

Title: Biomarkers and in-patient outcomes of COVID-19 hospitalizations- Systematic review and Meta-analysis

Supplemental File: Cut-off values for the biomarkers considered by the studies

Biomarker	Cut-off values*
Lymphopenia ^a	<1500/ μ L
Thrombocytopenia ^a	<150,000/ μ L
Alanine aminotransferase (ALT)	>40 U/L
Aspartate aminotransferase (AST)	>40 U/L
C-reactive Protein (CRP) ^b	>10 mg/L
Procalcitonin ^c	\geq 0.5 ng/mL ^d
Lactate Dehydrogenase (LDH) ^e	>250 U/L
Creatinine kinase (CK) ^f	>200 U/L
Creatinine ^g	\geq 1.5 mg/dL
D-dimer ^h	\geq 0.5 mg/L
<p>Reference values are taken from ^aGuan et al., ^bDu et al. ^a<1100/μL in Du et al., Xu et al., Khamis et al., Wan et al., Wang et al., Jun 2020, Deng et al., Zhang et al., Feb 2020, Zhang et al., Jun 2020; <800/μL in Jang et al., Zhou et al., Zheng et al., Mar 2020, Zhang et al., Jul 2020. ^b<125,000/μL in Xu et al., Zhang et al., Jul 2020, Khamis et al., Wan et al.; <100,000/μL in Jiang et al., Zhou et al., and Zheng et al., Mar 2020 ^c>3 mg/L in Zhang et al. Feb 2020; >5 mg/L in Jang et al.; >6 mg/L in Khamis et al.; \geq8 mg/L- Zheng et al., Mar 2020, Shahriarirad et al.; >15 mg/L Mikami et al. ^d>0.05ng/mL in Zhang et al., Jul 2020; \geq0.1 ng/mL in Huang et. al., May 2020, Zhang et al. Feb 2020. ^e>225 U/L in Zheng et al., Mar 2020; >440 U/L in Mikami et al.; >550 U/L in Jang et al. ^f>145 U/L in Jang et al.; >185 U/L in Jiang et al.; >310 U/L in Wang et al., Jun 2020. ^g>0.9mg/dL in Jang et al.; >0.96 mg/dL in Li et al.; >1.1 mg/dL in Wan et al.; \geq1.18mg/dL in Deng et al.; >1.2 mg/dL in Shahriarirad et al; >1.26 mg/dL in Wang et al., Jun 2020; \geq1.3 mg/dL in Wei et al. ^h>0.243mg/L in Zhang et al., Feb 2020; >1 mg/L in Li et al., Wang et al. Jun 2020; >2 mg/L in Mikami et al.</p>	

Supplemental file: Risk of bias of included studies

Study	Newcastle–Ottawa Scale			Overall risk of bias
	Selection	Comparability	Exposure	
Huang et al., Jan 2020	***	*	**	Low
Guan et al., Feb 2020	****	*	*	Low
Wang et al., Feb 2020	**	*	*	Moderate
Zhang et al., Feb 2020	***	*	**	Low
Wang et al., Mar 2020	***	*	**	Low
Zhou et al., Mar 2020	**	*	*	Moderate
Chen et al., Mar 2020	***	*	**	Low
Zheng et al., Mar 2020	****	*	*	Low
Colaneri et al., Apr 2020	**	*	*	Moderate
Zhao et al., Apr 2020	***	*	**	Low
Paranjpe et al., Apr 2020	***	*	**	Low
Goyal et al., Apr 2020	**	*	*	Moderate
Wan et al., Apr 2020	**	*	*	Moderate
Zhang et al., Apr 2020	***	*	**	Low
Zheng et al., May 2020	****	*	*	Low
Hong et al., May 2020	***	*	**	Low
Huang et al., May 2020	****	*	**	Low
Wang et al., May 2020	***	*	***	Low
Du et al., May 2020	****	*	**	Low
Deng et al., Jun 2020	**	*	*	Moderate
Jang et al., Jun 2020	****	*	**	Low
Khamis et al., Jun 2020	**	*	*	Moderate

