

## **Supplementary material**

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*Ruetzler K, Szarpak Ł, Ładny JR, et al. D-dimer levels predict COVID-19 severity and mortality. Kardiol Pol. 2021; 79: 217-218. doi:10.33963/KP.15830*

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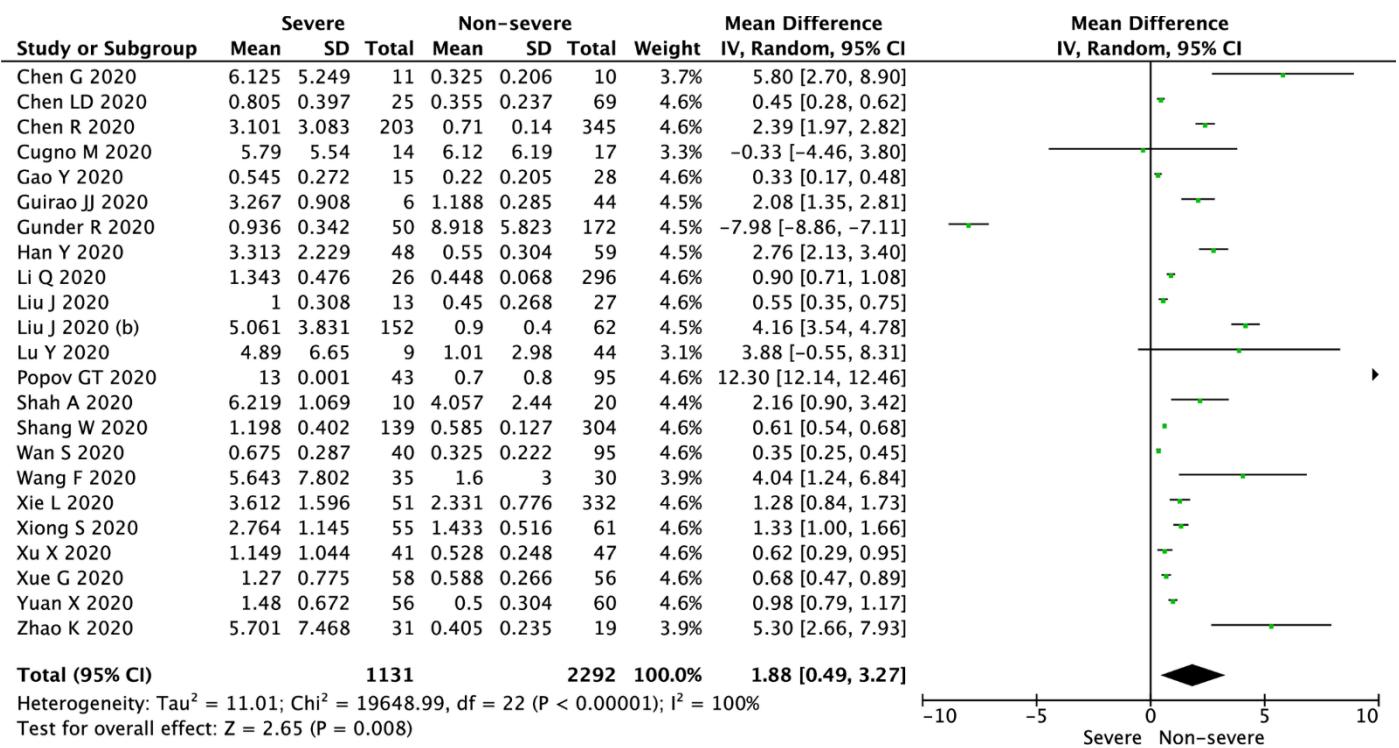
## **D-dimer levels predict COVID-19 severity and mortality**

### **SUPPLEMENTARY DIGITAL CONTENT**

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## D-dimer levels in severe vs. non-severe comparison



**Supplementary Figure 1.** Forest plot of D-dimer levels in severe vs. non-severe group. The center of each square represents the weighted mean difference for individual trials, and the corresponding horizontal line stands for a 95% confidence interval. The diamonds represent pooled results.

