



## 2019-nCoV Literature Situation Report (Lit Rep)

July 1, 2020

The scientific literature on COVID-19 is rapidly evolving and these articles were selected for review based on their relevance to Washington State decision making around COVID-19 response efforts. Included in these Lit Reps are some manuscripts that have been made available online as pre-prints but have not yet undergone peer review. Please be aware of this when reviewing articles included in the Lit Reps.

### Key Takeaways

- **Patient-collected lower nasal specimens had diagnostic equivalence to healthcare worker-collected lower nasal and oropharyngeal specimens for detection of SARS-CoV-2 by RT-PCR.** [More](#)
- **SARS-CoV-2 viral loads in upper respiratory specimens peaked within 2-3 days from symptom onset and decreased rapidly in a study among health care personnel with non-severe COVID-19.** [More](#)
- **SARS-CoV-2 antibody levels significantly decreased after heat inactivation of serum, which is a proposed method of reducing exposure risk for laboratory personnel. IgM levels decreased by 54% and IgG by 50%.** [More](#)
- **A meta-analysis of 19 studies found that hypertension was significantly associated with adverse outcomes in COVID-19.** [More](#)

### Transmission

- Among 23 children infected with SARS-CoV-2, L'Huillier et al. found that symptomatic neonates, children, and teenagers shed infectious, culture-competent SARS-CoV-2, suggesting that transmission from children is plausible.  
*L'Huillier et al. (June 30, 2020). Culture-Competent SARS-CoV-2 in Nasopharynx of Symptomatic Neonates, Children, and Adolescents. Emerging Infectious Diseases.* <https://doi.org/10.3201/eid2610.202403>
- Shrestha et al. examined SARS-CoV-2 viral load over time among 230 health care personnel with COVID-19 who did not require hospitalization. Viral loads in the upper respiratory specimens (n=528) peaked by 2 or 3 days from symptom onset and decreased rapidly thereafter, with >85% of the area under the curve occurring in the first five days.  
*Shrestha et al. (June 29, 2020). Distribution of Transmission Potential during Non-Severe COVID-19 Illness. Clinical Infectious Diseases.* <https://doi.org/10.1093/cid/ciaa886>

### Testing and Treatment

- Sensitivity and specificity were equivalent for patient-collected lower nasal specimens, physician-collected lower nasal specimens, and physician-collected oropharyngeal specimens in participants with SARS-CoV-2 infection (n=30) for detection by RT-PCR. Sensitivity of patient-collected specimens was 100% (95% CI: 72%-100%), and the specificity was 95% (95% CI: 74%-100%).  
*Altamirano et al. (June 12, 2020). Assessment of Sensitivity and Specificity of Patient-Collected Lower Nasal Specimens for Sudden Acute Respiratory Syndrome Coronavirus 2 Testing. JAMA Network Open.* <https://doi.org/10.1001/jamanetworkopen.2020.12005>



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- SARS-CoV-2 antibody levels decreased significantly after heat inactivation of serum at 56 C, which is a proposed method of reducing exposure risk for laboratory personnel. The IgM levels decreased in all 34 serum samples by mean of 54%. IgG levels decreased in 22 of 34 samples (65%) by a mean of 50%.

*Hu et al. (June 28, 2020). Heat Inactivation of Serum Interferes with the Immunoanalysis of Antibodies to SARS-CoV-2. Journal of Clinical Laboratory Analysis.*

<https://doi.org/10.1002/jcla.23411>

- *[pre-print, not peer-reviewed]* A rapid point-of-care diagnostic test (< 20 min) using reverse transcriptase loop-mediated isothermal amplification (RT-LAMP) and semiconductor technology to test extracted RNA samples has 90.6% sensitivity and 100% specificity when compared to RT-qPCR on 183 clinical samples. The portable diagnostic platform is paired with a smartphone for results visualization and geo-localization.

*Rodriguez-Manzano et al. (June 30, 2020). A Handheld Point-of-Care System for Rapid Detection of SARS-CoV-2 in under 20 Minutes. Pre-print downloaded Jul 1 from*

<https://doi.org/10.1101/2020.06.29.20142349>

- Zhu et al. evaluated the clinical performance of saliva specimens in comparison to paired respiratory tract specimens in a cohort of 442 patients with COVID-19 and positive respiratory tract specimens. RT-PCR testing of saliva specimens had a sensitivity of 86% (95%CI 83%, 89%) and specificity of 97% (95%CI 95, 98%). There was no significant difference regarding the temporal viral load profile between mild and severe cases.

