



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

June 16, 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

- **A study from Japan found that symptom-based testing of travelers missed most prevalent cases of SARS-CoV-2 at entry. Even with universal screening, nearly half of cases would have been missed without repeated testing over a 14-day period.** [More](#)
- **Researchers at Oxford University leading the RECOVERY (Randomised Evaluation of COVID-19 thERapY) trial released a statement today that the steroid dexamethasone significantly reduced deaths in COVID-19 patients receiving mechanical ventilation and in patients receiving supplemental oxygen.** [More](#)
- **Mathematical modeling suggests that susceptibility to SARS-CoV-2 and the proportion of infections that are symptomatic varies significantly by age. Researchers estimated that people under the age of 20 are half as susceptible to infection as those age 20 and older.** [More](#)
- **Occupational segregation by race may contribute to racial disparities in SARS-CoV-2 infection. Black Americans are more likely to be employed in essential industries, occupations with higher exposure to infections (e.g. nursing), and that require close proximity to others (e.g. bus drivers, flight attendants).** [More](#)

### Transmission

- Using disaggregated employment data from the Bureau of Labor Statistics, Hawkins found that occupational segregation by race may contribute to racial disparities in SARS-CoV-2 infection. The author found that black Americans were more likely to be employed in essential industries (e.g. healthcare, animal slaughtering), occupations with higher exposure to infections (e.g. nursing), and occupations with close proximity to others (e.g. bus drivers, flight attendants).  
*Hawkins. (June 15, 2020). Differential Occupational Risk for COVID-19 and Other Infection Exposure According to Race and Ethnicity. American Journal of Industrial Medicine.*  
<https://doi.org/10.1002/ajim.23145>
- An outbreak of SARS-CoV-2 among 10 people from 3 family units was linked to an indoor air-conditioned restaurant in Guangzhou, China. Examination of the potential routes of transmission suggest that the most likely cause of this outbreak was droplet transmission from one asymptomatic index patient. The authors recommend increasing the distance between tables and improving ventilation to prevent the spread of SARS-CoV-2 in restaurants.  
*Lu et al. (Apr 2, 2020). COVID-19 Outbreak Associated with Air Conditioning in Restaurant, Guangzhou, China, 2020. Emerging Infectious Diseases.*  
<https://doi.org/10.3201/eid2607.200764>



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## Geographic Spread

- Early in the SARS-CoV-2 epidemic, most cases were linked to recent travel history from China, suggesting that air travel played a major role in importation of cases. Using data from February 2020, De Salazar et al. found that daily air travel volume was positively correlated with imported cases of SARS-CoV-2 infection. They estimated that increasing flight volume by 31 passengers/day was associated with 1 additional expected case.

*De Salazar et al. (Mar 24, 2020). Identifying Locations with Possible Undetected Imported Severe Acute Respiratory Syndrome Coronavirus 2 Cases by Using Importation Predictions. Emerging Infectious Diseases. <https://doi.org/10.3201/eid2607.200250>*

## Testing and Treatment

- Researchers leading the RECOVERY (Randomised Evaluation of COVid-19 thERapY) trial at Oxford University [released a statement today](#) distributed widely by media outlets indicating that their trial found that the steroid dexamethasone reduced deaths in ventilated patients (RR=0.65; 95% CI: 0.48, 0.88) and in other patients receiving oxygen only (RR=0.80; 95% CI: 0.67, 0.96). The trial has not been published, but was featured in a news article by the journal *Nature* cited below.

*Ledford. (June 16, 2020). Coronavirus breakthrough: dexamethasone is first drug shown to save lives. Nature. [news article] <https://doi.org/10.1038/d41586-020-01824-5>*

- In January 2020, 566 Japanese nationals were repatriated from Wuhan, China and were monitored for 14 days following their return. Universal RT-PCR testing identified 12 cases of SARS-CoV-2 infection over this period. Entry screening only detected 7/12 cases, 2 of whom were symptomatic and 5 of whom were asymptomatic. Subsequent testing identified 5 additional cases among individuals whose first RT-PCR test result was negative. This study found that symptom-based testing performed poorly and missed 5/7 prevalent cases at entry. Even with universal screening, nearly half of cases (5/12) would have been missed without repeated testing.

*Arima et al. (Apr 10, 2020). Severe Acute Respiratory Syndrome Coronavirus 2 Infection among Returnees to Japan from Wuhan, China, 2020. Emerging Infectious Diseases. <https://doi.org/10.3201/eid2607.200994>*

- Okba et al. validated two ELISA serologic assays for detection of SARS-CoV-2 antibodies. Among 3 PCR-confirmed SARS-CoV-2-cases with serial sample collection, they found that most seroconverted within 2 weeks of disease onset. They found that commercial spike protein subunit 1 IgG or IgA ELISAs had low specificity and sensitivity varied between the 2 assays (the IgA ELISA showed higher sensitivity). These results need to be further validated with a larger cohort.

*Okba et al. (Apr 8, 2020). Severe Acute Respiratory Syndrome Coronavirus 2-Specific Antibody Responses in Coronavirus Disease 2019 Patients. Emerging Infectious Diseases. <https://doi.org/10.3201/eid2607.200841>*

## Clinical Characteristics and Health Care Setting

- *[pre-print, not peer reviewed]* Ahmad et al. identified 24 published cases of COVID-19 associated Guillain-Barre Syndrome (GBS), a post-infectious neurological syndrome. The majority of cases were male (18/24) and patients ranged in age from 23-84 years. Prognosis for COVID-19 associated GBS was generally good, with only one documented death.