**Supplementary Table 1.** Studies included in comparison severe vs. non-severe

Study	Country	Study design	Severe group			Non-severe group		
			No.	Age	Sex, male	No.	Age	Sex, male
Chen G. et al. 2020 <sup>(1)</sup>	China	Retrospective study	11	$61.1 \pm 2.8$	10 (90.9%)	10	$50.7 \pm 3.8$	7 (70.0%)
Chen LD. Et al. 2020 <sup>(2)</sup>	China	Retrospective study	25	$60.7 \pm 15.2$	15 (60.0%)	69	$51.4 \pm 15.8$	34 (49.3%)
Chen R. et al. 2020 <sup>(3)</sup>	China	Retrospective study	203	$61 \pm 13.7$	131 (64.5%)	345	$67.3 \pm 12.1$	182 (52.8%)
Cugno M. et al. 2020 <sup>(4)</sup>	Italy	Retrospective study	14	NS	NS	17	NS	NS
Gao Y. et al. 2020 <sup>(5)</sup>	China	Retrospective study	15	$45.2 \pm 7.7$	9 (60.0%)	28	$42.9 \pm 14.0$	17 (60.7%)
Guirao JJ. et al. 2020 <sup>(6)</sup>	Spain	Cohort study	6	$64.5 \pm 2.3$	5 (83.3%)	44	$63.4 \pm 4.5$	36 (81.8%)
Gunder R. et al. 2020 <sup>(7)</sup>	Turkey	Retrospective study	50	$62.2 \pm 11.9$	33 (66.0%)	172	$47.7 \pm 16.1$	99 (57.6%)
Han Y. et al. 2020 <sup>(8)</sup>	China	Retrospective study	48	$66.5 \pm 5.8$	31 (64.4%)	59	$58.5 \pm 7.5$	29 (49.2%)
Li Q. et al. 2020 <sup>(9)</sup>	China	Retrospective study	26	$67.3 \pm 3.8$	20 (76.9%)	296	$49.3 \pm 4.5$	147 (49.8%)
Liu J. et al. 2020 (a) <sup>(10)</sup>	China	Retrospective study	13	$59.7 \pm 10.1$	7 (53.8%)	27	$43.2 \pm 12.3$	8 (29.6%)
Liu J. et al. 2020 (b) <sup>(11)</sup>	China	Retrospective study	152	$70.1 \pm 4.7$	88 (57.9%)	62	$62.2 \pm 6.1$	31 (50.0%)
Lu Y. et al. 2020 <sup>(12)</sup>	China	Retrospective study	9	$68.8 \pm 4.3$	8 (88.9%)	44	$53.3 \pm 6.9$	26 (59.1%)

Popov GT. et al. 2020 <sup>(13)</sup>	Bulgaria	Retrospective study	43	$63.0 \pm 12.8$	33 (76.8%)	95	$48.3 \pm 15.7$	54 (56.9%)
Shah A. et al. 2020 <sup>(14)</sup>	UK	Retrospective study	10	$60.5 \pm 6.4$	5 (50.0%)	20	$57.5 \pm 3.5$	12 (60.0%)
Shang W. et al. 2020 <sup>(15)</sup>	China	Retrospective study	139	$63.8 \pm 3.2$	57 (41.0%)	304	$57.5 \pm 3.3$	166 (54.6%)
Wan S. et al. 2020 <sup>(16)</sup>	China	Case series	40	$59.3 \pm 6.1$	21 (52.5%)	95	$42.5 \pm 2.7$	52 (54.7%)
Wang F. et al. 2020 <sup>(17)</sup>	China	Retrospective study	35	$61.3 \pm 12.2$	NS	30	$52.2 \pm 12.4$	NS
Xie L. et al. 2020 <sup>(18)</sup>	China	Retrospective study	38	$59.8 \pm 7.5$	14 (36.8%)	24	$68.6 \pm 5.6$	13 (54.2%)
Xiong S. et al. 2020 <sup>(19)</sup>	China	Retrospective study	55	$64.3 \pm 6.6$	38 (69.1%)	61	$66 \pm 6.9$	42 (68.9%)
Xu X. et al. 2020 <sup>(20)</sup>	China	Retrospective study	41	$63.2 \pm 14.5$	15 (31.9%)	47	$52.5 \pm 14.6$	21 (44.7%)
Xue G. et al. 2020 <sup>(21)</sup>	China	Retrospective study	58	$62.7 \pm 6.7$	34 (58.6%)	56	$60.5 \pm 4.8$	30 (53.6%)
Yuan X. et al. 2020 <sup>(22)</sup>	China	Retrospective study	56	$57.8 \pm 6.6$	26 (46.4%)	61	$63.3 \pm 4.3$	30 (49.2%)
Zhao K. et al. 2020 <sup>(23)</sup>	China	Retrospective study	31	$59.3 \pm 7.3$	23 (74.2%)	19	$49.8 \pm 8.4$	7 (36.8%)

