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GW COVID-19 Intelligence Reports

GW Covid-19 Collection

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### GW Covid-19 Intelligence Reports: July 27, 2020

George Washington University

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**Epidemiology** – National and local trends demonstrate increasing new infections:

As of July 23<sup>rd</sup>, 144,000 people had died of COVID-19 in the U.S., and total cases reached [4 million](#), increasing from 3 million in only 15 days. Total number of cases [doubled](#) in 6 weeks. New [hot spots](#) — where daily cases are increasing over the past 14 days and testing positivity rate is increasing or is  $\geq 10\%$  — include CA, TX, FL, AZ, and LA.

The CDC director estimated that there may be [10 other infections](#) for every reported case and that 5-8% of Americans may have contracted the virus.

The DMV had increased cases in July, [particularly in younger patients](#). [Recent data](#) show 66% of cases and 29% of hospitalizations in patients <40yo, compared with 41% and 16% before July.

**Transmission** – Airborne transmission is likely, children spread virus more than adults and asymptomatic case rate is significant:

Aerosol samples collected around COVID-19 patients at the University of Nebraska demonstrated the presence of infectious, replicating virions, [indicating airborne transmission](#) is possible.

A [South Korean study](#) indicated that children between 10-19yo can spread the virus as much or more than adults. For index patients 10-19yo, **18.6%** of household contacts had COVID-19 compared with 11.8% for all index patients.

An [Italian study](#) found 42.5% of confirmed SARS-CoV-2 detections were asymptomatic. There was no significant difference in the viral load of symptomatic versus asymptomatic infections.

**Key Updates in Disease Presentation, Course, and Complications:**

Co-Infection - [Community acquired coinfection](#) was identified in 3.7% of hospitalized COVID-19 patients and in 41% of patients [admitted to ICU](#). Antibiotics were used in 69% of patients overall.

Dermatology - [Chillblains](#), or “COVID toes”, were reported to result from sedentary lifestyles and lack of warm footwear. [Analysis of a variety of cutaneous manifestations](#) of COVID-19 demonstrated that morbilliform was the most common; pernio-like lesions were common in patients with mild disease; and retiform purpura presented exclusively in ill, hospitalized patients. Certain skin changes may be [the only signs](#) of COVID-19 infection.

Hematology & Immunology - A [multi-institution study](#) found [no relationship](#) between blood type and COVID-19 severity, though types B and AB and Rh+ status were associated with a greater chance of testing positive (AOR 1.28, 1.37, and 1.23, respectively).

[Antibody response](#) to COVID-19 showed 95% of cases had seroconversion and neutralizing antibody response. Declining neutralizing antibodies were detected in samples up to 90 days after symptoms onset. Long-lasting [CD4 and CD8 T cells](#) developed and recognized multiple regions of the SARS-CoV-2 nucleocapsid protein.

[Three immunotypes](#) in COVID-19 patients were shown to be associated with poor clinical outcomes.

Laboratory Studies - A [study from Wuhan](#) showed that, for patients presenting with moderate COVID-19, higher levels of **neutrophil: lymphocyte** count and **CRP** on admission were associated with poor prognosis.

Neurology - Neurological complications of COVID-19 [include](#) encephalopathies, inflammatory CNS syndromes; ischemic stroke; peripheral neurologic disorders; and miscellaneous central disorders.

**Obstetrics & Pediatrics:**

Mothers infected with SARS-CoV-2 had [no transmission](#) to newborns while breastfeeding and sharing rooms, indicating transmission is unlikely when proper hygiene precautions are taken.

[Pregnant women](#) with COVID-19 were significantly more likely than nonpregnant women to require hospitalization, intensive care, and mechanical ventilation, but were not at greater risk of death. Black women were disproportionately affected by SARS-CoV-2 during pregnancy.

[Use of lung ultrasound](#) was found to be more predictive in detecting COVID-19 infection in pregnant women admitted to the hospital than screening based on symptomatology alone.

In [Multisystem Inflammatory Syndrome](#) in Children (MIS-C), median age was 8.3 years, 73% were previously healthy, 62% were male, 70% had positive PCR or antibody testing, 80% required ICU, and 2% died. The [CDC reported](#) 342 cases and 6 deaths due to MIS-C, 71% in Latino or Black children.

### **Risk Factors:**

The CDC expanded the [risk factors](#) for severe illness from COVID-19, removing the 65yo threshold and warning that risk increases steadily with age. CKD, COPD, Obesity (BMI≥30), immunocompromise, serious heart conditions, sickle cell disease, and Type 2 diabetes increase the risk of severe illness.

Hospitalized COVID-19 patients with HIV [were not found to have differences in adverse outcomes](#) compared to similar non-HIV patient groups.

Non-White hospitalized COVID-19 patients [were more likely to present with increased disease severity](#) on admission chest radiographs than White/Non-Hispanic patients.

Use of [ACE-Is and ARBs](#) did not increase the risk of severe or lethal COVID-19; ARB use may be associated with [lower mortality](#). Severe COVID-19 patients on chronic ACEIs/ARBs have an [increased risk of AKI](#) predicted by increased urea nitrogen.

[Statin use](#) was associated with lower risk of mortality in COVID-19 patients in a retrospective study.

[Risk factors for pulmonary embolism](#) in COVID-19 patients did not include traditional thrombo-embolic risk factors; clinical and biological findings at admission, including CRP, were associated with PE.

