Providence

COVID-19 Resource Desk

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Prepared by System Library Services Retraction Watch

New Research

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

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

Basic Science / Virology / Pre-clinical

1. **Interferon resistance of emerging SARS-CoV-2 variants.** Guo K, et al. *Proc Natl Acad Sci U S A.* 2022 Aug 9;119(32):e2203760119. doi: 10.1073/pnas.2203760119. https://doi.org/10.1073/pnas.2203760119

We compared the potency of 17 different human interferons against multiple viral lineages sampled during the global outbreak, including ancestral and five major variants of concern that include the B.1.1.7 (alpha), B.1.351 (beta), P.1 (gamma), B.1.617.2 (delta), and B.1.1.529 (omicron) lineages. Our data reveal that relative to ancestral isolates, SARS-CoV-2 variants of concern exhibited increased interferon resistance, suggesting that evasion of innate immunity may be a significant, ongoing driving force for SARS-CoV-2 evolution. These findings have implications for the increased transmissibility and/or lethality of emerging variants and highlight the interferon subtypes that may be most successful in the treatment of early infections.

Clinical Syndrome

2. **Phenotypic Heterogeneity of Fulminant COVID-19--Related Myocarditis in Adults.** Barhoum P, et al. *J Am Coll Cardiol.* 2022 Jul 26;80(4):299-312. doi: 10.1016/j.jacc.2022.04.056. https://doi.org/10.1016/j.jacc.2022.04.056

MIS-A+ and MIS-A- fulminant COVID-19-related myocarditis patients have 2 distinct phenotypes with different clinical presentations, prognosis, and immunological profiles. Differentiating these 2 phenotypes is relevant for patients' management and further understanding of their pathophysiology.

3. **Clinical characteristics and outcome of immunocompromised patients with COVID-19 caused by the Omicron variant: a prospective observational study.** Malahe SRK, et al. *Clin Infect Dis*. 2022 Jul 23:ciac571. doi: 10.1093/cid/ciac571. https://doi.org/10.1093/cid/ciac571

While the mortality in immunocompromised patients infected with Omicron was low, hospital admission was frequent and the duration of symptoms often prolonged. Besides vaccination, other interventions are needed to limit the morbidity from COVID-19 in immunocompromised patients.

Diagnostics & Screening

4. **Sensitivity of RT-PCR tests for SARS-CoV-2 through time.** Binny RN, et al. *J Infect Dis.* 2022 Jul 25:jiac317. doi: 10.1093/infdis/jiac317. https://doi.org/10.1093/infdis/jiac317

Using data from New Zealand, we estimate the time-varying sensitivity of SARS-CoV-2 RT-PCR under varying temporal, biological and demographic factors. Sensitivity peaks 4-5 days post-infection at 92.7% [91.4%, 94.0%] and remains over 88% between 5 and 14 days post-infection. After the peak, sensitivity declined more rapidly in vaccinated cases compared to unvaccinated, females compared to males, those aged under 40 compared to over 40 s, and Pacific peoples compared to other ethnicities. RT-PCR remains a sensitive technique and has been an effective tool in New Zealand's border and post-border measures to control COVID-19. Our results inform model parameters and decisions concerning routine testing frequency.

Epidemiology & Public Health

5. **Relation of Incident Type 1 Diabetes to Recent COVID-19 Infection: Cohort Study Using e-Health Record Linkage in Scotland.** McKeigue PM, et al. *Diabetes Care.* 2022 Jul 26:dc220385. doi: 10.2337/dc22-0385. https://doi.org/10.2337/dc22-0385

Type 1 diabetes incidence in children increased during the pandemic. However, the cohort analysis suggests that SARS-CoV-2 infection itself was not the cause of this increase.

Prognosis

6. **Association of Blood Viscosity with Mortality Among Patients Hospitalized With COVID-19.** Choi D, et al. *J Am Coll Cardiol.* 2022 Jul 26;80(4):316-328. doi: 10.1016/j.jacc.2022.04.060. https://doi.org/10.1016/j.jacc.2022.04.060

Among hospitalized COVID-19 patients, increased eBV is significantly associated with higher mortality. This suggests that eBV can prognosticate patient outcomes in earlier stages of COVID-19, and that future therapeutics aimed at reducing WBV should be evaluated.