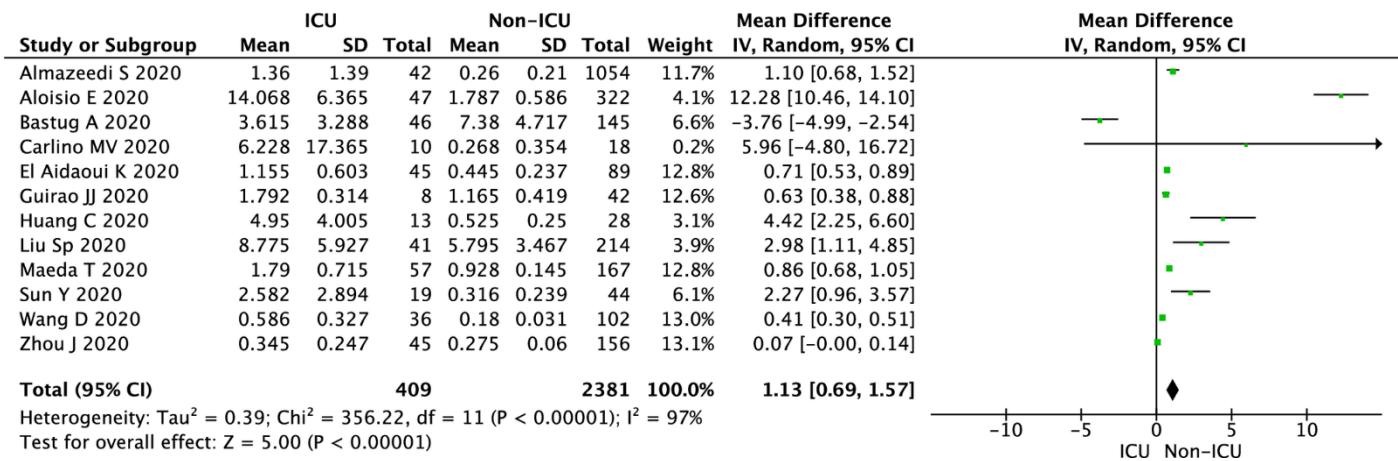
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## References:

