

## POINTS &amp; PEARLS

A Quick-Read Review Of Key Points &amp; Clinical Pearls, May 2020

## Novel 2019 Coronavirus SARS-CoV-2 (COVID-19): An Overview for Emergency Clinicians

### Points

- The Center for Systems Science and Engineering at Johns Hopkins University maintains a global COVID-19 tracker at: <https://bit.ly/2VV6RxV>
- COVID-19 is highly virulent with an estimated  $R_0$  value of 2.2, similar to SARS-CoV-1 and pandemic influenza.
- Every patient with a fever has the potential to be infected with COVID-19 even if they have no respiratory symptoms, so they should be treated as suspected cases of COVID-19, in isolation.
- Doffing of personal protective equipment may be the highest-risk procedure. To review a demonstration of proper donning/doffing of PPE, go to: <https://youtu.be/0YUOGvtyNNI>
- Gastrointestinal symptoms have been found in almost half of patients. Patients with GI symptoms are more likely to have worse disease outcome.
- Hypoxia may present before dyspnea.
- It is believed that that SARS-CoV-2 causes a cytokine storm, with release of measurable inflammatory markers in a positive feedback loop that ultimately leads to ARDS and multiorgan failure.
- Transmission is presumed to be primarily through droplets and fomites. The likelihood of fecal-oral transmission is also high. The WHO and CDC both emphasize strict hand hygiene.
- RT-PCR for COVID-19 has a sensitivity of < 80%. CT scan will often show evidence of disease well before PCR positivity.
- CT is likely to show pathology in a bilateral peripheral and multifocal distribution with lower lung predominance.
- There is limited evidence that hydroxychloroquine and azithromycin may be beneficial in treatment. Clinical trials are underway to formally investigate this.
- Though not ideal, in disaster situations when there are limited ventilator resources, a single ventilator can be reconfigured to split airflow to multiple patients.

### Pearls

- Elevations in ALT, LDH, troponin, CK, D-dimer, ferritin, IL-6, PT, creatinine, and procalcitonin have all been associated with increased disease severity. (See Table 5, page 2.)
- Given the rate of nosocomial spread and the risks with transporting unstable hypoxemic patients, routine CT scans are not recommended. Lung ultrasound results are similar to CT for evaluation of pneumonia and/or ARDS.
- Hypoxemic patients are likely to respond well to PEEP. Noninvasive ventilation has a crucial role in delaying or preventing intubation.
- For invasive ventilation, follow the lung protective strategy of ARDSnet, utilizing low tidal volume ventilation.

### Visit our website's COVID-19 resources page:

[www.ebmedicine.net/COVID-19](http://www.ebmedicine.net/COVID-19) for frequent updates, additional resources, calculators, translations, and **-NEW-** Mount Sinai Health Systems' COVID-19 Protocols.

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**Table 5. Laboratory Markers Correlating With Disease Severity and Clinical Management for Patients With COVID-19 Pneumonia**

Laboratory Test	Abnormality Seen in Patients With COVID-19 <sup>27</sup>
Complete blood cell count	Lymphocytopenia, thrombocytopenia <sup>55</sup> associated with severe disease
Complete metabolic panel	Mild to moderate elevations in AST/ALT, creatinine associated with severe disease <sup>27</sup>
Coagulation markers	Mildly elevated prothrombin time associated with severe disease; significant elevation in D-dimer predictor of mortality
Lactate dehydrogenase	Significant elevation associated with severe disease
Creatine phosphokinase	Elevation associated with death; case reports of idiopathic rhabdomyolysis with COVID-19 infection <sup>56</sup>
Procalcitonin	Normal in viral infection alone; elevation suggests bacterial co-infection <sup>54</sup>
Ferritin	Elevated in severe disease <sup>27</sup> biomarker seen in immunopathogenesis (“cytokine storm”), especially in secondary hemophagocytic lymphohistiocytosis <sup>24</sup>
IL-6	Elevation associated with disease severity
BNP/troponin*	Elevated in severe disease without evidence of primary coronary ischemia or heart failure etiology; <sup>57</sup> do not check routinely unless clinical suspicion for either
Influenza/RSV/respiratory viral panel	From ~6% to 22% (40% in pediatrics) co-infection rate <sup>53,54,58</sup>

\*BNP/troponin are frequently elevated in these patients, with unclear mechanism. Per the American College of Cardiology, clinicians are advised to measure troponin and BNP only if suspecting diagnoses of acute myocardial infarction from coronary disease or heart failure, respectively.<sup>57</sup> These elevations alone do not signify these disease processes in the context of COVID-19, as the virus is believed to play a direct role in the elevation of these markers. Viral myocarditis has been postulated as a potential etiology, but further research needs to be done to investigate this.

Abbreviations: ALT, alanine aminotransferase; AST, aspartate aminotransferase; BNP, B-type natriuretic peptide; IL-6, interleukin 6; RSV, respiratory syncytial virus.

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