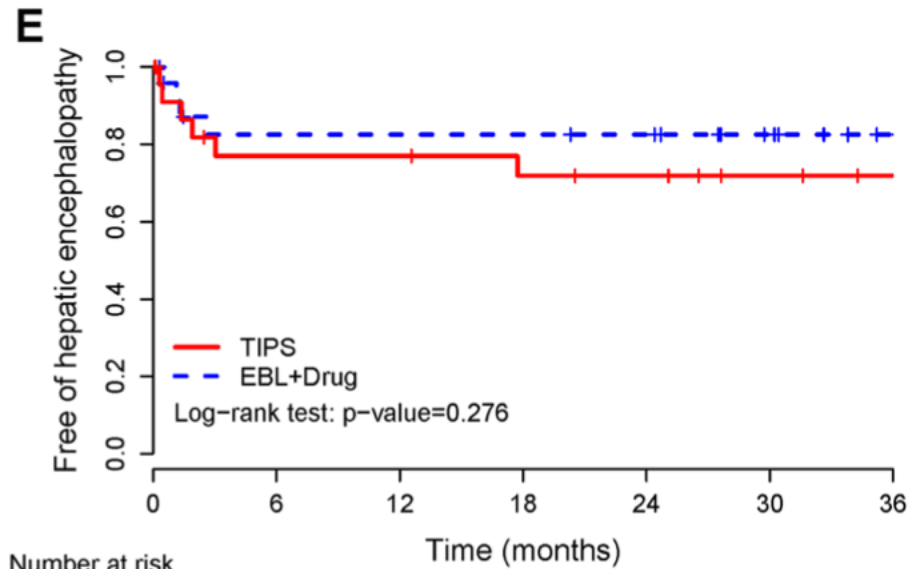
Vitamin K antagonists

- oral administration
- *but* unreliability of INR in cirrhosis

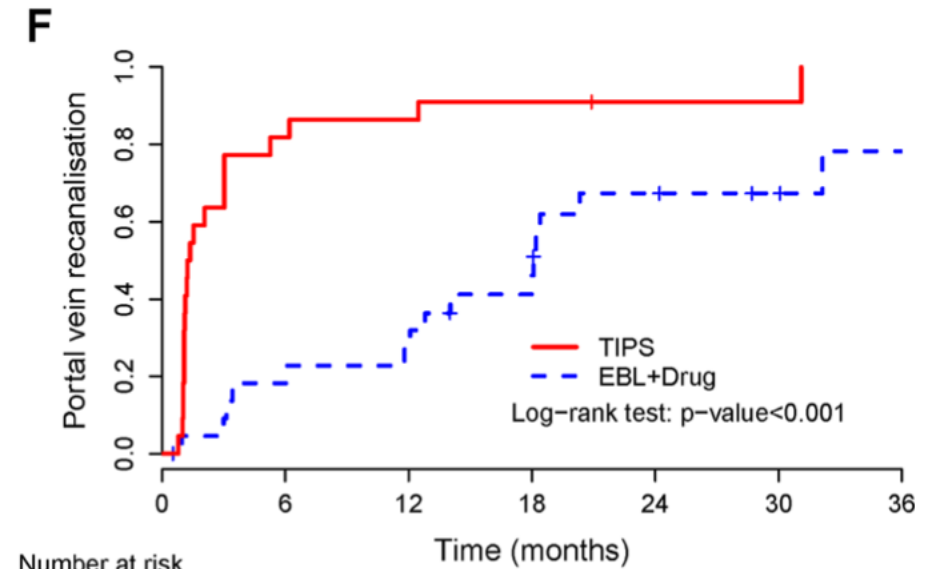
Direct oral anticoagulants

- increasing amount of data
- oral administration
- greater efficacy and safety than Vit. K antagonists
- *but* contraindicated in advanced cirrhosis