- Chen G, Wu D, Guo W, et al. Clinical and immunological features of severe and moderate coronavirus disease 2019. *J Clin Invest.* 2020; 130(5):2620-2629. doi: 10.1172/JCI137244.
- Chen LD, Zhang ZY, Wei XJ, et al. Association between cytokine profiles and lung injury in COVID-19 pneumonia. *Respir Res.* 2020; 21(1):201. doi: 10.1186/s12931-020-01465-2.
- Chen R, Sang L, Jiang M, et al. Longitudinal hematologic and immunologic variations associated with the progression of COVID-19 patients in China. *J Allergy Clin Immunol.* 2020; 146(1):89-100. doi: 10.1016/j.jaci.2020.05.003.
- Cugno M, Meroni PL, Gualtierotti R, et al. Complement activation in patients with COVID-19: A novel therapeutic target. *J Allergy Clin Immunol.* 2020 Jul;146(1):215-217. doi: 10.1016/j.jaci.2020.05.006.
- Gao Y, Li T, Han M, et al. Diagnostic utility of clinical laboratory data determinations for patients with the severe COVID-19. *J Med Virol.* 2020 Jul;92(7):791-796. doi: 10.1002/jmv.25770.
- Guirao JJ, Cabrera CM, Jiménez N, et al. High serum IL-6 values increase the risk of mortality and the severity of pneumonia in patients diagnosed with COVID-19. *Mol Immunol.* 2020 Oct 14;128:64-68. doi: 10.1016/j.molimm.2020.10.006.
- Güner R, Hasanoglu I, Kayaaslan B, et al. COVID-19 experience of the major pandemic response center in the capital: Results of the pandemic's first month in Turkey. *Turk J Med Sci.* 2020 Jul 19. doi: 10.3906/sag-2006-164.
- Han Y, Zhang H, Mu S, et al. Lactate dehydrogenase, an independent risk factor of severe COVID-19 patients: a retrospective and observational study. *Aging (Albany NY).* 2020 Jun 24;12(12):11245-11258. doi: 10.18632/aging.103372.
- Li Q, Zhang J, Ling Y, et al. A simple algorithm helps early identification of SARS-CoV-2 infection patients with severe progression tendency. *Infection.* 2020 Aug;48(4):577-584. doi: 10.1007/s15010-020-01446-z.
- Liu J, Li S, Liu J, et al. Longitudinal characteristics of lymphocyte responses and cytokine profiles in the peripheral blood of SARS-CoV-2 infected patients. *EBioMedicine.* 2020; 55:102763. doi: 10.1016/j.ebiom.2020.102763.
- Liu J, Liu Z, Jiang W, et al. Clinical predictors of COVID-19 disease progression and death: Analysis of 214 hospitalised patients from Wuhan, China. *Clin Respir J.* 2020 Oct 22. doi: 10.1111/cnj.13296.
- Lu Y, Sun K, Guo S, et al. Early Warning Indicators of Severe COVID-19: A Single-Center Study of Cases From Shanghai, China. *Front Med (Lausanne).* 2020 Jul 17;7:432. doi: 10.3389/fmed.2020.00432.
- Popov GT, Baymakova M, Vaseva V, Kundurzhiev T, Mutafchiyski V. Clinical Characteristics of Hospitalized Patients with COVID-19 in Sofia, Bulgaria. *Vector Borne Zoonotic Dis.* 2020 Oct 14. doi: 10.1089/vbz.2020.2679.
- Shah A, Frost JN, Aaron L, et al. Systemic hypoferremia and severity of hypoxemic respiratory failure in COVID-19. *Crit Care.* 2020; 24(1):320. doi: 10.1186/s13054-020-03051-w.
- Shang W, Dong J, Ren Y, et al. The value of clinical parameters in predicting the severity of COVID-19. *J Med Virol.* 2020 May 21;10.1002/jmv.26031. doi: 10.1002/jmv.26031.
- Wan S, Xiang Y, Fang W, et al. Clinical features and treatment of COVID-19 patients in northeast Chongqing. *J Med Virol.* 2020 Jul;92(7):797-806. doi: 10.1002/jmv.25783.

17. Wang F, Hou H, Luo Y, et al. The laboratory tests and host immunity of COVID-19 patients with different severity of illness. *JCI Insight*. 2020 May 21;5(10):e137799. doi: 10.1172/jci.insight.137799.
18. Zie Y, You Q, Wu C, et al. Impact of Cardiovascular Disease on Clinical Characteristics and Outcomes of Coronavirus Disease 2019 (COVID-19). *Circ J*. 2020 Jul 22;84(8):1277-1283. doi: 10.1253/circj.CJ-20-0348.
19. Xiong S, Liu L, Lin F, et al. Clinical characteristics of 116 hospitalized patients with COVID-19 in Wuhan, China: a single-centered, retrospective, observational study. *BMC Infect Dis*. 2020 Oct 22;20(1):787. doi: 10.1186/s12879-020-05452-2.
20. Xu Y, Li Y, Zeng Q, et al. Clinical Characteristics of SARS-CoV-2 Pneumonia Compared to Controls in Chinese Han Population. *medRxiv* 2020. doi: 10.1101/2020.03.08.20031658v1.
21. Xue G, Gan X, Wu Z, et al. Novel serological biomarkers for inflammation in predicting disease severity in patients with COVID-19. *Int Immunopharmacol*. 2020 Oct 3;89(Pt A):107065. doi: 10.1016/j.intimp.2020.107065.
22. Yuan X, Huang W, Ye B, et al. Changes of hematological and immunological parameters in COVID-19 patients. *Int J Hematol*. 2020 Oct;112(4):553-559. doi: 10.1007/s12185-020-02930-w.
23. Zhao K, Huang J, Dai D, et al. Serum Iron Level as a Potential Predictor of Coronavirus Disease 2019 Severity and Mortality: A Retrospective Study. *Open Forum Infect Dis*. 2020 Jun 21;7(7):ofaa250. doi: 10.1093/ofid/ofaa250.

