

March 27, 2020 COVID-19 Update

Compiled by Katherine Salciccioli MD



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- Heart failure may help explain link between underlying CV disease and poor outcomes
- Meta-analysis shows patients with severe COVID-19 illness have higher troponin levels than those with milder illness

Articles reviewed:

- Association of Cardiac Injury With Mortality in Hospitalized Patients With COVID-19 in Wuhan, China (*JAMA Cardiology*)
- Factors associated with mental health outcomes about health care workers exposed to coronavirus disease 2019 (*JAMA Network Open*)

Heart failure may help explain link between underlying CV disease and poor outcomes

- Expert heart failure cardiologists suggest that underlying diastolic and/or systolic heart failure may exacerbate bilateral PNA, contributing to ARDS and complications
- Careful fluid management and avoidance of medications which may affect renal salt/water management is likely prudent, especially with underlying CV disease
- Mehra MR, Ruschitzka F, COVID-19 Illness and Heart Failure: A Missing Link?, *JACC: Heart Failure* (2020), <https://doi.org/10.1016/j.jchf.2020.03.004>.

Meta-analysis shows patients with severe COVID-19 illness have higher troponin levels than those with milder illness

- Heterogenous studies ($I^2=98%$) including 341 patients showed higher troponin levels in those with severe disease
- Timing of lab draw relative to illness, outcome measures were extremely variable between studies – data not strong enough to suggest that higher troponin levels are predictive of poor outcomes
- Overall, previous recommendation to only check troponins when there is clinical concern for acute ischemia or myocarditis to avoid unnecessary downstream testing remains appropriate
- G. Lippi, C.J. Lavie and F. Sanchis-Gomar, Cardiac troponin I in patients with coronavirus disease 2019 (COVID-19): Evidence from a meta-analysis, *Progress in Cardiovascular Diseases* (2020), <https://doi.org/10.1016/j.pcad.2020.03.001>

Article Title:	Association of Cardiac Injury With Mortality in Hospitalized Patients With COVID-19 in Wuhan, China
Authors:	Shi S, Qin M, Shen B et al.
Full Citation:	Shi S, Qin M, Shen B et al. (2020). Association of Cardiac Injury With Mortality in Hospitalized Patients With COVID-19 in Wuhan, China. <i>JAMA Cardiol.</i> ePub 25 March 2020. doi:10.1001/jamacardio.2020.0950

Study Question:

Is there an association between cardiac injury and mortality in patients with COVID-19?

Methods:

- Retrospective cohort study of all COVID-19 positive patients admitted at a single Wuhan hospital 1/20/20-2/10/20
- Cardiac injury was defined as hs-troponin level about the 99th percentile regardless of clinic/imaging findings
- Cases without troponin and CK-MB labs checked at any time during hospitalization were excluded, leading to 416 patients included out of 645 COVID+ patients admitted during the study period
- NOTE: the majority of patients remained in-hospital at the conclusion of the study (76.7% including 46.3% of those with cardiac injury and 72.2% of those without)

Results:

- Patients with cardiac injury on admission were likely to be older, have chest pain on admission, have underlying history of at least one of HTN/CAD/CVA/HF/COPD/cancer, have PNA on imaging, and have other lab abnormalities associated with more severe disease (ie lymphopenia, AKI)
- Cardiac injury on admission was associated with higher rates of ARDS (58.5% vs 14.7%, p<0.001) and mortality (51.5% vs 4.5%, p<0.002)
- Other than ARDS, cardiac injury was the only RF analyzed in this study found to be significantly associated with mortality on multivariable Cox regression analysis which included age, comorbidities, AKI on admission, BNP)

Conclusion:

Cardiac injury is common in hospitalized COVID-19 patients and is independently associated with higher risk of in-hospital mortality

Perspective:

