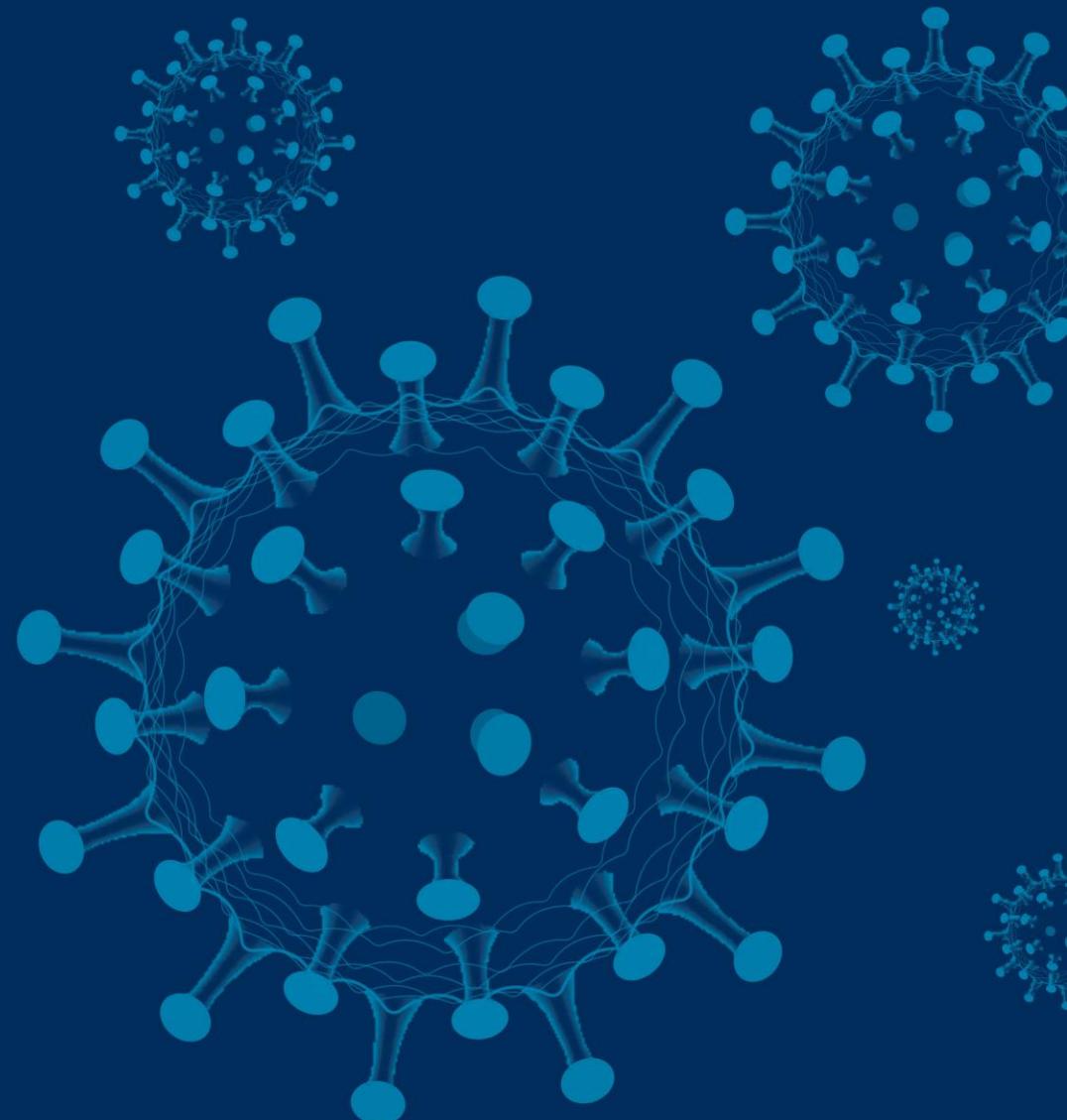




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COVID-19

COVID-19, Clots and Anticoagulants: A Case- based Discussion on VTE Prevention and Treatment