## D-dimer levels in ICU vs. non-ICU comparison



**Supplementary Figure 2.** Forest plot of D-dimer levels in ICU vs. non-ICU group. The center of each square represents the weighted mean difference for individual trials, and the corresponding horizontal line stands for a 95% confidence interval. The diamonds represent pooled results.

**Supplementary Table 2.** Studies included in ICU vs. non-ICU comparison

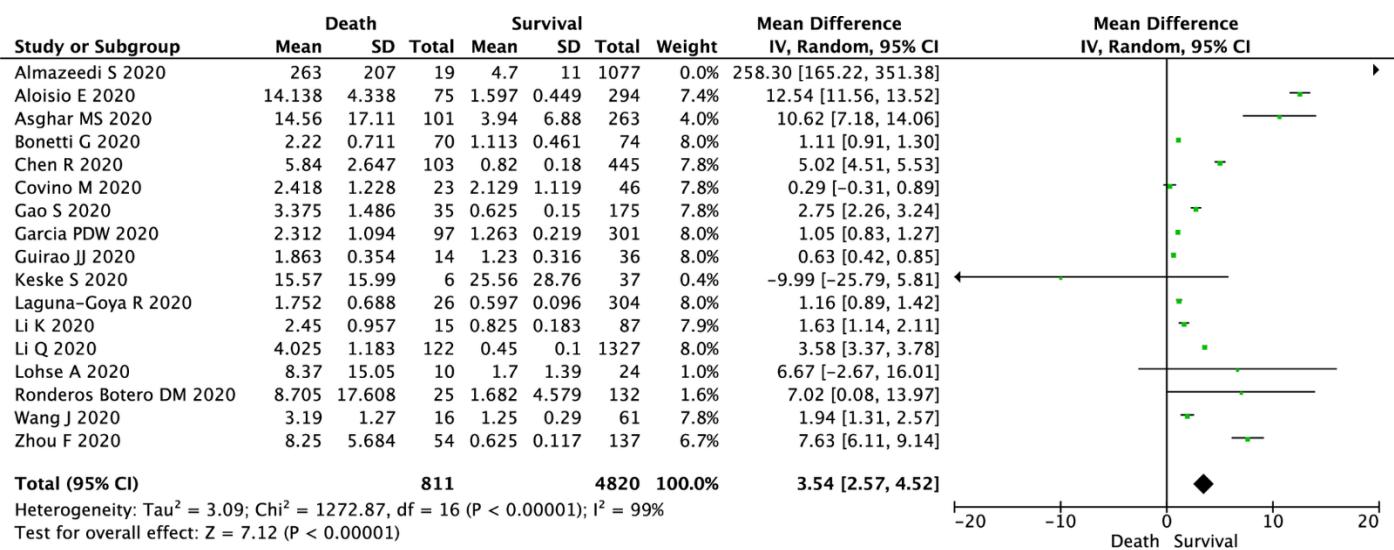
Study	Country	Study design	ICU group			Non-ICU group		
			No.	Age	Sex, male	No.	Age	Sex, male
Almazeedi S. et al. 2020 <sup>(1)</sup>	Kuwait	Retrospective study	42	54.8 ± 11	32 (76.2%)	1054	37.1 ± 16	856 (81.2%)
Aloisio E. et al. 2020 <sup>(2)</sup>	Italy	Retrospective study	47	63.8 ± 3.7	41 (87.2%)	380	67 ± 4.5	252 (66.3%)
Bastug A. et al. 2020 <sup>(3)</sup>	Turkey	Retrospective study	46	65.5 ± 18.5	26 (56.5%)	145	46.8 ± 10.8	81 (55.9%)
Carlino MV. et al. 2020 <sup>(4)</sup>	Italy	Observational study	10	73 ± 7.4	8 (80.0%)	18	47 ± 12.6	10 (55.6%)
El Aidaoui K. et al. 2020 <sup>(5)</sup>	Marroco	Retrospective observational study	45	64.8 ± 4.9	35 (77.9%)	89	42.3 ± 7.8	38 (42.7%)
Guirao JJ. et al. 2020 <sup>(6)</sup>	Spain	Cohort study	8	62.1 ± 2.8	7 (87.5%)	42	63.8 ± 1.8	34 (80.9%)
Huang C. et al. 2020 <sup>(7)</sup>	China	Retrospective study	21	61.4 ± 16.4	12 (57.1%)	43	41.2 ± 15.7	25 (58.1%)
Liu SP et al. 2020 <sup>(8)</sup>	China	Retrospective study	41	63 ± 15	28 (71.8%)	214	61 ± 11.3	108 (50.9%)
Maeda T. et al. 2020 <sup>(9)</sup>	USA	Retrospective study	57	67 ± 5.2	31 (54.4%)	167	64.5 ± 4.3	96 (57.5%)
Sun Y. et al. 2020 <sup>(10)</sup>	China	Retrospective study	19	59.4 ± 13.7	NS	44	42.3 ± 19.7	NS
Wang D. et al. 2020 <sup>(11)</sup>	China	Retrospective case series	36	66.8 ± 6.1	22 (61.1%)	102	50.3 ± 4.2	53 (52.0%)
Zhou J et al. 2020 <sup>(12)</sup>	China	Retrospective study	45	56.5 ± 5.8	27 (60.0%)	156	41 ± 3.7	75 (48.1%)