7. **Association of Renin Angiotensin Aldosterone System Inhibitors and Outcomes of Hospitalized Patients With COVID-19.** Society of Critical Care Medicine Discovery Viral Infection and Respiratory Illness Universal Study (VIRUS): COVID-19 Registry Investigator Group. *Crit Care Med.* 2022 Jul 27. doi: 10.1097/CCM.0000000000005627. https://doi.org/10.1097/ccm.0000000000005627

   Among patients hospitalized for COVID-19 who were taking AHAs, prior use of a combination of RAASIs and other AHAs was associated with higher in-hospital mortality than the use of RAASIs alone. When compared with ARBs, ACEIs were associated with significantly higher mortality in hospitalized COVID-19 patients.

Survivorship & Rehabilitation

8. **Symptoms and risk factors for long COVID in non-hospitalized adults.** Subramanian A, et al. *Nat Med.* 2022 Jul 25. doi: 10.1038/s41591-022-01909-w. https://doi.org/10.1038/s41591-022-01909-w

We selected 486,149 adults with confirmed SARS-CoV-2 infection and 1,944,580 propensity score-matched adults with no recorded evidence of SARS-CoV-2 infection. Outcomes included 115 individual symptoms, as well as long COVID, defined as a composite outcome of 33 symptoms by the World Health Organization clinical case definition. A total of 62 symptoms were significantly associated with SARS-CoV-2 infection after 12 weeks. The largest aHRs were for anosmia, hair loss, sneezing, ejaculation difficulty and reduced libido. Among the cohort of patients infected with SARS-CoV-2, risk factors for long COVID included female sex, belonging to an ethnic minority, socioeconomic deprivation, smoking, obesity and a wide range of comorbidities. The risk of developing long COVID was also found to be increased along a gradient of decreasing age.

9. **Prognosis and persistence of smell and taste dysfunction in patients with covid-19: meta-analysis with parametric cure modelling of recovery curves.** Tan BKJ, et al. *BMJ.* 2022 Jul 27;378:e069503. doi: 10.1136/bmj-2021-069503. https://doi.org/10.1136/bmj-2021-069503

18 studies (3699 patients) from 4180 records were included in reconstructed IPD meta-analyses. A substantial proportion of patients with covid-19 might develop long lasting change in their sense of smell or taste. This could contribute to the growing burden of long covid.

Therapeutics

10. **Antiviral drug treatment for nonsevere COVID-19: a systematic review and network meta-analysis.** Pitre T, et al. *CMAJ.* 2022 Jul 25;194(28):E969-E980. doi: 10.1503/cmaj.220471. https://doi.org/10.1503/cmaj.220471

Molnupiravir and nirmatrelvir-ritonavir probably reduce risk of hospital admissions and death among patients with nonsevere COVID-19. Nirmatrelvir-ritonavir is probably more effective than molnupiravir for reducing risk of hospital admissions. Most trials were conducted with unvaccinated patients, before the emergence of the Omicron variant; the effectiveness of these drugs must thus be tested among vaccinated patients and against newer variants.

11. **Casirivimab and Imdevimab for the Treatment of Hospitalized Patients With COVID-19.** COVID-19 Phase 2/3 Hospitalized Trial Team. *J Infect Dis.* 2022 Jul 27:jiac320. doi: 10.1093/infdis/jiac320. https://doi.org/10.1093/infdis/jiac320

In this phase I/II/III, double-blind, placebo-controlled trial conducted prior to widespread circulation of Delta and Omicron, hospitalized COVID-19 patients were randomized (1:1:1) to 2.4 g or 8.0 g CAS + IMD or placebo, and characterized at baseline for viral load and SARS-CoV-2 serostatus. In hospitalized COVID-19 patients on low-flow/no oxygen, CAS + IMD reduced viral load and likely improves clinical outcomes in the overall population, with the benefit driven by seronegative patients, and no harm observed in seropositive patients.