Speakers

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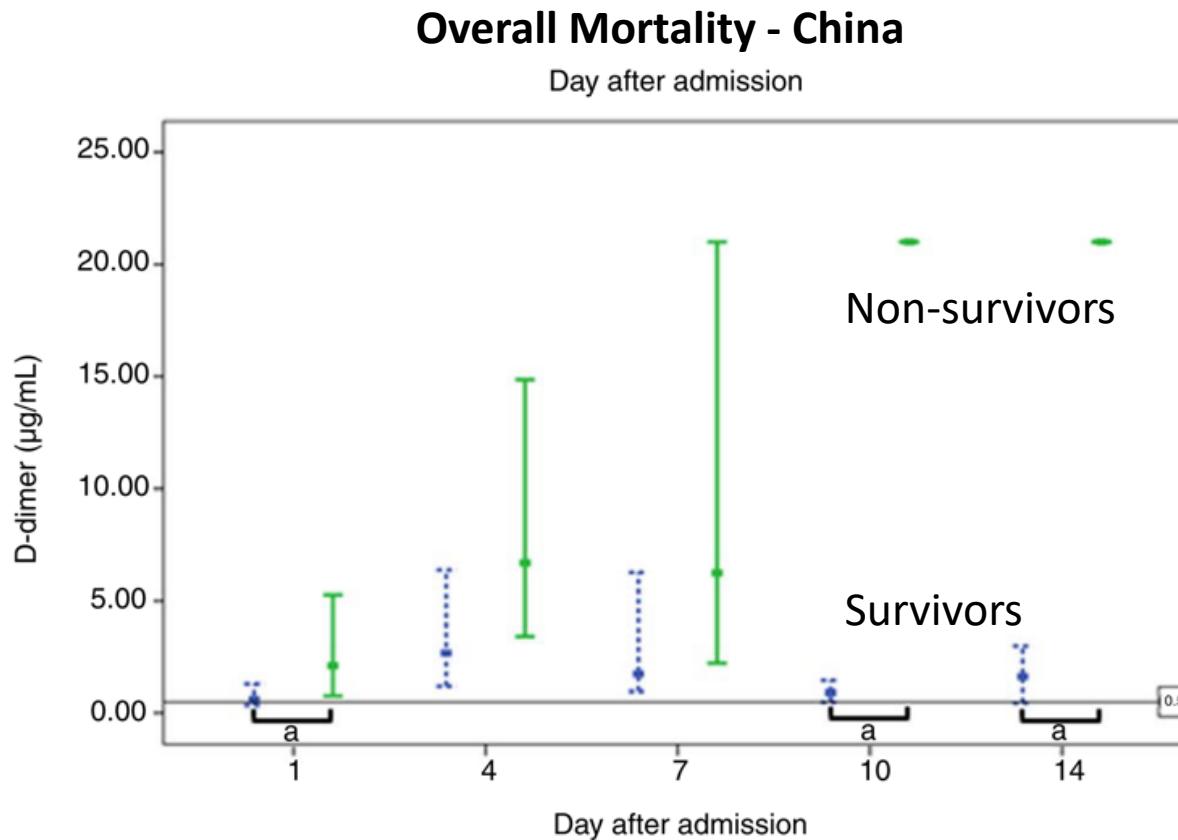
Case

- 49 yo man admitted after 5 days of fever, progressive SOB
- PMH: obesity (BMI 38), DM2 on insulin, and mild CKD (stage 2)
- ED: HR 98, SBP 134/88, RR 24, SpO₂ 84% on RA → 94% on 2L
- No leg swelling
- D-dimer 8.4 (nl<0.50)
- CXR: Bilateral patchy infiltrates
- PECT: no PE, bilateral ground glass opacities and consolidation (RLL, LUL)
- Admit to the general medicine wards

Discussion

- What contributes to VTE risk?
- On what type of unit should this patient be managed and why?