Mikami et al., Jun 2020	**	*	*	Moderate
Shahriarirad et al., Jun 2020	****	*	**	Low
Wang et al., Jun 2020	****	*	**	Low
Zhang et al., Jun 2020	**	*	*	Moderate
Jiang et al., Jul 2020	****	*	**	Low
Li et al., Jul 2020	****	*	**	Low
Wei et al., Jul 2020	****	*	**	Low
Xu et al., Jul 2020	**	*	*	Moderate
Zhang et al., Jul 2020	**	*	*	Moderate
Ferguson et al. Aug 2020	**	*	*	Moderate

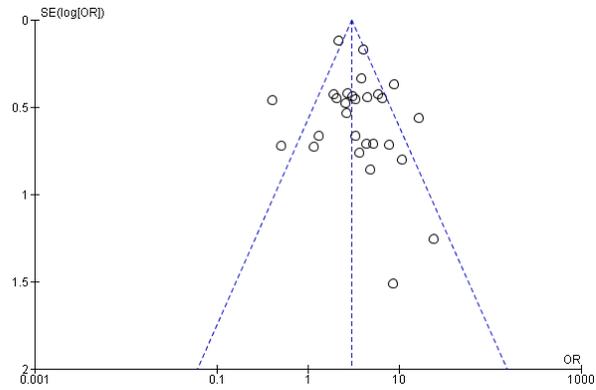
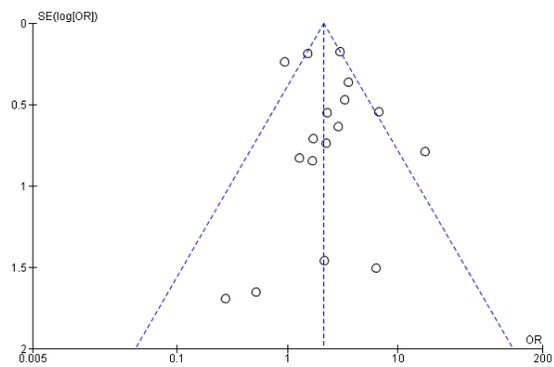
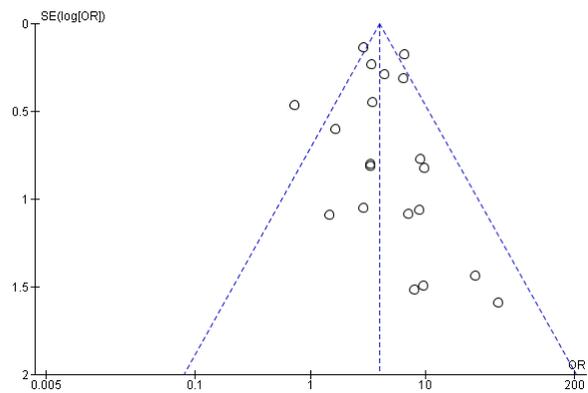
Supplemental file: Funnel plots**Figure 4A: Lymphopenia****Figure 4B: Thrombocytopenia****Figure 4C: Elevated C-reactive protein (CRP)**

Figure 4D: Elevated Procalcitonin

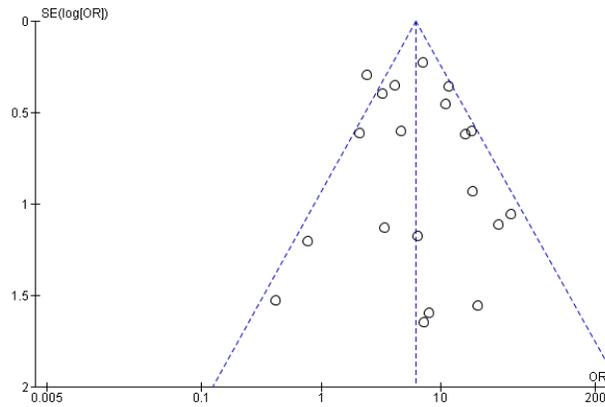


Figure 4E: Elevated Creatinine Kinase

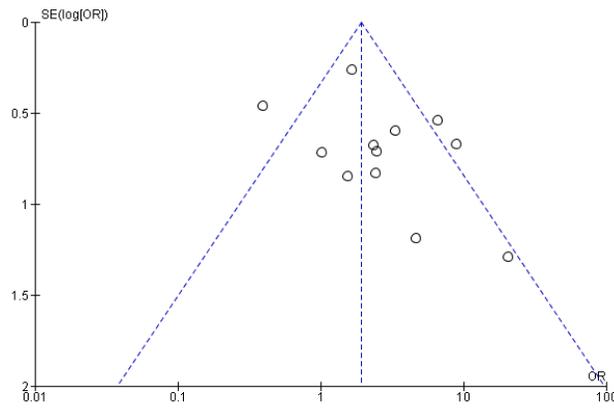


Figure 4F: Elevated Aspartate aminotransferase (AST)