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**References:**

1. Almazeedi S, Al-Youha S, Jamal MH, et al. Characteristics, risk factors and outcomes among the first consecutive 1096 patients diagnosed with COVID-19 in Kuwait. *EClinicalMedicine*. 2020 Jul 4;24:100448. doi: 10.1016/j.eclinm.2020.100448.
2. Aloisio A, Chibireva M, Serafini L, et al. A comprehensive appraisal of laboratory biochemistry tests as major predictors of COVID-19 severity. *Arch Pathol Lab Med*. 2020 Jul 10. doi: 10.5858/arpa.2020-0389-SA.
3. Bastug A, Bodur H, Erdogan S, et al. Clinical and laboratory features of COVID-19: Predictors of severe prognosis. *Int Immunopharmacol*. 2020 Nov;88:106950. doi: 10.1016/j.intimp.2020.106950.
4. Carlino MV, Valenti N, Cesaro F, et al. Predictors of Intensive Care Unit admission in patients with coronavirus disease 2019 (COVID-19). *Monaldi Arch Chest Dis*. 2020 Jul 15;90(3). doi: 10.4081/monaldi.2020.1410.
5. El Aidaoui K, Haoudar A, Khalis M, et al. Predictors of Severity in Covid-19 Patients in Casablanca, Morocco. *Cureus*. 2020; 12(9):e10716. doi: 10.7759/cureus.10716.
6. Guirao JJ, Cabrera CM, Jiménez N, et al. High serum IL-6 values increase the risk of mortality and the severity of pneumonia in patients diagnosed with COVID-19. *Mol Immunol*. 2020 Oct 14;128:64-68. doi: 10.1016/j.molimm.2020.10.006.
7. Huang H, Song B, Xu Z, et al. Predictors of coronavirus disease 2019 severity: A retrospective study of 64 cases. *Jpn J Infect Dis*. 2020 Aug 1. doi: 10.7883/yoken.JJID.2020.298.
8. Liu SP, Zhang Q, Wang W, et al. Hyperglycemia is a strong predictor of poor prognosis in COVID-19. *Diabetes Res Clin Pract*. 2020; 167:108338. doi: 10.1016/j.diabres.2020.108338.
9. Maeda T, Obata R, Do DR, Kuno T. The association of interleukin-6 value, interleukin inhibitors, and outcomes of patients with COVID-19 in New York City. *J Med Virol*. 2020 Jul 28. doi: 10.1002/jmv.26365.
10. Sun Y, Dong Y, Wang L, et al. Characteristics and prognostic factors of disease severity in patients with COVID-19: The Beijing experience. *J Autoimmun*. 2020 Aug;112:102473. doi: 10.1016/j.jaut.2020.102473.
11. Wang D, Hu B, Hu C, et al. Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coronavirus-Infected Pneumonia in Wuhan, China. *JAMA*. 2020 Mar 17;323(11):1061-1069. doi: 10.1001/jama.2020.1585.
12. Zhou J, Sun J, Cao Z, et al. Epidemiological and clinical features of 201 COVID-19 patients in Changsha city, Hunan, China. *Medicine (Baltimore)*. 2020 Aug 21;99(34):e21824. doi: 10.1097/MD.00000000000021824.