D-dimer and COVID-19 Mortality



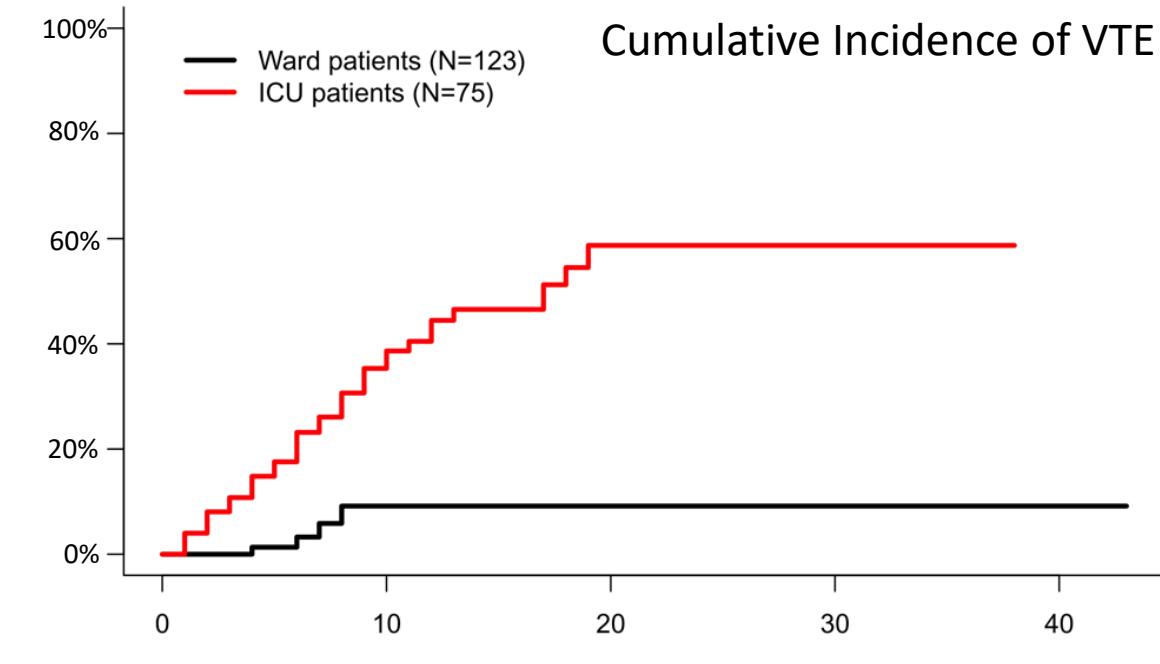
D-dimer and PE - France

	PE Present (n=32)	PE Absent (n=74)	P-value
Elevated D-dimer (>0.5)	28 (88%)	50 (68%)	
Median (IQR)	15.4 ± 14.4	1.9 ± 3.1	0.001
<5	5 (18%)	39 (78%)	
5-20	12 (43%)	9 (12%)	
>20	11 (39%)	2 (4%)	

