

4. Wang YD, Zhang SP, Wei QZ, et al. COVID-19 complicated with DIC: 2 cases report and literatures review. *Zhonghua Xue Ye Xue Za Zhi*. 2020;41:E001.
5. Yan G, Lee CK, Lam LTM, et al. Covert COVID-19 and false-positive dengue serology in Singapore. *Lancet Infect Dis*. 2020;20:536.
6. Yang M, Hon KL, Li K, Fok TF, Li CK. The effect of SARS coronavirus on blood system: its clinical findings and the pathophysiologic hypothesis. *Zhongguo Shi Yan Xue Ye Xue Za Zhi*. 2003;11(3):217-221.
7. Ogimi C, Waghmare AA, Kuypers JM, et al. Clinical significance of human coronavirus in bronchoalveolar lavage samples from hematopoietic cell transplant recipients and patients with hematologic malignancies. *Clin Infect Dis*. 2017;64(11):1532-1539.

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## Hematologic parameters in patients with COVID-19 infection: a reply

To the Editor:

We thank Dr Sahu and Dr Siddiqui for adding further input on the effect of COVID 19 infection on the blood system, in their correspondence to our letter to the *American Journal of Hematology*.<sup>1</sup>


We did not specifically look at coagulation abnormalities in our correspondence to AJH, but we have noted these have been already addressed by other publications, notably Tang et al<sup>2</sup> and Han et al<sup>3</sup> in their papers on COVID-19 associated coagulopathy.

Our initial impression at the time of our correspondence was that apart from D-dimer, the coagulation parameters such as PT, PTT and fibrinogen in non-ICU patients were less significant in identifying patients needing ICU care. While an elevated D-dimer may also reflect underlying inflammation, immobility or liver disease, patients with COVID-19 infection with markedly raised D-dimers are significantly at risk of mortality,<sup>2</sup> and a raised level also implies increased thrombin generation. We note that anti-coagulation therapy mainly with low molecular weight heparin appears to be associated with a better prognosis in severe COVID-19 infection with markedly elevated D-dimer in a further publication by Tang et al.<sup>4</sup> As such, the International Society for Thrombosis and Haemostasis interim guidance on recognition and management of coagulopathy in COVID-19<sup>5</sup> has the recommendation that prophylactic dose low molecular weight heparin should be considered in all patients, who require hospital

admission for COVID-19 infection in the absence of any contraindications.

As mentioned in our correspondence, our primary focus was on hematologic parameters and we did not cover the scope of any specific data on thrombosis and bleeding. We have however, further published in a separate letter to the *American Journal of Hematology* about the usage of blood and blood products,<sup>6</sup> which may answer partially the concerns of risk of bleeding in our population of patients.

None of our patients we studied with COVID-19 infection had hematologic malignancies at the point of submitting our letter, but we do recognize that these immunosuppressed patients are particularly vulnerable and may likely experience greater morbidity and mortality when having a COVID-19 infection.

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### REFERENCES

1. Fan BE, Chong VCL, Chan SSW, et al. Hematologic parameters in patients with COVID-19 infection. *Am J Hematol*. 2020;95:E131-E134. <https://doi.org/10.1002/ajh.25774>.
2. Tang N, Li D, Wang X, Sun Z. Abnormal coagulation parameters are associated with poor prognosis in patients with novel coronavirus pneumonia. *J Thromb Haemost*. 2020;18:844-847.
3. Han H, Yang L, Liu R, et al. Prominent changes in blood coagulation of patients with SARS-CoV-2 infection. *Clin Chem Lab Med*. 2020;58(7):1116-1120.
4. Tang N, Bai H, Chen X, et al. Anticoagulant treatment is associated with decreased mortality in severe coronavirus disease 2019 patients with coagulopathy. *J Thromb Haemost*. 2020;18:1094-1099. <https://doi.org/10.1111/jth.14817>.
5. Thachil J, Tang N, Gando S, et al. ISTH Interim Guidance on Recognition and Management of Coagulopathy in COVID-19. *J Thromb Haemost*. 2020;18:1023-1026. <https://doi.org/10.1111/jth.14810>.
6. Fan BE, Ong KH, Chan SSW, et al. Blood and blood product use during COVID-19 infection. *Am J Hematol*. 2020;95(7):E158-E160.