

CLINICAL RECOMMENDATIONS FOR ASSESSING ACTIVE AND RECOVERED COVID-19 PATIENTS

Based on our group's experience since March 2020 and ongoing review of the cardiac literature, we provide 2 levels of recommendations for cardiac monitoring and evaluation:

COVID-19 Inpatient Recommendations:

***Background:** In a cohort of 700 COVID-19 patients hospitalized at the Hospital of the University of Pennsylvania, we found that admission to the ICU was independently associated with the onset of cardiac arrests and incident arrhythmias including atrial fibrillation, clinically significant bradyarrhythmias, and nonsustained ventricular tachycardia.¹ Based on these findings, we believe that arrhythmias are not merely due to the direct effect of COVID-19 infection but are likely the result of systemic illness.*

Recommendations:

For severely ill COVID-19 patients, we recommend continuous telemetry monitoring.

COVID-19 Outpatient Recommendations:

***Background:** Recent data suggest a high degree of cardiac structural changes among recovered COVID-19 patients regardless of the severity of infection.² In a population of 100 patients who recovered from COVID-19 and the majority of whom never required hospitalization, cardiac MRI was performed more than 2 months post COVID-19 diagnosis. The vast majority of patients (78%) had abnormal cardiac MRI findings including myocardial inflammation, scar, and changes in ventricular structure and function. Given concerns of post-viral cardiac disease, we have generated the recommendations below.*

Initial recommendations for recovered patients at least 2 months post COVID-19 diagnosis:

1. Standard 12-lead ECG
2. Transthoracic echocardiogram
3. Ambulatory event monitoring (14-day patch)
4. Consider laboratory measures that include troponin and NT-pro BNP.

Additional recommendations: Patients who have ventricular enlargement or dysfunction (LVEF < 50%); ventricular ectopy burden $\geq 10\%$ over 24 hours; sustained VT or detectable troponin level (≥ 0.010 ng/ml) using standardized assay should undergo evaluation with cardiac MRI.

References

1. Bhatla A, et al. COVID-19 and cardiac arrhythmias. *Heart Rhythm*. 2020.
2. Puntmann VO, et al. Outcomes of Cardiovascular Magnetic Resonance Imaging in Patients Recently Recovered From Coronavirus Disease 2019 (COVID-19). *JAMA Cardiol*. 2020.