## D-dimer levels in death vs. survival groups



**Supplementary Figure 3.** Forest plot of D-dimer levels in death vs. survival group. The center of each square represents the weighted mean difference for individual trials, and the corresponding horizontal line stands for a 95% confidence interval. The diamonds represent pooled results.

**Supplementary Table 3.** Studies included in death vs. survival comparison

Study	Country	Study design	Death group			Survival group		
			No.	Age	Sex, male	No.	Age	Sex, male
Almazeedi S. et al. 2020 <sup>(1)</sup>	Kuwait	Retrospective study	19	55.0 ± 10.1	16 (84.2%)	1077	38.7 ± 15.1	872 (81.0%)
Aloisio E. et al. 2020 <sup>(2)</sup>	Italy	Retrospective study	89	73.3 ± 2.2	70 (78.7%)	338	58.3 ± 3.5	223 (65.9%)
Asghar MS. et al. 2020 <sup>(3)</sup>	Pakistan	Retrospective observational multicenter study	101	61.0 ± 11.6	66 (65.3%)	263	49.3 ± 16.1	66 (25.1%)
Bonetti G. et al. 2020 <sup>(4)</sup>	Italy	Cohort study	70	76.1 ± 5.7	45 (64.3%)	74	62.5 ± 3.3	51 (68.9%)
Chen R. et al. 2020 <sup>(5)</sup>	China	Retrospective study	103	66.9 ± 12.1	69 (67.0%)	445	53.5 ± 13.9	244 (54.8%)
Covino M. et al. 2020 <sup>(6)</sup>	Italy	Single-center retrospective observational study	23	84.8 ± 0.8	12 (52.2%)	46	84.5 ± 2.3	25 (54.3%)
Gao S. et al. 2020 <sup>(7)</sup>	China	Retrospective study	35	75 ± 3.5	22 (62.9%)	175	70.3 ± 1.2	79 (45.1%)
Garcia PDW. et al. 2020 <sup>(8)</sup>	Multi-country	Prospective observational cohort study	97	70.5 ± 2.7	69 (71.1%)	301	62 ± 2.7	231 (76.7%)
Guirao JJ. et al. 2020 <sup>(9)</sup>	Spain	Cohort study	14	69.0 ± 3.1	11 (78.6%)	36	61.4 ± 1.7	30 (83.3%)
Kaske S. et al. 2020 <sup>(10)</sup>	Turkey	Retrospective study	6	74 ± 5.2	6 (100%)	37	60.8 ± 19.3	18 (56.8%)
Laguna-Goya R. et al. 2020 <sup>(11)</sup>	Spain	Prospective cohort study	36	64.8 ± 4.3	25 (69.4%)	465	51.5 ± 2.3	292 (62.9%)

Li K. et al. 2020 <sup>(12)</sup>	China	Retrospective study	15	68.3 ± 5.5	11 (73.3%)	87	55 ± 3.7	48 (55.2%)
Li Q. et al. 2020 <sup>(13)</sup>	China	Retrospective study	26	67.3 ± 3.8	20 (76.9%)	296	49.3 ± 4.5	147 (49.8%)
Lohse A. et al. 2020 <sup>(14)</sup>	France	Retrospective study	10	80 ± 10.1	NS	24	73.1 ± 11.1	NS
Ronderos Botero DM. et al. 2020 <sup>(15)</sup>	USA	Retrospective study	25	62.4 ± 12.7	20 (80.0%)	132	50.6 ± 17.1	89 (67.4%)
Wang J. et al. 2020 <sup>(16)</sup>	China	Retrospective study	NS	NS	NS	NS	NS	NS
Zhou F. et al. 2020 <sup>(17)</sup>	China	Retrospective multicenter cohort study	54	69.3 ± 3.8	38 (70.4%)	137	51.8 ± 2.2	81 (59.1%)

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## References:

