COVID-19 Resource Desk
#60 | 6.13.21 to 6.19.21

New Research
*note, PREPRINTS have not undergone formal peer review

COVID-19 related publications by Providence caregivers – see Digital Commons

Epidemiology & Public Health


In summary, we show that the Delta VOC in Scotland was found mainly in younger, more affluent groups. Risk of COVID-19 hospital admission was approximately doubled in those with the Delta VOC when compared to the Alpha VOC, with risk of admission particularly increased in those with five or more relevant comorbidities. Both the Oxford–AstraZeneca and Pfizer–BioNTech COVID-19 vaccines were effective in reducing the risk of SARS-CoV-2 infection and COVID-19 hospitalisation in people with the Delta VOC, but these effects on infection appeared to be diminished when compared to those with the Alpha VOC.


By analyzing vaccination records and test results collected during the rapid vaccine rollout in a large population from 177 geographically defined communities, we find that the rates of vaccination in each community are associated with a substantial later decline in infections among a cohort of individuals aged under 16 years, who are unvaccinated. On average, for each 20 percentage points of individuals who are vaccinated in a given population, the positive test fraction for the unvaccinated population decreased approximately twofold. These results provide observational evidence that vaccination not only protects individuals who have been vaccinated but also provides cross-protection to unvaccinated individuals in the community.

Healthcare Delivery & Healthcare Workers

Our analysis indicate a SARS-CoV-2 seroprevalence rate of 8% among studies included >1,000 HCWs for the year 2020 before vaccinations started. The most common risk factors associated with higher seroprevalence rate were ethnicity, male gender, and having higher number of household contacts. Working as a frontline HCW was inconsistent in its association with higher seroprevalence.

4. **Validation of a Crisis Standards of Care Model for Prioritization of Limited Resources During the Coronavirus Disease 2019 Crisis in an Urban, Safety-Net, Academic Medical Center.**
   [https://journals.lww.com/ccmjournal/Abstract/9000/Validation_of_a_Crisis_Standards_of_Care_Model_for.95193.aspx](https://journals.lww.com/ccmjournal/Abstract/9000/Validation_of_a_Crisis_Standards_of_Care_Model_for.95193.aspx)
   Patients with major and severe chronic medical conditions overall had 46.55% and 50.00% mortality at 1 and 5 years, respectively. However, mortality varied between conditions. Our findings appear to support a crisis standards protocol which focuses on acute illness severity and only considers underlying conditions carrying a greater than 50% predicted likelihood of 1-year mortality.

**Prognosis**

5. **Risk of hospital admission for patients with SARS-CoV-2 variant B.1.1.7: cohort analysis.**
   [https://www.bmj.com/content/373/bmj.n1412](https://www.bmj.com/content/373/bmj.n1412)
   The results suggest that the risk of hospital admission is higher for people infected with the B.1.1.7 variant compared with wild-type SARS-CoV-2, likely reflecting a more severe disease. The higher severity may be specific to adults older than 30 years.

   Polypharmacy and selected drug classes are associated with increased risk of adverse clinical outcomes among COVID-19 patients. Antipsychotic drugs were associated with severe COVID-19 morbidity and increased risk of death among COVID-19 infected men and women.

7. **Renin-Angiotensin-Aldosterone System Inhibitors and SARS-CoV-2 Infection: An Analysis from the Veteran's Affairs Healthcare System: Sandhu. ACEI, ARB, and Association with COVID.**
   Results suggest the safety of continuing ACEI and ARB therapy. The association between ACEI therapy and lower odds of SARS-CoV-2 infection requires further investigation.
Discontinuation of RAS-inhibition in COVID-19 had no significant effect on the maximum severity of COVID-19 but may lead to a faster and better recovery.


This cohort study found that Black patients hospitalized with COVID-19 had higher rates of hospital mortality or discharge to hospice than White patients after adjustment for the personal characteristics of those patients. However, those differences were explained by differences in the hospitals to which Black and White patients were admitted.

**Survivorship & Rehabilitation**


A fourth of individuals admitted to hospital for COVID-19 still had three or more persistent symptoms at 6 months.


This report demonstrates the feasibility of conducting physical and occupational therapy in COVID-19 specific ICUs. Providing therapy services appeared to be safe for patients and members of the therapy team, as adverse events were rare and no therapist was diagnosed with COVID-19. Patients tolerated therapy in spite of receiving advanced respiratory support. The discharge location of our patients was notably different than other COVID-19 cohorts with more patients discharged to acute rehabilitation and home, suggesting that shifting rehabilitation efforts earlier in acute illness can improve functional outcomes.