D-dimer and COVID-19 Mortality

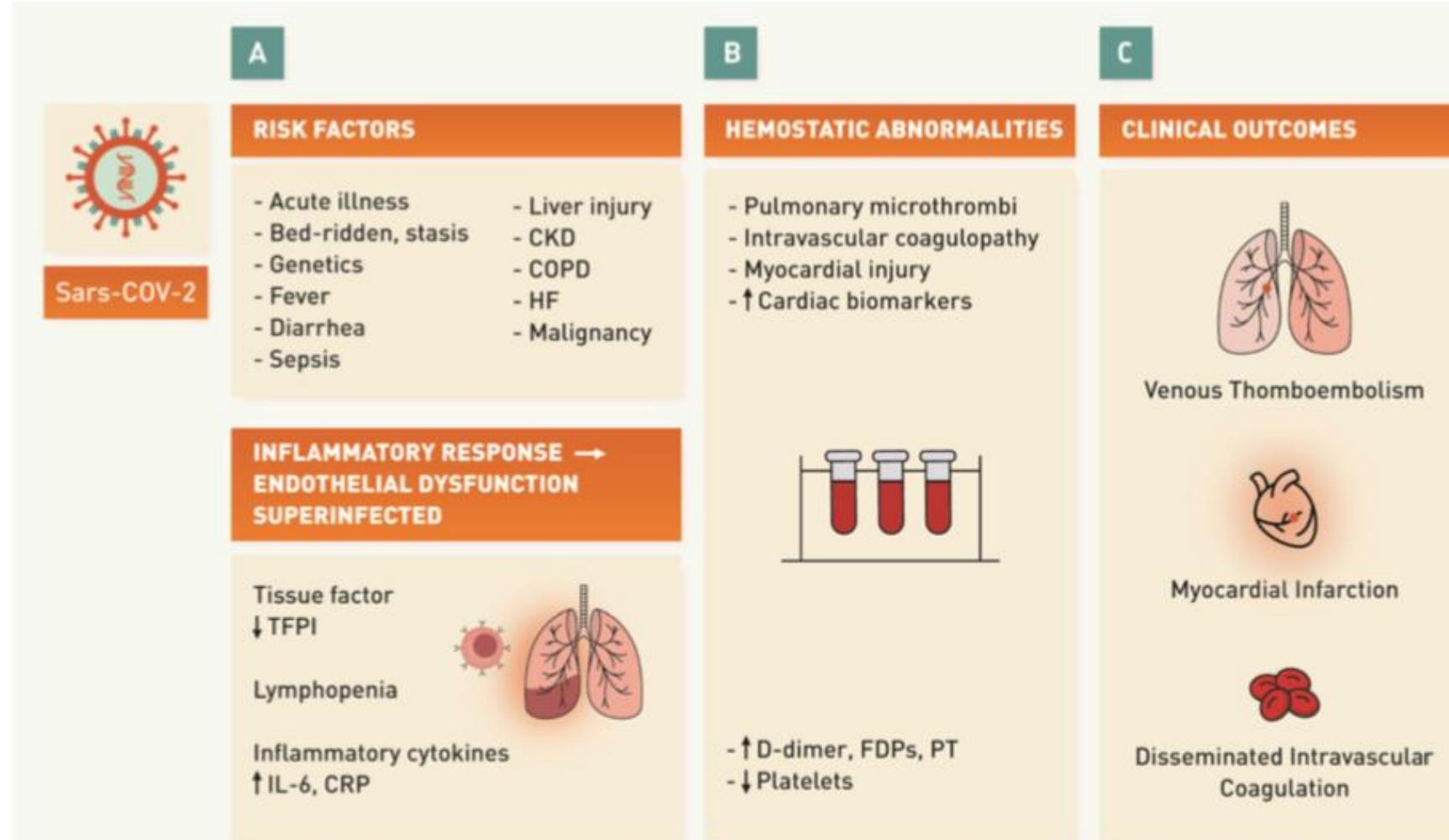
VTE Risk Factors - Netherlands

	VTE (n=39)	No VTE (n=159)	HR
Mean age (SD)	62 (10)	60 (15)	1.05 (0.82-1.4)
ICU	35 (89%)	40 (25%)	8.9 (3.2-25)
Median D-dimer (IQR)	2.6 (1.1-18)	1.0 (0.7-1.7)	1.4 (1.1-1.9)