Vaccines / Immunology

12. **Effectiveness of 2, 3, and 4 COVID-19 mRNA Vaccine Doses Among Immunocompetent Adults During Periods when SARS-CoV-2 Omicron BA.1 and BA.2/BA.2.12.1 Sublineages Predominated - VISION Network, 10 States, December 2021-June 2022.** Link-Gelles R,et al. *MMWR Morb Mortal Wkly Rep.* 2022 Jul 22;71(29):931-939. doi: 10.15585/mmwr.mm7129e1. https://doi.org/10.15585/mmwr.mm7129e1

VE against COVID-19-associated hospitalization 7-119 days and ≥120 days after receipt of dose 3 was 92% and 85%, respectively, during the BA.1 period, compared with 69% and 52%, respectively, during the BA.2/BA.2.12.1 period. Patterns were similar for ED/UC encounters. Among adults aged ≥50 years, VE against COVID-19-associated hospitalization ≥120 days after receipt of dose 3 was 55% and ≥7 days (median = 27 days) after a fourth dose was 80% during BA.2/BA.2.12.1 predominance. Immunocompetent persons should receive recommended COVID-19 booster doses to prevent moderate to severe COVID-19, including a first booster dose for all eligible persons and second booster dose for adults aged ≥50 years at least 4 months after an initial booster dose. Booster doses should be obtained immediately when persons become eligible.

13. **Association Between Vaccination and Acute Myocardial Infarction and Ischemic Stroke After COVID-19 Infection.** Kim YE, et al. *JAMA*. 2022 Jul 22. doi: 10.1001/jama.2022.12992. https://jamanetwork.com/journals/jama/fullarticle/2794753

This study found that full vaccination against COVID-19 was associated with a reduced risk of AMI and ischemic stroke after COVID-19. The findings support vaccination, especially for those with risk factors for cardiovascular diseases. Study limitations include that diagnosis codes for reimbursement were used to capture outcome events. Although the operational definition in this study has been widely used, some diagnostic inaccuracies may exist. Also, there were imbalances in patient characteristics by vaccination status. The decision to be vaccinated is affected by multiple factors that may also be associated with cardiovascular risk. A robust model was applied to mitigate the effect of such imbalances, but the possibility of unobserved bias remains.

14. **Effectiveness Associated with Vaccination After COVID-19 Recovery in Preventing Reinfection.** Lewis N, et al. *JAMA Netw Open*. 2022 Jul 1;5(7):e2223917. doi: 10.1001/jamanetworkopen.2022.23917. https://doi.org/10.1001/jamanetworkopen.2022.23917

These findings suggest that risk of SARS-CoV-2 reinfection after recovery from COVID-19 was relatively high among individuals who remained unvaccinated. Vaccination after recovery from COVID-19 was associated with reducing risk of reinfection by approximately half.

15. **Safety Monitoring of COVID-19 mRNA Vaccine Second Booster Doses Among Adults Aged ≥50 Years - United States, March 29, 2022-July 10, 2022.** Hause AM, et al. *MMWR Morb Mortal Wkly Rep.* 2022 Jul 29;71(30):971-976. doi: 10.15585/mmwr.mm7130a4. https://doi.org/10.15585/mmwr.mm7130a4

During March 29-July 10, 2022, approximately 16.8 million persons in the United States aged ≥50 years received a fourth dose. Among 286,380 v-safe registrants aged ≥50 years who reported receiving a second booster of an mRNA vaccine, 86.9% received vaccines from the same manufacturer for all 4

doses (i.e., homologous vaccination). Among registrants who reported homologous vaccination, injection site and systemic reactions were less frequent after the second booster dose than after the first booster dose. VAERS received 8,515 reports of adverse events after second mRNA booster doses among adults aged ≥50 years, including 8,073 (94.8%) nonserious and 442 (5.1%) serious events. CDC recommends that health care providers and patients be advised that local and systemic reactions are expected after a second booster dose, and that serious adverse events are uncommon.

Women & Children

16. **Post-COVID-19 Conditions Among Children 90 Days After SARS-CoV-2 Infection.** Pediatric Emergency Research Network–COVID-19 Study Team. *JAMA Netw Open.* 2022 Jul 1;5(7):e2223253. doi: 10.1001/jamanetworkopen.2022.23253. https://doi.org/10.1001/jamanetworkopen.2022.23253

In this cohort study, SARS-CoV-2 infection was associated with reporting PCCs at 90 days in children. Guidance and follow-up are particularly necessary for hospitalized children who have numerous acute symptoms and are older.

GUIDELINES & CONSENSUS STATEMENTS

Update Alert 8: Masks for Prevention of Respiratory Virus Infections, Including SARS-CoV-2, in Health Care and Community Settings. *Ann Intern Med.* 2022 Jul 26. doi: 10.7326/L22-0272.

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