The most recently published COVID-19 research focuses more on describing the clinical presentations and the natural history of the pathology, rather than rehabilitation interventions or service delivery. Studies with high levels of evidence regarding the efficacy of interventions, long-term monitoring, or new organization models remain lacking.
Therapeutics


   Among patients hospitalized with Covid-19 pneumonia, tofacitinib led to a lower risk of death or respiratory failure through day 28 than placebo.


   This implemented protocol for awake prone positioning increased duration of prone positioning, but did not reduce the rate of intubation in patients with hypoxemic respiratory failure due to COVID-19 compared to standard care.


   In-hospital mortality in patients receiving ECMO support for COVID-19 was 37.1% during the first year of the pandemic, similar to those with non-COVID-19-related ARDS. Increasing age was a risk factor for death. Venovenous ECMO appears to be an effective intervention in selected patients with COVID-19-related ARDS.


   In patients with refractory ARDS from COVID-19 or Influenza placed on ECMO, there was no significant difference in survival to hospital discharge. In patients surviving to decannulation, the duration of ECMO support and total length of stay were longer in COVID-19 patients.


   In this trial of adults with COVID-19 and severe hypoxia, we were unable to provide precise estimates of the benefits and harms of hydrocortisone as compared with placebo as only 3% of the planned sample size were enrolled. The trial was terminated early when 30 out of 1,000 participants had been enrolled because of external evidence indicating benefit from corticosteroids in severe COVID-19.
   The percentage of B.1.1.7 isolates in the U.S. that belong to this sub-lineage increased from 0.15% in February 2021 to 1.8% in April 2021. To date this sub-lineage appears to be U.S.-specific with reported cases in 31 states, including Hawaii. As of April 2021 it constituted 36.8% of all B.1.1.7 isolates in Washington. Phylogenetic analysis and transmission inference with Nextstrain suggests this sub-lineage likely originated in either California or Washington. Structural analysis revealed that the S:D178H mutation is in the NTD of the S protein and close to two other signature mutations of B.1.1.7, HV69-70del and Y144del. It is surface exposed and may alter NTD tertiary configuration or accessibility, and thus has the potential to affect neutralization by NTD directed antibodies.

   We conducted a systematic review on published estimates of the incubation period distribution of COVID-19 and showed that the pooled median of the point estimates of the mean, median and 95th percentile for incubation period are 6.3 days, 5.4 days and 13.1 days respectively. Estimates of the mean and 95th percentile of the incubation period distribution were considerably shorter before the epidemic peak in China compared to after the peak, and variation was also noticed for different choices of methodological approach in estimation. Our findings implied that corrections may be needed before directly applying estimates of incubation period into control of or further studies on emerging infectious diseases.

   Analyzing 813 viral genome sequences from nasopharyngeal swabs, we showed that vaccinees who tested positive at least 7 days after the second dose were disproportionally infected with B.1.351, compared with controls. Those who tested positive between 2 weeks after the first dose and 6 days after the second dose were disproportionally infected by B.1.1.7. These findings suggest reduced vaccine effectiveness against both VOCs within particular time windows.

The data suggest that immunity in convalescent individuals will be very long lasting and that convalescent individuals who receive available mRNA vaccines will produce antibodies and memory B cells that should be protective against circulating SARS-CoV-2 variants.


We describe 3 patients with SCLS or a history suggestive of SCLS who developed life-threatening flares 1 to 2 days after COVID-19 vaccination. We believe these patients identify SCLS as a risk factor for the development of serious adverse reactions after COVID-19 vaccination. However, we recognize that these observations do not rule out other causes of these flares. For example, infection-related symptoms precede 44% to 64% of all acute flares, and flares have been reported with SARS-CoV-2 infection. However, we were unable to identify any of these other triggers.


To our knowledge, this is the first report of patients with solid organ transplants receiving a third dose of vaccine directed against SARS-CoV-2. It is encouraging that antibody titers increased after the third dose in one third of patients who had negative antibody titers and in all patients who had low-positive antibody titers. In addition, the vaccine reactions seem acceptable, given the benefits that these vaccines can confer. Antibody responses, however, appear to vary, and potential risks, such as organ rejection, should be evaluated on an individual basis.