*Zhu et al. (June 23, 2020). Viral Dynamics of SARS-CoV-2 in Saliva from Infected Patients. Journal of Infection. <https://doi.org/10.1016/j.jinf.2020.06.059>*

## Clinical Characteristics and Health Care Setting

- A large study of patients from the UK (10 hospitals) and Italy (1 hospital) found that a clinical frailty scale was a better predictor of COVID-19 disease outcomes among hospitalized patients than either age or comorbidity. The clinical frailty scale could inform decision making about medical care in adult patients admitted to hospital with COVID-19.

*Hewitt et al. (June 30, 2020). The Effect of Frailty on Survival in Patients with COVID-19 (COPE): A Multicentre, European, Observational Cohort Study. The Lancet Public Health.*

[https://doi.org/10.1016/S2468-2667\(20\)30146-8](https://doi.org/10.1016/S2468-2667(20)30146-8)

- A systematical review and meta-analysis (19 studies, 15,302 COVID-19 cases) shows that adjusted for relevant confounders, hypertension is significantly associated with increased risk of adverse outcomes among COVID-19 patients (OR=1.44; 95% CI 1.24-1.66).

*Liang et al. (June 23, 2020). The Association of Hypertension with the Severity and Mortality of COVID-19 Patients: Evidence Based on Adjusted Effect Estimates. Journal of Infection.*

<https://doi.org/10.1016/j.jinf.2020.06.060>

- Sanchez et al. found that repeated point prevalence surveys at 26 Detroit skilled nursing facilities (SNFs) identified an attack rate of 44% among SNF residents. Within 21 days of diagnosis, 37% of infected patients were hospitalized and 24% died. Among 12 facilities participating in a second survey and receiving on-site infection prevention and control support, the percentage of newly identified cases decreased from 35% to 18%.

*Sanchez et al. (July 1, 2020). Initial and Repeated Point Prevalence Surveys to Inform SARS-CoV-2 Infection Prevention in 26 Skilled Nursing Facilities — Detroit, Michigan, March–May 2020.*

*MMWR. <https://doi.org/10.15585/mmwr.mm6927e1>*

## Public Health Policy and Practice

- Based on data from the 2018 Behavioral Risk Factor Surveillance System, 50% of rural residents are at high risk for hospitalization and serious illness if they were to be infected with COVID-19, compared to 47% “micropolitan” and 40% in metropolitan areas.
- Kaufman et al. estimate that rural residents will generate an estimated 10% more hospitalizations for COVID-19 per capita than urban residents given equal infection rates.

*Kaufman et al. (June 30, 2020). Half of Rural Residents at High Risk of Serious Illness Due to COVID-19, Creating Stress on Rural Hospitals. The Journal of Rural Health.*

<https://doi.org/10.1111/jrh.12481>

## Other Resources and Commentaries

- [Citywide Nucleic Acid Screening of SARS-CoV-2 Infections in Post-Lockdown Wuhan China Results and Implications](#) – Medrxiv (June 30)
- [A Descriptive Study of Coronavirus Disease 2019–Related Experiences and Perspectives of a National Sample of College Students in Spring 2020](#) – Journal of Adolescent Health (June 24)
- [Social Media Can Have an Impact on How We Manage and Investigate the COVID-19 Pandemic](#) – Journal of Clinical Epidemiology (June 7)
- [Structure of the Full SARS-CoV-2 RNA Genome in Infected Cells](#) – Biorxiv (June 30)
- [Disproportionate Burden of COVID-19 among Racial Minorities and Those in Congregate Settings among a Large Cohort of People with HIV](#) – AIDS (June 25)
- [Could the COVID-19 Pandemic Aggravate Antimicrobial Resistance?](#) – American Journal of Infection Control (June 27)
- [A Phenome-Wide Association Study \(PheWAS\) of COVID-19 Outcomes by Race Using the Electronic Health Records Data in Michigan Medicine](#) – Medrxiv (July 1)
- [Is a “Cytokine Storm” Relevant to COVID-19?](#) – JAMA Internal Medicine (June 30)
- [Angiotensin-converting Enzyme 2: The Old Door for New Severe Acute Respiratory Syndrome Coronavirus 2 Infection](#) – Reviews in Medical Virology (June 30)
- [SARS-CoV-2 Spike Glycoprotein Vaccine Candidate NVX-CoV2373 Elicits Immunogenicity in Baboons and Protection in Mice](#) – Biorxiv (June 30)

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