

# Thromboembolic events and bleedings in ICU patients with COVID-19

- a nationwide retrospective study

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Hindsgavl

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Et stort tak til alle dem der har hjulpet med dataindsamling:

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og til Nicolai Haase m.fl. for arbejdet med den danske covid-kohorte database

# Background

- In 2020 several studies suggested a high proportion of COVID-19 patients admitted to ICU developed thromboembolic complications.<sup>1-4</sup>
- Autopsy studies of COVID-19 patients confirmed presence of thrombosis in the small vessels and capillaries of the lungs.<sup>5,6</sup>

1. Klok. Thromb Res 2020; 191: 148–50.
2. Middeldorp. J Thromb Haemost 2020; 18: 1995–2002
3. Poissy. Circulation 2020; 142: 184–6.
4. Cui. J Thromb Haemost 2020; 18: 1421–4.
5. Fox. Lancet Respir Med 2020; 8: 681–6.
6. Yao. Cell Res 2021; 31: 836–46.

## *Increased thrombosis prophylaxis were recommended*

- As a result of the high rates of thrombotic events reported in the early studies, several investigators suggested an increase in prophylactic anticoagulation doses for critically ill patients with COVID-19 (Blood 2020; 135)
- The Danish Society of Thrombosis and haemostasis (DSTHI) published new guidelines online in April 2020, recommending increased dosage of thromboprophylaxis in ICU patients



# FOREBYGGELSE OG BEHANDLING AF TROMBOSE OG BLØDNING HOS **COVID-19**-PATIENTER

TABEL 1: ANBEFALINGER VEDRØRENDE TROMBOSEPROFYLAKSE

PATIENTGRUPPE	ANBEFALET TROMBOSEPROFYLAKSE
Indlagt pga COVID-19, ikke intensiv (22)	Fragmin® 5.000 ie x 1 dgl. eller Innohep® 4.500 ie x 1 dgl. eller Klexane® 40 mg x 1 dgl
Indlagt på intensiv pga COVID-19 (4)	Fragmin® 5.000 ie x 2 dgl. eller Innohep® 4.500 ie x 2 dgl. eller Klexane® 40 mg x 2 dgl.

RETNINGSLINJE 2020

# *The Danish Covid-thrombosis study*

- ***Aim:*** To describe incidence, characteristics and risk factors for clinically relevant thromboembolic events and bleedings in ICU patients with COVID-19 and to explore whether these events are associated with mortality
- ***Inclusion criteria:*** Patients admitted to an ICU in Denmark with laboratory-confirmed SARS-CoV-2 infection based on the national Danish COVID-ICU-database<sup>1</sup>
- ***Methods:*** We manually went through medical files and registered coagulation variables, transfusion data, bleeding events and thrombotic events during the entire ICU admission.