Our series of 7 male COVID-19 vaccination recipients who presented with myocarditis-like illness supports a potential causal association with vaccination given the temporal relationship, clinical presentation and CMR findings. Additional study is needed to confirm if the rate of myocarditis-like illness is higher after vaccination than the background rate of myocarditis among similar aged individuals in the population. Globally, myocarditis is diagnosed in approximately 10-20 individuals per 100,000/year. The clinical course of vaccine-associated myocarditis-like illness appears favorable, with resolution of symptoms in all patients.


We report a case of a 30-year-old male who presented progressive dyspnea and constrictive retrosternal pain after receiving SARS-CoV-2 vaccine. Cardiac magnetic resonance and laboratory data revealed typical findings of acute myopericarditis.

There is a generally high immunogenicity of COVID-19 vaccination in oncology patients except immunosuppressed cohorts that need novel vaccination or passive immunization strategies.

**Whole Person Care**


Among 10,444 U.S. adults surveyed during December 6–27, 2020, and February 16–March 8, 2021, parents, unpaid caregivers of adults, and parents-caregivers (persons in both roles) had significantly worse mental health than adults not in these roles, including five times the odds of any adverse mental health symptoms (parents-caregivers). Persons who had someone to rely on for support had lower odds of experiencing any adverse mental health symptoms. Parents and unpaid caregivers of adults, and particularly those in both roles, might benefit from mental health support and services tailored to their roles.

**Women & Children**


The side-effect profile obtained from a detailed systematic review of organ systems among pregnant women who received either of the mRNA vaccines in the immediate or early postvaccination period were nonlife threatening and they appeared to be similar (with no significant statistical difference) when compared with nonpregnant women. The pregnancy-related adverse events were very rarely reported. There is high acceptance of the second vaccine dose, which is an encouraging aspect for future pregnant vaccine recipients.


Among 135,968 women, 7,154 (5.3%) had initiated and 15,043 (11.1%) had completed vaccination during pregnancy. Receipt of ≥1 dose of COVID-19 vaccine during pregnancy was highest among women aged 35-49 years (22.7%) and lowest among those aged 18-24 years (5.5%), and higher among non-Hispanic Asian (Asian) (24.7%) and non-Hispanic White (White) women (19.7%) than among Hispanic (11.9%) and non-Hispanic Black (Black) women (6.0%). Vaccination coverage increased among all racial and ethnic groups over the analytic period,
likely because of increased eligibility for vaccination† and increased availability of vaccine over time. These findings indicate the need for improved outreach to and engagement with pregnant women, especially those from racial and ethnic minority groups who might be at higher risk for severe health outcomes because of COVID-19.


This study of EHRs of children and youth hospitalized for COVID-19 in 6 countries demonstrated variability in hospitalization trends across countries and identified common complications and laboratory abnormalities in children and youth with COVID-19 infection. Trends in hospitalizations for 671 children and youth found discrete surges with variable timing across 6 countries. Common complications included cardiac arrhythmias, viral pneumonia, and respiratory failure. Few children were treated with COVID-19-directed medications.


In this community-based cross-sectional study, SARS-CoV-2 RNA levels, as determined by Ct values, were significantly higher in symptomatic individuals than in asymptomatic individuals and no significant age-related differences were found. Further research is needed to understand the role of SARS-CoV-2 RNA levels and viral transmission.


Among children and adolescents with MIS-C, initial treatment with IVIG plus glucocorticoids was associated with a lower risk of new or persistent cardiovascular dysfunction than IVIG alone.


This study from the New York State has reported an incidence of MIS-C of 2 per 100,000 persons younger than 21 years of age between 1 March 1 and 10 May 2020.
**GUIDELINES & CONSENSUS STATEMENTS**


**FDA / CDC / NIH / WHO Updates**

CDC – Delta variant now categorized as Variant of Concern, June 15, 2021


**Commentary / Press Releases**

RECOVERY trial finds Regeneron’s monoclonal antibody combination reduces deaths for hospitalised COVID-19 patients who have not mounted their own immune response. June 16, 2021. *see research preprint here*

Novavax COVID-19 Vaccine Demonstrates 90% Overall Efficacy and 100% Protection Against Moderate and Severe Disease in PREVENT-19 Phase 3 Trial. June 14, 2021


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