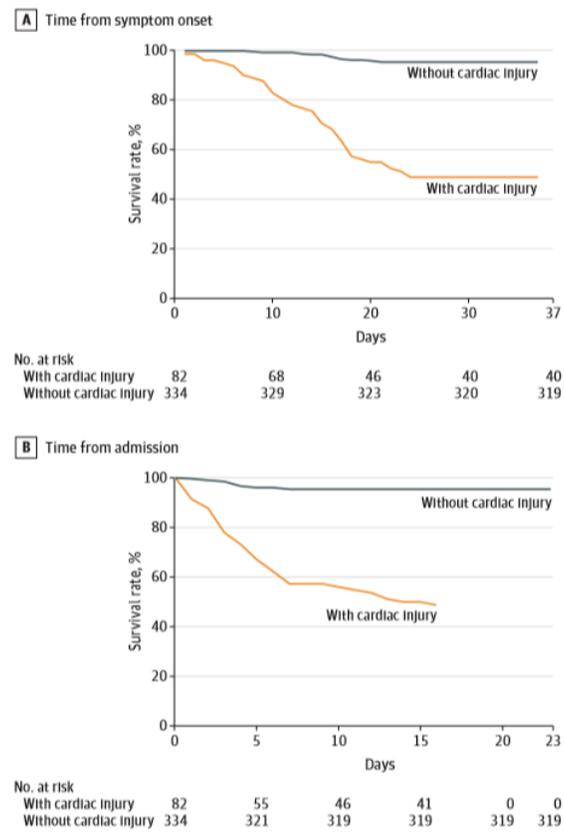
While this study suggests that cardiac involvement during COVID-19 correlates with poorer outcomes, the lack of echocardiography or trended lab values provides limited insight into why this might be the case or what could be done to mitigate the risk. Additionally, a large portion of the study group was still admitted at the time of publication, limiting the accuracy of in-hospital mortality as an endpoint – this is reflected in the lack of significance of age and underlying comorbidities as RFs for death, which have been consistently shown in multiple other larger, multicenter trials.

Summary Written by:

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Topic Areas: COVID-10, cardiac injury

Figure 2. Mortality During Hospitalization Between Patients With vs Without Cardiac Injury



Article Title:	Factors associated with mental health outcomes about health care workers exposed to coronavirus disease 2019
Authors:	Lai J, Ma S, Wang Y et al
Full Citation:	Lai J, Ma S, Wang Y, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. <i>JAMA Netw Open.</i> 2020;3(3):e203976. doi:10.1001/jamanetworkopen.2020.3976

Study Question:

What factors are associated with mental health outcomes among health care workers in China who are treating patients with coronavirus disease 2019 (COVID-19)?

Methods:

- Prospective, cross-sectional, region-stratified study collecting demographic data and mental health measurements from 1257 health care workers in 34 hospitals over the course of 6 days in China.
- Key aim: to quantify the magnitude of symptoms and analyze potential risk factors associated with these symptoms.
- Degree of symptoms of depression, anxiety, insomnia, and distress were assessed using written questionnaires utilizing mental health indexes and scales appropriate for each symptom.

Results:

- 1257 of 1830 contacted individuals completed the survey; participation rate of 68.7%.
- A considerable proportion of participants reported symptoms of depression (634 {50.4%}), anxiety (560 {44.6%}), insomnia (427 {34.0%}), and distress (899 {71.5%}).
- Nurses, women, frontline health care workers, and those working in Wuhan reported more severe degrees of all measurements of mental health symptoms than other health care workers.

Conclusions:

- Working on the front line was an independent risk factor for worse mental health outcomes in all dimensions of interest, raising concerns about the psychological well-being of physicians and nurses involved in the acute COVID-19 outbreak.
- There is a need for psychological support or interventions for healthcare workers.
- Protecting health care workers is a key component of public health measures needed to address the COVID-19 epidemic.

Perspective:

The mental stress of those working in the healthcare industry during the outbreak of COVID-19 is imperative to address. However, evidence-based evaluations and mental health interventions targeting front-line health care workers are relatively scarce. Further study is needed to develop an ongoing and post-epidemic plan to provide for the mental health of our healthcare workers.

Summary Written by:

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Topic Areas: COVID-19, mental health, health systems