1. Haase et al. Acta Anaesthesiol Scand. 2020)

*Preliminary  
results 1*  
-  
**BASELINE**

**1369 patients included from March 2020 – June 2021**

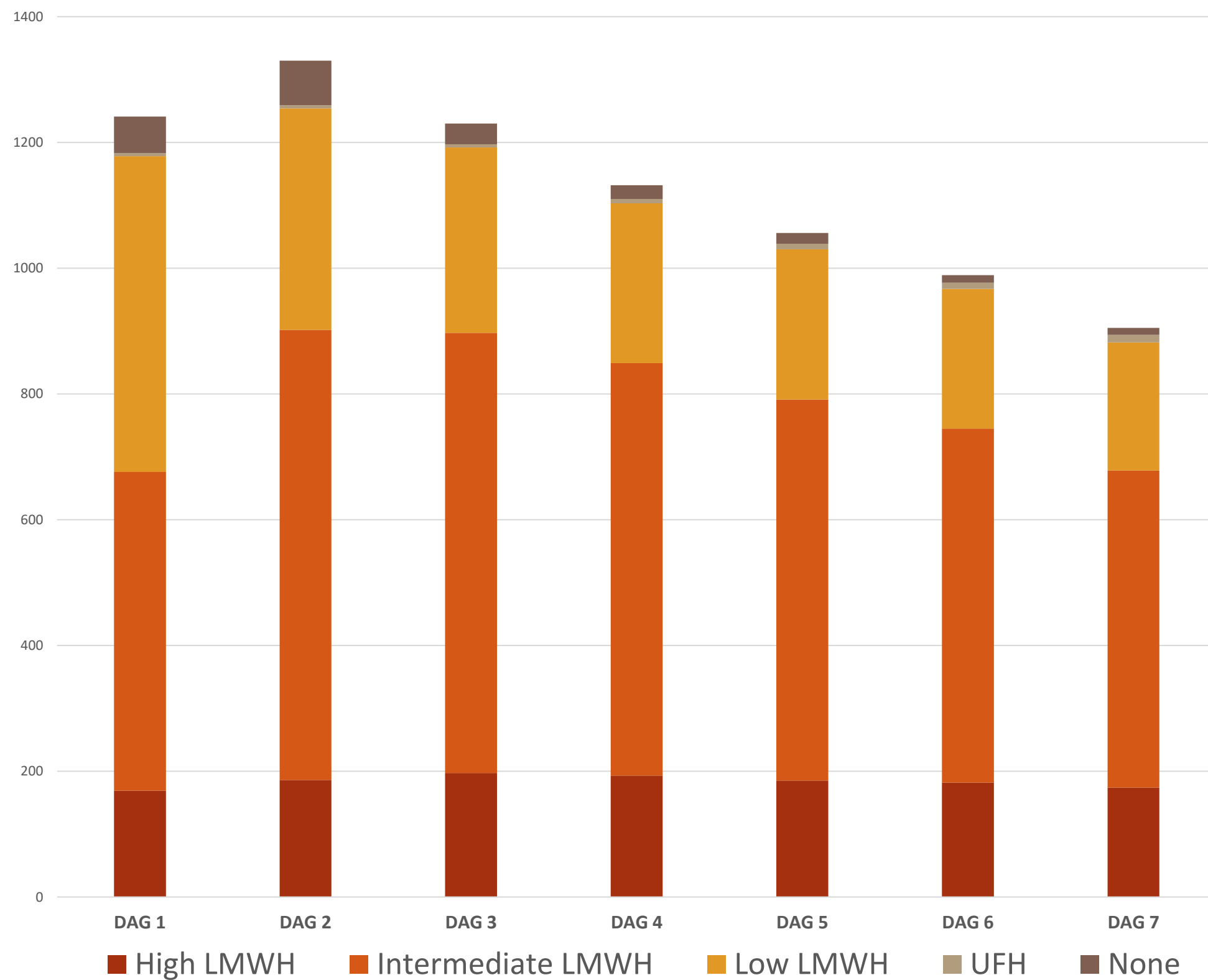
**Table 1. Baseline and clinical characteristics of the 1369 patients in the Danish covid-thrombosis sub-study**

<b>Age</b>	68	-	IQR 58 – 75
<b>Female</b>	443	-	32%
<b>Body Mass Index (BMI)</b>	28	-	IQR 25 – 33
<b>Days from hospital admission to ICU admission</b>	1	-	IQR 0-4
<b>Co-morbidities:</b>			
- <b>Use of antithrombotic medications prior to ICU admission</b>	410	-	31%
- <b>Haematological malignancy</b>	74	-	5.4%
- <b>Solid tumor cancer</b>	46	-	3.4%
<b>Organ support during ICU admission:</b>			
- <b>Mechanical ventilation</b>	873	-	64%
- <b>Renal replacement therapy</b>	223	-	16%

Data are in median (IQR) or no. (%). Missing variables: BMI (141(10.1%)), otherwise no missing values