TIPS For PVT in Patients with Cirrhosis

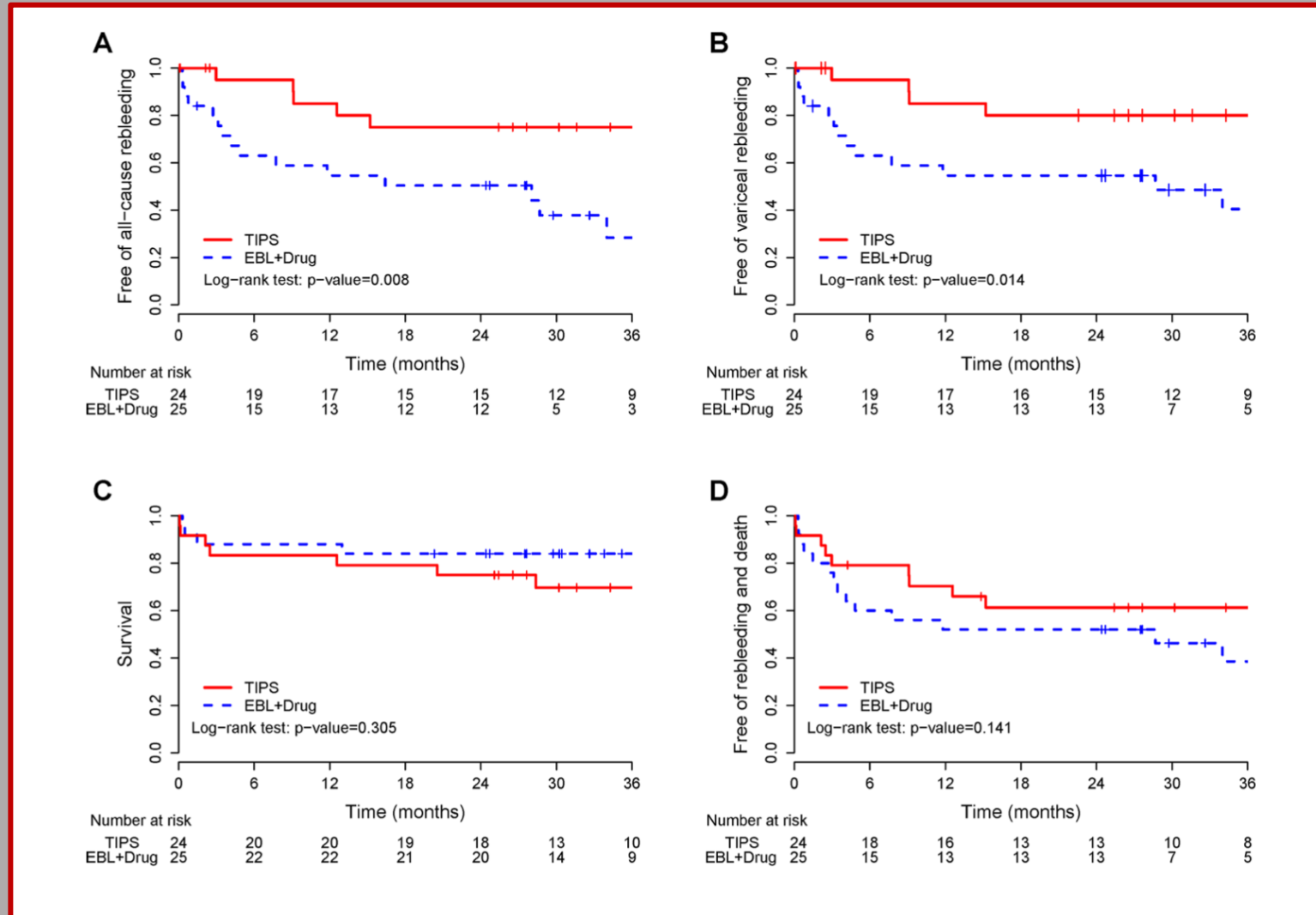


Number at risk	0	6	12	18	24	30	36
TIPS	24	16	16	14	13	10	8
EBL+Drug	25	18	18	18	17	12	7



Number at risk	0	6	12	18	24	30	36
TIPS	22	4	3	2	1	1	0
EBL+Drug	23	18	16	12	6	4	2

TIPS For PVT in Patients with Cirrhosis





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ILC, Vienna, 2023. VALDIG