A [system to predict survival](#) in hospitalized COVID-19 patients showed older age, LDH, elevated neutrophil: lymphocyte ratio, and high direct bilirubin were predictive of 28-day mortality.

[Biomarkers](#) including IL-6, CRP, ferritin, LDH, and D-Dimer, can aid in detection of hospitalized COVID-19 patients at risk of deterioration. LDH and [D-dimer](#) were most associated with mortality and CRP and D-Dimer were most associated with ICU transfer and intubation.

The [sepsis-induced coagulopathy](#) scoring system can be used for early assessment and management of COVID-19 patients with critical disease; low platelets, and increased PTT, D-Dimer, and neutrophil: lymphocyte ratio are predictive of increased disease severity.

An [increased incidence of stress cardiomyopathy](#) was found during the pandemic (7.8% vs. <2% pre-pandemic), suggesting a contribution of psychological, social and economic stressors.

### **Key Diagnostic Testing Updates**

[Antibody tests](#) 1 week after first symptoms detected only 30% of people who had COVID-19; accuracy increased in week 2 (70%), and was highest in week 3 (> 90%). In 2% of those without COVID-19, antibody tests gave false positive results. A [CRISPR-based assay](#) was developed to improve diagnosis of COVID-19.

### **Key Treatments & Research Updates**

[RECOVERY trial data](#) showed that **dexamethasone** reduced 28-day mortality in hospitalized COVID-19 patients receiving respiratory support.

Treatment with **colchicine** was associated with reduced clinical deterioration but no difference in troponin levels in a [RCT](#) of 105 hospitalized COVID-19 patients,

**Remdesivir** showed favorable safety and pharmacokinetic profiles [supporting once-daily dosing](#). Prioritization of remdesivir [was recommended](#) for hospitalized patients requiring low-flow supplemental oxygen. Some benefit was shown for hospitalized patients on room air, but not for those requiring high-flow oxygen, noninvasive or invasive mechanical ventilation. Treatment for 5 days was recommended.

**Sarilumab** use for IL-6 blockade in patients with severe COVID-19 and systemic hyperinflammation [was not significantly associated with clinical improvement](#). **Tocilizumab** was associated with a [45% reduction in death](#) in COVID-19 patients requiring mechanical ventilation and in [clinical improvement in 74%](#) within 14 days. [Early response](#) to it was associated with increased survival and shorter hospital stay. **Favipiravir** [was shown to be of some benefit](#) as an anti-inflammatory in severe COVID-19.

[Hydroxychloroquine treatment](#) had no benefit in mild COVID-19, [nor did it](#) substantially reduce symptom severity in symptomatic COVID-19 outpatients.

A [meta-analysis and living systematic review](#) revealed continued uncertainty over whether **convalescent plasma** is beneficial and safe for hospitalized COVID-19 patients.

The Radiological Society of North America (RSNA) established a [COVID-19 Open Radiology Database](#) to provide imaging data and supporting clinical information for education and research.

### **Key Vaccine Updates**

The [ChAdOx1 nCoV-19 vaccine](#) showed an acceptable safety profile and humoral and cellular responses. An [Ad5-vectored COVID-19 vaccine](#) was determined to be safe and induced significant immune responses in the majority of recipients after one dose. An [mRNA-1273 vaccine](#) induced immune responses in all participants without trial-limiting safety concerns.

A [National Academies](#) committee will assist policymakers with equitable allocation of COVID-19 vaccines.

### **Public Policy & News**

The DC Mayor [ordered](#) all persons leaving their residences to wear masks with limited exceptions and, has instituted a requirement that anyone coming to DC from [27 states with 'hot spots'](#) must quarantine for 14 days.

HHS [ordered hospitals](#) to submit data on ICU capacity, ventilator use, PPE, and staffing shortages to its Teletracking system or state health departments rather than to the CDC.

The [Republican National Convention](#) was cancelled due to the flare-up of COVID-19 in Florida.

The Trump administration stated [schools must reopen](#). Montgomery, Prince George's, Arlington, and Fairfax Counties will begin with full-time distance learning in the Fall. DC has not announced its plans.

Dr. Anthony Fauci [threw the first pitch](#) at the opening Washington Nationals game on 7/23. Star player Juan Soto, 21yo, [tested positive](#) for coronavirus hours before the game.

This report was produced by Laura Sigman, MD, JD and Himmelfarb Reference Librarians Elaine Sullo, Laura Abate and Stacy Brody and the GW Covid-19 Intelligence Unit. If you have a question that the Intelligence Unit can assist you with, or if you would like to provide suggestions or feedback, please email Dr. Lawrence Deyton, lead for the Intelligence at [L.Deyton@gwu.edu](mailto:L.Deyton@gwu.edu).

NOTE: Intelligence Reports will be issued monthly with Special Intelligence Reports issued on topics of immediate interest on an as needed basis. Interim updates are available –see Dr. Akselrod's Department of Medicine weekly Infectious Disease Update available on the GW Covid-19 Intelligence Reports webpage at <https://guides.himmelfarb.gwu.edu/SituationReport>

Searchable GW Covid-19 resources can be found through the following links:

GW Covid-19 Research Guide: <https://guides.himmelfarb.gwu.edu/covid-19>

GW Covid-19 Intelligence Reports: <https://guides.himmelfarb.gwu.edu/SituationReport>