## Heparin during the first 7 days

*Preliminary results 2*  
-  
*USE OF HEPARIN*





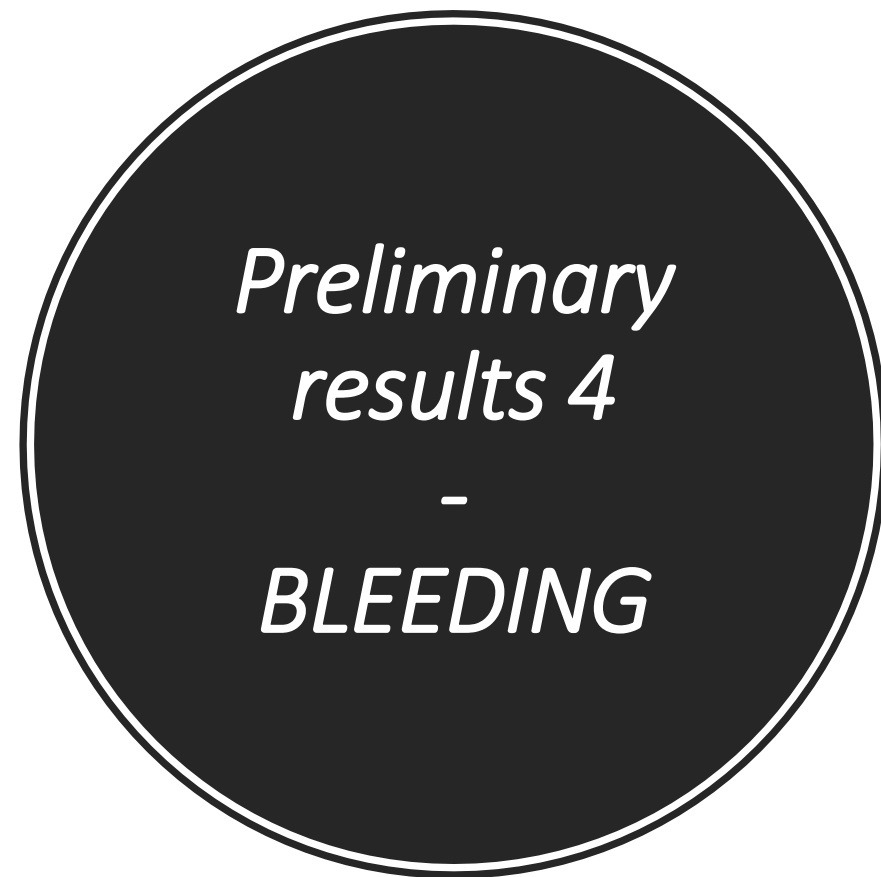


## ***Thrombotic events in the ICU***

Total number registered events: 158/1369 (11.5%)

- DVT 16 (1.17%)
  - Pulmonary embolism: 119 (8.7%)
  - AMI: 3 (0.2%)
  - Other thrombotic events: 13 (1%)
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- *Only thromboembolic events which were confirmed radiographically or ultrasonographically were registered*
  - *Only thromboembolic events during the ICU admission were registered. However, some patients had thrombosis before entering the ICU.*





## *Bleedings in the ICU*

Total number of patients with bleeding in the ICU:  
**309/1369 (22.6%)**

- Total number of registered bleeding events: 876
- Total number of patients with **major** bleeding\* in the ICU: 81 (5.9%)
- Total number of registered **major** bleeding events:\* 133

\*Major bleeding event defined as requiring transfusion of at least 2 units of Red Blood Cells (RBC) and/or intracranial bleeding and/or bleeding resulting in need for major therapeutic intervention

- *It was only possible to register 10 bleeding events per patient, however some patients bled more.*

## Conclusion

We found an overall high rate of thrombosis and bleeding in our patients; 12 % experienced a thrombotic event and 24% of the patients bled while in the ICU.

Further questions – please contact

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