Statistical analysis plan.

Study name: The use of Focused Lung Ultrasound in Patients Suspected of COVID-19.

8.April 2020

Descriptive data:			
Demographic	Age	Mean, sd	
	Sex	% kvinder	
	Weight	Mean, sd.	
	Height	Mean, sd.	
	Site	groupe	
Baseline data	BT sys	Mean, sd.	
	BT dia	Mean, sd.	
	SAT	Mean, sd.	
	Puls	Mean, sd.	
	Respiratory Rate	Mean, sd.	
	Oxygen, l/min	Mean, sd.	
	ferritin	Mean, sd.	
	Hbg	Mean, sd.	
	Leukocytter	Mean, sd.	
	Lymfocytter	Mean, sd.	
	Mono	Mean, sd.	
	Neutrofile	Mean, sd.	
	Egfr	Mean, sd.	
	Karbamid	Mean, sd.	
	Kreatinin	Mean, sd.	
	Natrum	Mean, sd.	
	Kalium	Mean, sd.	
	Ddimer	Mean, sd.	
	Probnp	Mean, sd.	
	Tnt	Mean, sd.	
	Tni	Mean, sd.	
	glucose hba1c	Mean, sd.	
	ph	Mean, sd.	
	pco2	Mean, sd.	
	po2	Mean, sd.	
	be	Mean, sd.	
	bicarbonat	Mean, sd.	
	lactat	Mean, sd.	
	Rtg af thorax	Grupper	
	CT thorax	Grupper	
	Covid-19 pcr	Yes/No	
Treatment data	Antibiotica	Yes/No	
	Antiviral	Yes/No	

	Biological	Yes/No	
	Anti thormbotic	Yes/No	
	Death during admission	Yes/No	
	Length of admission	kontinuert	
	Death at 30 days	Yes/No	
	Cause of death	Covid/ikke-covid	
	Treatment restrictions, ITA	Yes/No	
	Treatment restrictions, ventilator	Yes/No	
FLUS data.	L1	0-3	
	L2	0-3	
	L3	0-3	
	L4	0-3	
	L5	0-3	
	L6	0-3	
	L7	0-3	
	R1	0-3	
	R2	0-3	
	R3	0-3	
	R4	0-3	
	R5	0-3	
	R6	0-3	
	R7	0-3	
	Flus mean	0-3, sd	
Inter- intraobservatør agreement			
Limits of agreement. Bland altmann.	20% Flus film re-scored by 1.observatør	Weigthed kappa	kap s1 s2, tab wgt(w)
	20% Flus film scored by 2.observatør	Weigthed kappa	kap o1 o2, tab wgt(w)
Mean Flus score relatered tol event:			
Covid death	Parametric destribution qq plot and histogram		
	Norm +	t-test.	ttest flusmed, by(covdod)
	Nomr -	Wilcoxon	ranksum flusmed, by(covdod) by covdod, sort : summarize flusmed, d graph bar (Mean) flusmed, over(covdod)
ITA admission	Parametric destribution qq plot and histogram		
	Norm +	t-test.	ttest flusmed, by(ita_in)
	Nomr -	Wilcoxon	by ita_in, sort : summarize flusmed, d ranksum flusmed, by(ita_in)

			graph bar (Mean) flusmed, over(ita_in)
Ventilator treatment	Parametric destribution qq plot and histogram		
	Norm +	t-test.	ttest flusmed, by(respirator_beh)
	Nomr -	Wilcoxon	by respirator_beh, sort : summarize flusmed, d ranksum flusmed, by(respirator_beh) graph bar (Mean) flusmed, over(respirator_beh)
Prædiction of event			
Covid death	Univariat logistical regression	Variable: covdod flusmed	
	Multivariate logistical regression	Variable: covdod, Flusmed, alder, køn, sat, ilt (kategori?)	
ITA admission	Univariat logistiscal regression	Variable: ita_in flusmed	
	Multivariate logistical regression	Variable: ita_in, Flusmed, alder, køn, sat	, if behandlingsloft_ita ==0
Ventilator treatment	Univariat logistical regression	Variable: respirator_beh flusmed	
	Multivariate logistical regression	Variable: respirator_beh Flusmed, alder, køn, sat	, if behandlingsloft_resp ==0

Continuous variables are assessed for parametric distribution with quartile-quartile plots. Medians, interquartile ranges or means and standard deviations and ranges are reported according to parametric distribution. Students' t-test or Mann-Whitney U test is used as it was considered appropriate to evaluate differences between groups. The statistical significance is set to 5%. All data are handled in Excel (Microsoft) and REDCap (hosted at Aarhus University). All analyses are performed using Stata 14.2 (StataCorp, USA).

Building Prediction Models

Prediction models are based on multivariable logistic regression and preselected variables. The variables are sex, age, relevant comorbidity, oxygen administration and the mean-FLUS score. The selection of these variables is based on published data and clinical experience available to the study group during the study design stage. Explanatory variables are examined to decide cut-points, scales or the need for transformation. Variables are limited and prioritized to avoid overfitting or underfitting, respecting the study population size. Every included variable require at least 15 events.

The dependent variable is the primary outcome of interest: the COVID-19-related need for mechanical ventilation in the main analysis. Secondary outcomes are analyzed using the same logistic regression model, except for the outcome on high-flow oxygen treatment. The explanatory variable on oxygen administration is considered closely related to the outcome and is thus excluded from this analysis.