- Almazeedi S, Al-Youha S, Jamal MH, et al. Characteristics, risk factors and outcomes among the first consecutive 1096 patients diagnosed with COVID-19 in Kuwait. *EClinicalMedicine*. 2020 Jul 4;24:100448. doi: 10.1016/j.eclimn.2020.100448.
- Aloisio A, Chibireva M, Serafini L, et al. A comprehensive appraisal of laboratory biochemistry tests as major predictors of COVID-19 severity. *Arch Pathol Lab Med*. 2020 Jul 10. doi: 10.5858/arpa.2020-0389-SA.
- Asghar MS, Kazmi SJH, Khan NA, et al. Poor Prognostic Biochemical Markers Predicting Fatalities Caused by COVID-19: A Retrospective Observational Study From a Developing Country. *Cureus*. 2020 Aug 5;12(8):e9575. doi: 10.7759/cureus.9575.
- Bonetti G, Manelli F, Patroni A, et al. Laboratory predictors of death from coronavirus disease 2019 (COVID-19) in the area of Valcamonica, Italy. *Clin Chem Lab Med*. 2020 Jun 25;58(7):1100-1105. doi: 10.1515/cclm-2020-0459.
- Chen R, Sang L, Jiang M, et al. Longitudinal hematologic and immunologic variations associated with the progression of COVID-19 patients in China. *J Allergy Clin Immunol*. 2020 Jul;146(1):89-100. doi: 10.1016/j.jaci.2020.05.003.
- Covino M, De Matteis G, Santoro M, et al. Clinical characteristics and prognostic factors in COVID-19 patients aged ≥80 years. *Geriatr Gerontol Int*. 2020 Jul;20(7):704-708. doi: 10.1111/ggi.13960.
- Gao S, Jiang F, Jin W, ET AL.. Risk factors influencing the prognosis of elderly patients infected with COVID-19: a clinical retrospective study in Wuhan, China. *Aging (Albany NY)*. 2020 Jul 11;12(13):12504-12516. doi: 10.18632/aging.103631.
- Garcia PDW, Fumeaux T, Guerci P, et al. Prognostic factors associated with mortality risk and disease progression in 639 critically ill patients with COVID-19 in Europe: Initial report of the international RISC-19-ICU prospective observational cohort. *EClinicalMedicine*. 2020 Aug;25:100449. doi: 10.1016/j.eclimn.2020.100449.
- Guirao JJ, Cabrera CM, Jiménez N, et al. High serum IL-6 values increase the risk of mortality and the severity of pneumonia in patients diagnosed with COVID-19. *Mol Immunol*. 2020 Oct 14;128:64-68. doi: 10.1016/j.molimm.2020.10.006.
- Keske S, Tekin S, Sait B, et al. Appropriate use of tocilizumab in COVID-19 infection. *Int J Infect Dis*. 2020 Oct;99:338-343. doi: 10.1016/j.ijid.2020.07.036.
- Laguna-Goya R, Utrero-Rico A, Talayero P, et al. IL-6-based mortality risk model for hospitalized patients with COVID-19. *J Allergy Clin Immunol*. 2020; 146(4):799-807.e9. doi: 10.1016/j.jaci.2020.07.009.
- Li K, Chen D, Chen S, et al. Predictors of fatality including radiographic findings in adults with COVID-19. *Respir Res*. 2020 Jun 11;21(1):146. doi: 10.1186/s12931-020-01411-2.
- Li Q, Zhang J, Ling Y, et al. A simple algorithm helps early identification of SARS-CoV-2 infection patients with severe progression tendency. *Infection*. 2020; 48(4):577-584. doi: 10.1007/s15010-020-01446-z.
- Lohse A, Klopstein T, Balblanc JC, et al. Predictive factors of mortality in patients treated with tocilizumab for acute respiratory distress syndrome related to coronavirus disease 2019 (COVID-19). *Microbes Infect*. 2020; 22(9):500-503. doi: 10.1016/j.micinf.2020.06.005.
- Ronderos Botero DM, Omar AMS, Sun HK, et al. COVID-19 in the Healthy Patient Population: Demographic and Clinical Phenotypic Characterization and Predictors of In-Hospital Outcomes. *Arterioscler Thromb Vasc Biol*. 2020; 40(11):2764-2775. doi: 10.1161/ATVBAHA.120.314845.
- Wang J, Yu H, Hua Q, et al. A descriptive study of random forest algorithm for predicting COVID-19 patients outcome. *PeerJ*. 2020 Sep 9;8:e9945. doi: 10.7717/peerj.9945. eCollection 2020.
- Zhou F, Yu T, Du R, et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *Lancet*. 2020; 395(10229):1054-1062. doi: 10.1016/S0140-6736(20)30566-3.