ICU	75	60	33	18	2	2	1	1	0
Ward	123	57	16	8	6	5	3	2	1

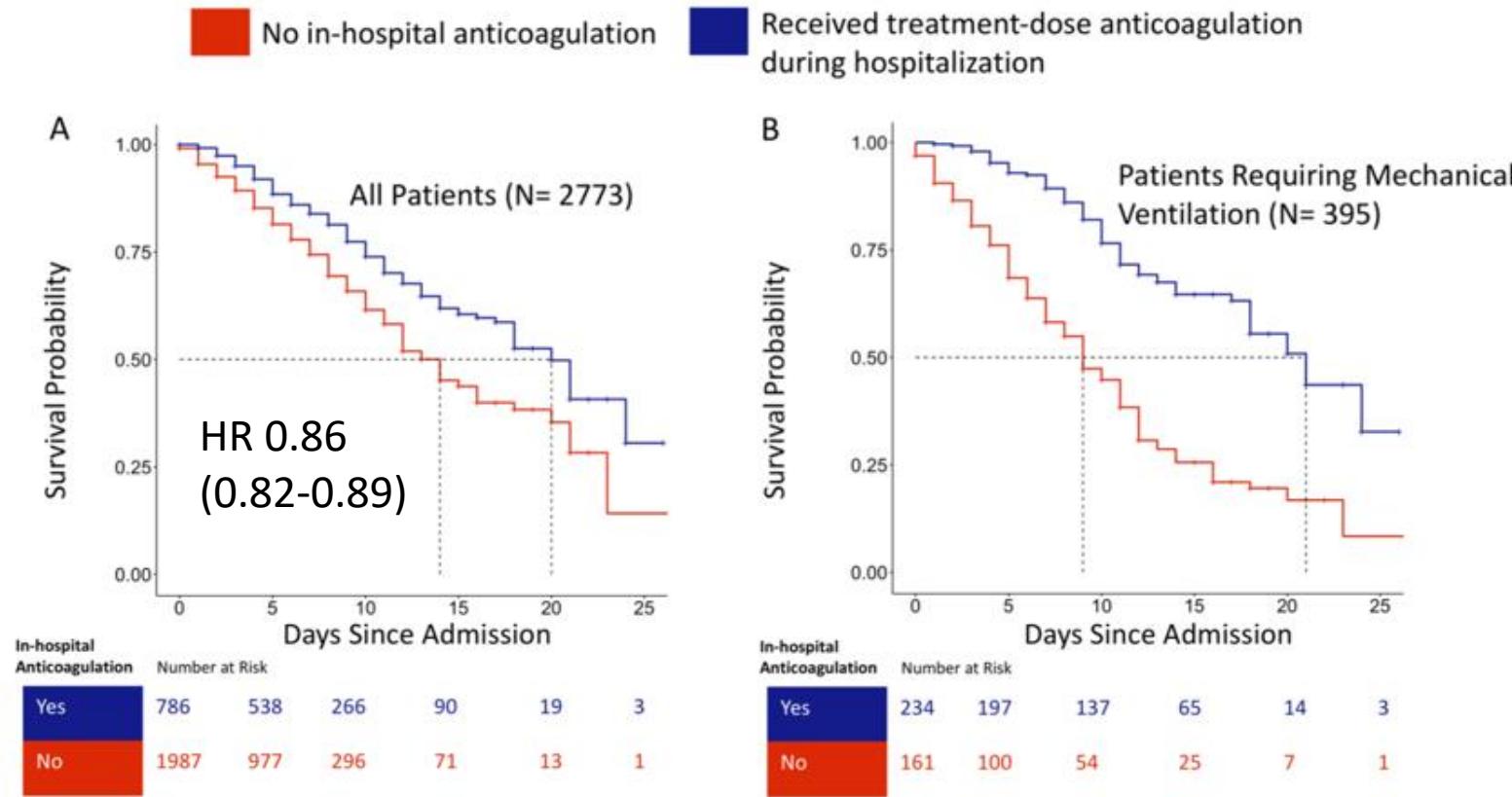
Mechanism of COVID-19 Thrombosis



Discussion

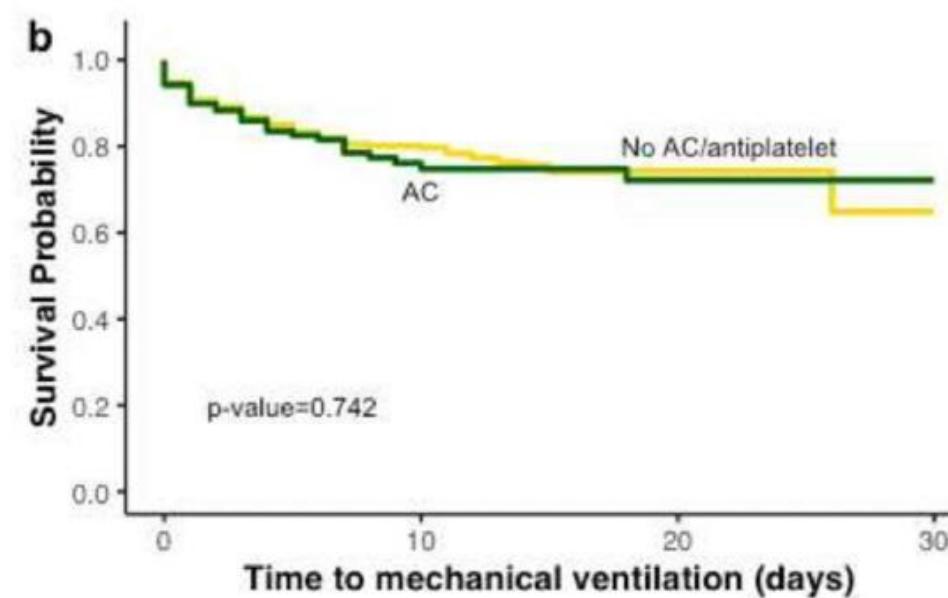
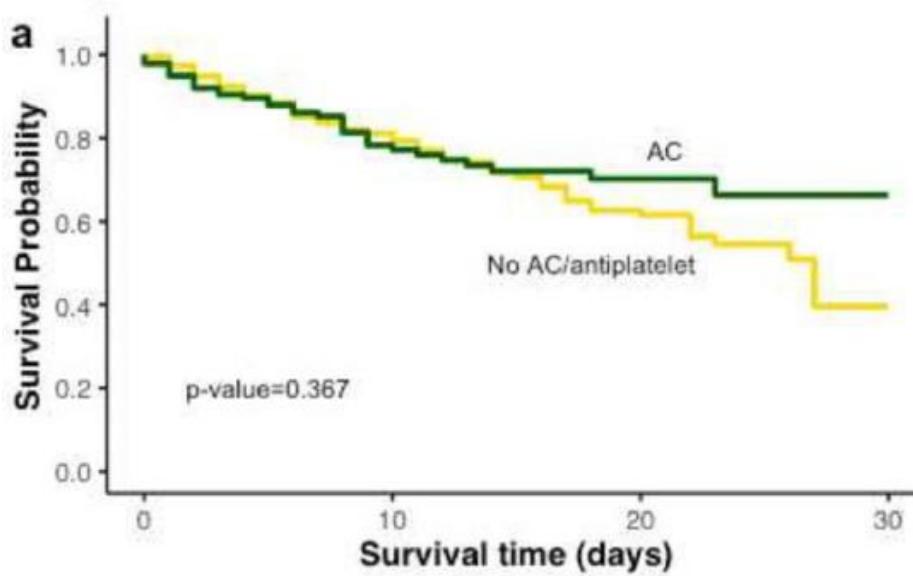
- What VTE prophylaxis would you use?

What dose of anticoagulation?



- NYC Hospital System
- 2733 hospitalized patients with COVID-19
- Compare in-hospital treatment-dose anticoag vs. none

Benefit of Therapeutic Anticoagulation?



- Same NYC Hospital System
- 3772 hospitalized patients with COVID-19
- Compare pre-hospital anticoag vs. no anticoag

What dose of anticoagulation?

Patient with COVID-19	Standard Dose VTE Prophylaxis	Intermediate or Escalated Dose VTE Prophylaxis	Therapeutic Anticoagulation
Outpatients	Consider if high-risk		
Floor patients	Yes		
ICU Patients		Yes	
ARDS Patients		Yes	
Confirmed VTE			Yes
Suspected PE			Yes

How best to address bleeding risk?

