

March 19, 2020 COVID-19 Update

Compiled by Katherine Saliccioli MD

Contents include:

Brief summary:

- Recent ACC guidance related to cardiac medications, laboratory tests in COVID-19
- Role of Lopinavir/Ritonavir
- Aerosol/Surface Stability of SARS-CoV-2 (NEJM)

Articles reviewed:

- Detection of Covid-19 in Children in Early January 2020 in Wuhan China (NEJM)
- Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study (Lancet)



[HFSA/ACC/AHA Joint Statement on use of RAAS Antagonists in COVID-19](#)

- Concern for worsening of COVID-19 given upregulation of ACE2 receptors with use
 - ACE2 receptor is cellular binding site for SARS-CoV-2
- As discussed in the ACC-CCA webinar, no role to start or stop ACE-I/ARB outside of normal clinical practice

<https://www.acc.org/latest-in-cardiology/articles/2020/03/17/08/59/hfsa-acc-aha-statement-addresses-concerns-re-using-raas-antagonists-in-covid-19>

[No role for statins in acute therapy of COVID-19 at this time](#)

- The anti-inflammatory role of statins has previously raised q's about their role in the ICU setting
- First, are cardiovascular and general outcomes improved with the continuation of statin therapy among those already on statin therapy?
 - Yes, in *observational studies* pts admitted with viral or bacterial PNA had fewer CV complications while admitted
- Second, does *de novo* initiation of statin therapy have a role in preventing complications from viral illnesses including COVID-19?
 - No. There are conflicting RCTs on the use of statin therapy in ventilator-associated PNA, so no data to support initiation of statins in patients ill with COVID-19
- Third, is there any harm associated with statin therapy use in acute viral illnesses?
 - Not in the absence of rhabdomyolysis

<https://www.acc.org/latest-in-cardiology/articles/2020/03/18/15/09/is-there-a-role-for-statin-therapy-in-acute-viral-infections-covid-19>

[Monitoring of troponin and BNP levels in COVID-19](#)

- Troponin elevation in COVID-19?
 - Often elevated in severe respiratory distress
 - May be more elevated with COVID-19 due to elevated ACE2 binding sites on cardiomyocytes – may help explain the higher levels of myocarditis and acute ventricular dysfunction being seen with the disease
 - Although trends are not yet clear, hs-troponin was significantly elevated in more than half of patients who died in one large Chinese study

- BNP elevation in COVID-19?
 - Often elevated in states of myocardial stress even in the absence of HF (ie acute respiratory distress)
 - Often associated with poor outcomes in ARDS
 - Chinese studies have shown frequently elevated levels with uncertain significance – clinical correlation with s/sx of heart failure is warranted
- What should be done when troponin and/or BNP levels are abnormal?
 - Given the frequent elevation of both tests, ACC recommends only testing when there is clinical concern for acute MI or heart failure
 - Echo and angiography should be reserved for patients where these procedures would be expected to meaningfully affect their outcome

<https://www.acc.org/latest-in-cardiology/articles/2020/03/18/15/25/troponin-and-bnp-use-in-covid19>

Role of Lopinavir/Ritonavir (NEJM March 18, 2020)

- Randomized/controlled trial of 199 patients total. No benefit of lopinavir/ritonavir in time to improvement or mortality
- DOI: 10.1056/NEJMoa2001282

Aerosol/Surface Stability of SARS-CoV-2 (NEJM March 16, 2020)

- Appears to be stable in aerosol up to 3 hours
- Appears to be stable on surfaces up to 72 hours, longer on stainless steel and plastic than cardboard
- DOI: 10.1056/NEJMc2004973

Article Title:	Detection of Covid-19 in Children in Early January 2020 in Wuhan, China
Authors:	Liu W, Zhang Q, Chen J et al
Full Citation:	Liu W, Zhang Q, Chen J et al. (2020). Detection of Covid-19 in Children in Early January 2020 in Wuhan, China. <i>N Engl J Med</i> . Published online 12 March 2020 www.NEJM.org.