*Ahmad and Rathore. (June 16, 2020). Guillain Barre Syndrome in COVID-19: A Scoping Review. Pre-print downloaded June 16 from <https://doi.org/10.1101/2020.06.13.20130062>*

- Angiotensin-converting enzyme 2 (ACE2) and transmembrane serine protease 2 (TMPRSS2) are the two main cell entry proteins for SARS-CoV-2. Saheb Sharif-Askari et al. found that children have lower expression of the ACE2 and TMPRSS2 receptors in the lung airway. They also found that lung airway expression of both ACE2 and TMPRSS2 was higher in smokers compared with non-smokers, and in patients with chronic obstructive pulmonary disease (COPD) compared with healthy subjects.  
*Saheb Sharif-Askari et al. (May 19, 2020). Airways Expression of SARS-CoV-2 Receptor, ACE2, and TMPRSS2 Is Lower in Children Than Adults and Increases with Smoking and COPD. Molecular Therapy. Methods & Clinical Development. <https://doi.org/10.1016/j.omtm.2020.05.013>*
- Kang and Jung provide a narrative review of global epidemiological data on age-associated SARS-CoV-2 pathogenicity, morbidity, and mortality, with a focus on SARS-CoV-2 in children and the elderly. They review theories for the higher mortality observed in elderly people with COVID-19 related to immune function and prevalence of comorbidities.  
*Kang and Jung. (June 12, 2020). Age Related Morbidity and Mortality among Patients with COVID-19. Infection & Chemotherapy. <https://pc.icjournal.org/DOIx.php?id=10.3947/ic.2020.52.e32>*
- Increased susceptibility of elderly individuals and excessive inflammation associated with COVID-19 disease may accelerate the progression of brain inflammatory neurodegeneration, which plays a central role in Alzheimer's disease pathogenesis. Naughton et al. discuss the potential interactions between SARS-CoV-2 and Alzheimer's disease.  
*Naughton et al. (June 12, 2020). Potential Novel Role of COVID-19 in Alzheimer's Disease and Preventative Mitigation Strategies. Journal of Alzheimer's Disease. <https://doi.org/10.3233/JAD-200537>*

## Mental Health and Personal Impact

- Kaslow et al. propose a 6-phase framework for managing and responding to the behavioral health impacts of the COVID-19 pandemic: preplanning, response readiness, response mobilization, intervention, continuation, and amelioration. The authors describe the Caring Communities initiative as an exemplar of action steps that behavioral health professionals and organizations can take to improve behavioral health care and reduce health disparities during a pandemic.  
*Kaslow et al. (June 15, 2020). Flattening the Emotional Distress Curve: A Behavioral Health Pandemic Response Strategy for COVID-19. The American Psychologist. <https://doi.org/10.1037/amp0000694>*
- In a sample of 293 Israeli adults, Mimoun et al. found that people placed on furlough (e.g. unpaid leave of absence) reported higher levels of distress than those who were unemployed prior to the pandemic. These findings highlight the psychological impacts that accompany employment instability associated with COVID-19 lockdown policies.  
*Mimoun et al. (June 15, 2020). Psychological Aspects of Employment Instability during the COVID-19 Pandemic. Psychological Trauma: Theory, Research, Practice, and Policy. <https://doi.org/10.1037/tra0000769>*

## Modeling and Prediction

- Davies et al. used mathematical modeling to estimate the age-specific susceptibility to SARS-CoV-2 infection and the age-specific fraction of infections that are symptomatic. After fitting their model to data from 6 countries, they estimated that people under the age of 20 years are half as susceptible to infection as those over 20 years of age, 79% of infections among adolescents (age 10-19) are asymptomatic, and 31% of infections among people age 70 and older are asymptomatic.  
*Davies et al. (June 16, 2020). Age-Dependent Effects in the Transmission and Control of COVID-19 Epidemics. Nature Medicine. <https://doi.org/10.1038/s41591-020-0962-9>*

## Other Resources and Commentaries

- [COVID-19 and U.S.-Based Refugee Populations](#) – Psychological Trauma (June 15)
- [Appropriate Selection of Convalescent Plasma Donors for COVID-19](#) – The Lancet Infectious Diseases (June 15)
- [Coronavirus Disease 2019 Case Surveillance — United States, January 22–May 30, 2020](#) – MMWR (June 15)
- [Effects of Sterilization With Hydrogen Peroxide and Chlorine Dioxide on the Filtration Efficiency of N95, KN95, and Surgical Face Masks](#) – JAMA Network Open (June 15)
- [Shoring Up the US Safety Net in the Era of Coronavirus Disease 2019](#) – JAMA Health Forum (June 1)
- [Hospital-Wide SARS-CoV-2 Antibody Screening in 3056 Staff in a Tertiary Center in Belgium](#) – JAMA (June 15)
- [Aerosol and Surface Distribution of Severe Acute Respiratory Syndrome Coronavirus 2 in Hospital Wards, Wuhan, China, 2020](#) – Emerging Infectious Diseases (Apr 10)
- [High Contagiousness and Rapid Spread of Severe Acute Respiratory Syndrome Coronavirus 2](#) – Emerging Infectious Diseases (Apr 7)
- [Severe Acute Respiratory Syndrome Coronavirus 2 RNA Detected in Blood Donations](#) – Emerging Infectious Diseases (Apr 3)
- [Coronavirus Disease 2019 Takes Adolescent Suicide Prevention to Less Charted Territory](#) – The Journal of Adolescent Health (June 12)
- [Overcoming the Challenge of Family Separation From Nursing Home Residents During COVID-19](#) – Journal of the American Medical Directors Association (May 21)
- [Spectrum of COVID-19 in Children](#) – Acta Paediatrica (June 15)
- [How 3D Printing and Social Media Tackles the PPE Shortage during Covid-19 Pandemic](#) – Safety Science (June 7)

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