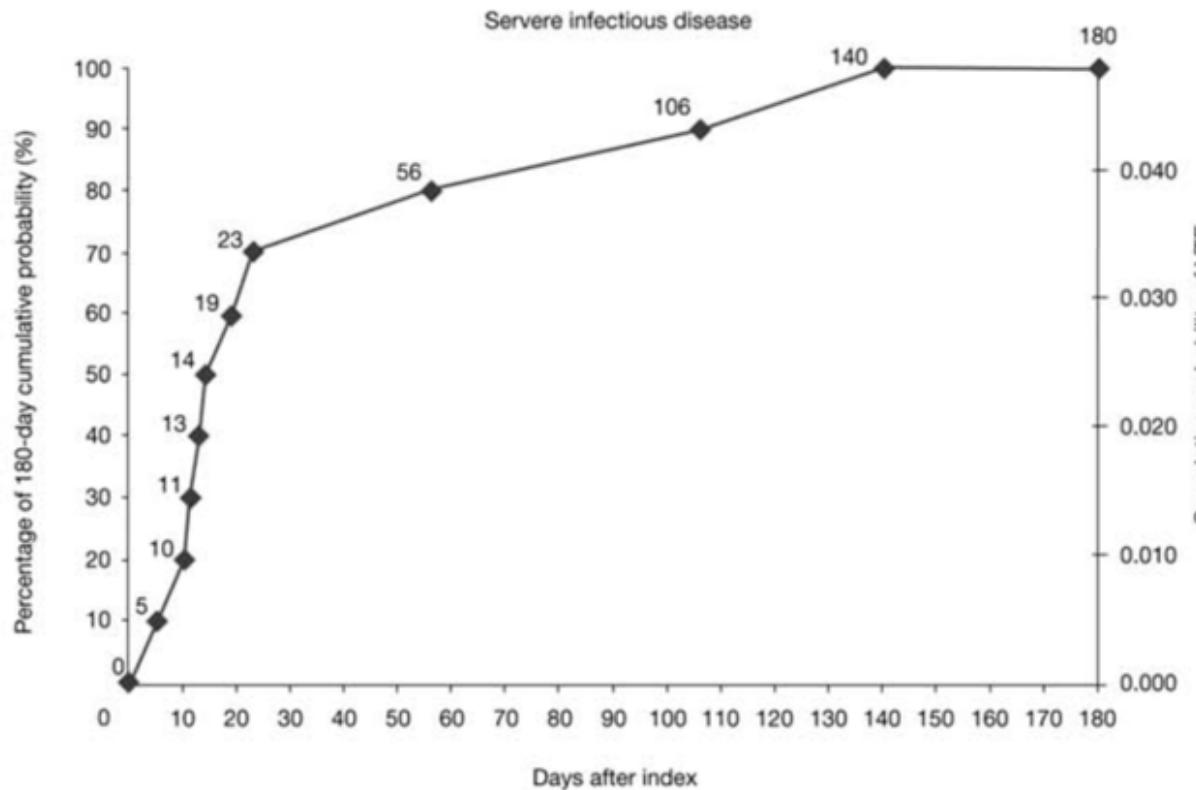
Case

- On hospital day 4, his O₂ requirement rapidly increases to 6L
- He is transferred to ICU for heated high-flow O₂
- He develops acute on chronic renal insufficiency
 - Cr 2.2, CrCl <30ml/min
- Do you change his VTE prophylaxis regimen?

Case

- After 3 days in the ICU, his O2 requirements improve, no longer febrile
 - He transfers to the floor for continued O2 weaning
 - Renal function improving (Cr 1.7)
- He is eventually discharged home on hospital day 10 (symptom day 15)
 - Still requiring 0.5-1L NC
 - Back to baseline renal function (Cr 1.3)
 - D-dimer 2.5 (nl <0.5)
- Do you consider post-hospital VTE prophylaxis?

Risk of post-hospital VTE



	VTE Events	Major Bleeding
Rivaroxaban 10mg daily	4.4%	1.1%
Enoxaparin 40mg daily	5.7%	0.4%
Betrixaban 80mg daily	5.3%	0.7%
Enoxaparin 40mg daily	7.0%	0.6%

Case – What if?

- Upon admission to ICU, DVT scan performed
 - Acute DVT in left iliofemoral vein
- Reminder: Cr 2.2, CrCl <30ml/min
- What anticoagulation regimen?
- How long to treat?

Take-home Points

- Key risk factors for VTE include COVID-19
- Stick to evidence-based prophylaxis unless in a clinical trial
 - Consider intermediate-dose or escalated prophylaxis for sicker patients
- Consider role of post-hospital VTE prophylaxis
 - Persistent immobilization
 - Ongoing inflammation
 - Prior VTE
- Confirmed or presumed VTE → 3 months of anticoagulation



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