Study Question:

Were children infected early in the Covid-19 epidemic in China? What is the spectrum of illness seen in children infected with Covid-19?

Methods:

Retrospective cohort study of children hospitalized in Wuhan, China for respiratory infections during a one week period (1/7-1/15/20).

Results:

- Of 366 children admitted with respiratory symptoms, 6 (1.6%) were found to have Covid-19
- All children were previously healthy; no families had direct contact with Huanan Seafood Market
- Lymphocyte count was low in all 6 children
- 4/6 had typical viral PNA pattern on chest imaging
- 1/6 required ICU admission
- All treated with antivirals, antibiotics, supportive care
- All patients recovered with mean hospitalization of 7.5 days (range 5-13)

Table 1. Summary of the Clinical Characteristics of Six Children with Covid-19.*

Characteristic	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5	Patient 6
Age (yr)	3	7	3	1	3	4
Sex	Female	Female	Female	Male	Female	Male
CT findings	Patchy ground-glass opacities in both lungs	NA	Patchy shadows in both lungs	Patchy shadows in both lungs	Patchy shadows in both lungs	Normal
Treatments						
Ribavirin	Yes	No	No	No	No	Yes
Oseltamivir	Yes	Yes	Yes	Yes	Yes	Yes
Glucocorticoids	Yes	No	Yes	Yes	Yes	No
Supplemental oxygen	Yes	No	No	No	No	No
Intravenous immune globulin	Yes	No	No	No	No	No
Clinical course						
ICU admission	Yes	No	No	No	No	No
Duration of fever (days)	11	3	7	6	4	6
Duration of hospitalization (days)	13	7	7	5	10	8
City of residence	Wuhan	Wuhan	Huangshi	Wuhan	Wuhan	Wuhan

* Covid-19 denotes coronavirus disease 2019, CT computed tomography, ICU intensive care unit, and NA not available.

Conclusions:

Children were infected with Covid-19 early in the Chinese epidemic. The studied patients were previously healthy and had moderate to severe symptoms, with one requiring ICU care. All recovered.

Perspective:

Overall, this is a small study looking at Covid-19 illness in children who were sick enough to require hospitalization. The Covid-19 patients made up a very small percentage of the children admitted with respiratory symptoms. All 6 children, previously healthy, recovered and survived to hospital discharge. Few details are published as this was a research letter. When taken in context with the *Pediatrics* article reviewed yesterday 3/18/20, this raises questions about how many of the 'suspected' cases truly had Covid-19 and about how the study's findings regarding the entire study population, not just those with proven Covid-19, should be interpreted.

Summary Written by:

Katherine B. Saliccoli MD

Topic Areas: Pediatrics, COVID-19

Article Title:	Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study
Authors:	Zhou F, Yu T, Fan G et al
Full Citation:	Zhou F, Yu T, Fan G et al. (2020). Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. <i>Lancet</i> . Published online www.thelancet.com 12 March 2020.