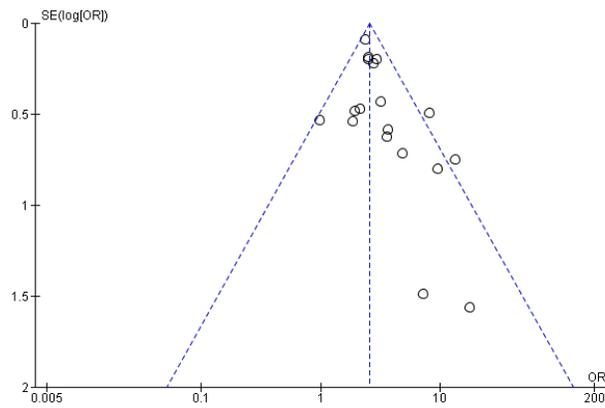


Figure 4G: Elevated Alanine aminotransferase (ALT)

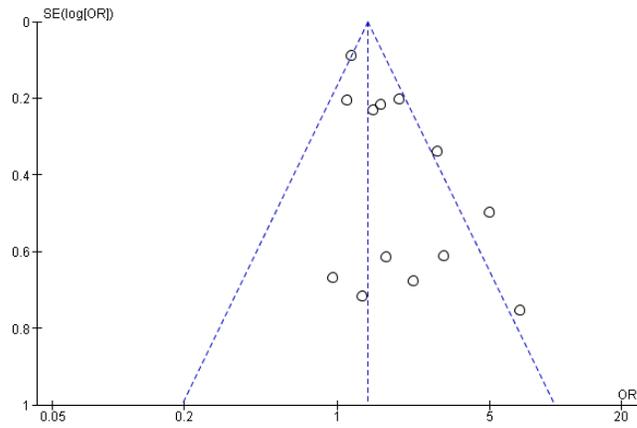


Figure 4H: Elevated Creatinine

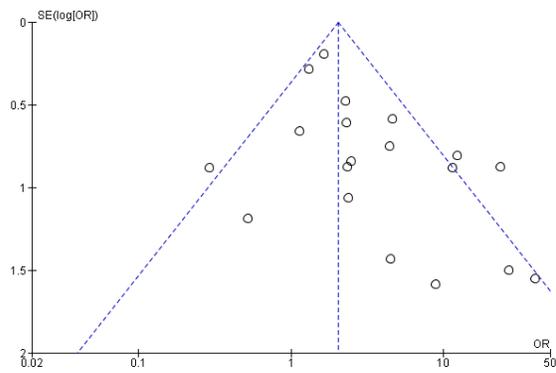


Figure 4I: Elevated D-Dimer

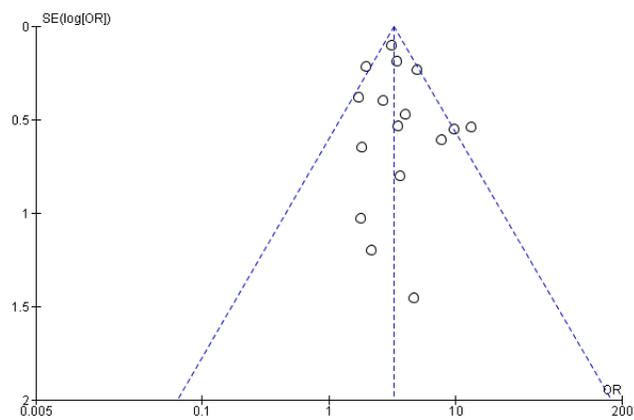


Figure 4J: Elevated Lactate dehydrogenase (LDH)