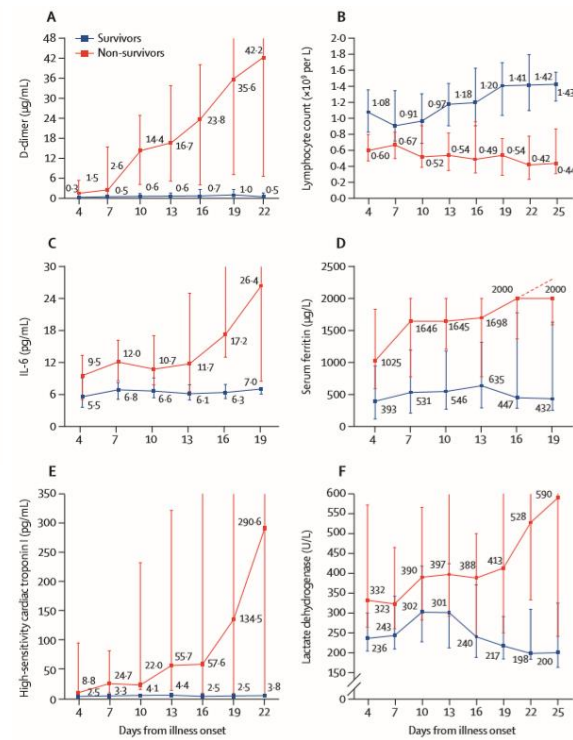
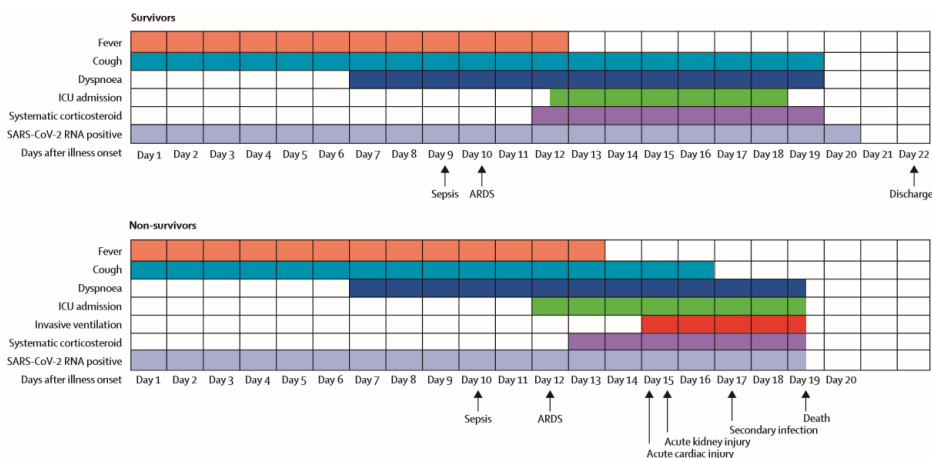
Study Question:

What is the clinical course of patients with COVID-19? What are the risk factors for mortality?

Methods:

Retrospective, multicenter cohort study of all inpatient adults ≥ 18 yo with lab-confirmed COVID-19. EMR data used to compare survivors and non-survivors using univariable and multivariable logistic regression to identify RFs for in-hospital death.

Results:



- 191 patients were included for hospitalizations occurring between 12/1/2019 and 1/31/2020
- SARS-CoV-2 RNA persisted for median 20 days with longest recorded 37 days in survivors (n=137, 71.7%) or through death (n=54, 28.3%)
- Nearly half of patients had at least one comorbidity, including HTN (30%), DM (19%), and CAD (8%)
- Older age, organ failure, and elevated D-dimer >1 were associated with increased mortality on multivariable analysis.

Conclusions:

The identified RFs (age, organ failure, elevated D-dimer) may help identify patients with poor prognosis early in their course. Prolonged viral shedding supports isolation of infected patients.

Perspective:

This appears to have been a very ill population, with mortality rate >25% which is much higher than other nationally or internationally published data, so its applicability should be carefully considered. After a relatively benign early course, respiratory distress, sepsis, and organ failure usually occur a week or more into the infection. Older patients with underlying organ dysfunction are at higher risk a priori, and elevated D-dimer and elevated organ failure scores identify patients at higher risk of in-hospital death. Individual comorbidities such as HTN were not significant on multivariable analysis, but the high incidence in the ill population raises questions about the role these underlying diseases and/or their therapies are playing in the COVID-19 disease process. Prolonged viral shedding suggests that prolonged isolation is needed to help stop spread of the disease – it will be important to know if this holds true for asymptomatic or minimally symptomatic outpatients as well.

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Topic Areas: COVID-19, outcomes, risk factors, clinical course