

Title of Paper	Journal	Pub. Date	Category	Article highlights	Problem/Background	Design	Groups, for clinical studies	Results
<a href="#"><u>Multivariate Analysis of Factors Affecting COVID-19 Case and Death Rate in U.S. Counties: The Significant Effects of Black Race and Temperature</u></a>	medRxiv	4/24/20	Prognosis	U.S. counties with a higher proportion of Black residents are associated with increased COVID-19 cases and deaths, lower daily temperature associated with increased cases but not deaths.		Basic science	Counties were excluded from the analyses if they had fewer than 50 cases or their first case occurred fewer than 3 weeks prior to the end of the study. With these constraints, 661 counties from 50 states and Washington D.C were included in case analysis. Counties were excluded from death analyses if they reported fewer than 10 deaths or the first death had occurred fewer than 2 weeks prior to the end of the study. The deaths analyses include 217 counties from 37 states and D.C.	See highlights
<a href="#"><u>Characteristics of Patients with Coronavirus Disease (COVID-19) Confirmed using an IgM-IgG Antibody Test</u></a>	Journal of Medical Virology	4/24/20	Diagnosis & Prevention	Serological testing for IgM-IgG might serve as a supplementary testing to improve sensitivity of COVID-19 diagnosis	Nuclei acid based testing only suffers from false negatives	Basic science		56 hospitalized patients enrolled. 15 positive and 1 negative for IgM in the 16 nucleic acid positive patients, and 34 positive and 6 negative for IgM in the 40 nucleic acid negative patients. All patients tested positive for IgG. Level of IgM was weakly associated with severity of acute inflammation.
<a href="#"><u>MINERVA: A facile strategy for SARS-CoV-2 whole genome deep sequencing of clinical samples</u></a>	bioRxiv	4/25/20	Biology	Simplified sequencing library construction approach (MINERVA) achieves high sensitivity, coverage and depth for viral genome sequencing from patient samples	A better approach for capturing viral genome together with metatranscriptome from patient sample is needed	Basic science		Direct tag RNA/cDNA hybrids with sequencing adapters combined with post-library target enrichment protocol reduces hands-on time to 100min from clinical sample to sequencing-ready library, or 190min if deeper viral genome coverage is required. This method can reach higher coverages at similar sequencing depth compared to traditional approach.
<a href="#"><u>A Library of Nucleotide Analogues Terminate RNA Synthesis Catalyzed by Polymerases of Coronaviruses Causing SARS and COVID-19</u></a>	bioRxiv	4/25/20	Treatment	New set of nucleotide analogues that could inhibit SARS-CoV-2 RdRps	Testing nucleotide analogues as potential treatment approach	Basic science		Nucleotide analogues with sugar or base modifications were tested for polymerase reaction with RdRp. All 11 molecules tested displayed incorporation, 6 exhibited immediate termination of the polymerase reaction (Carbovir triphosphate, Ganciclovir triphosphate, Stavudine triphosphate, Entecavir triphosphate, 3'-O-methyl UTP and Biotin-16-dUTP), 2 showed delayed termination (Cidofovir diphosphate and 2'-O-methyl UTP), and 3 did not terminate the polymerase reaction (2'-fluoro-dUTP, 2'-amino-dUTP and Desthiobiotin-16-UTP). These could potentially be used for viral replication inhibitions.
<a href="#"><u>Trained immunity: a tool for reducing susceptibility and severity of SARS-CoV-infection</u></a>	Cell	Pre-proof	Diagnosis & Prevention	Induction of trained immunity by whole microorganism vaccines may reduce susceptibility and severity of SARS-CoV-2 infection	What are the possible strategies to boost immune response against SARS-CoV-2 viral infections?	Ideas, editorials, reviews or opinions		Whole microorganism vaccines (e.g., BCG) have been shown to induce trained immunities that could potentially protect the host against other viral infections. Induce immunity with these type of vaccines might boost the innate immune responses to enable viral replications to be kept under control. Clinical trials focusing on the effect of BCG are ongoing in Netherlands and Australia in health care workers.
<a href="#"><u>Herd immunity: understanding COVID-19</u></a>	Immunity	Pre-proof	Epidemiology	Without vaccination program, establishing herd immunity should not be the ultimate goal	How's herd immunity established and is it the proper goal for fighting COVID-19	Ideas, editorials, reviews or opinions		To establish herd immunity, immunized population should reach 1-1/R0, which is about 67% for SARS-CoV-2. Reaching this level of infection without vaccination program in place could lead to the death of 30 million people worldwide with the estimated infection fatality rate (IFR) of 0.6%. However, our population is not evenly distributed, and the protection against reinfection might wane over time, weakening the effectiveness of herd immunity. Emphasis now should be to protect the clustered vulnerable groups, in the hopes that herd immunity will eventually be reached as a byproduct of such measures.
<a href="#"><u>Heparin therapy improving hypoxia in COVID-19 patients - a case series</u></a>	medRxiv	4/22/20	Treatment	Treatment with therapeutic levels of heparin can be considered for COVID-19 patients	Does treatment with therapeutic levels of heparin contribute to improvement in COVID-19 patients?	Case reports/series	27 consecutive COVID-19 patients admitted to the Pulmonology service at Sirio-Libanes Hospital in Sao Paulo-Brazil	All patients treated with therapeutic levels of heparin matching their clinical severity. PaO2/FiO2 ratio improved and patients showed progressive improvement without bleeding complications.

<a href="#"><u>Smoking, vaping and hospitalization for COVID-19</u></a>	qeios	pre-print	Epidemiology	<b>Nicotine may have beneficial effects on COVID-19, while generalized advice to quit smoking as a measure to improve health risk remains valid</b>	Is smoking a risk factor for COVID-19 hospitalization?	Meta-analysis		Data from 13 studies covering 5960 patients in China suggested that smokers are depleted in the hospitalized COVID-19 patients compared to the general population, with a pooled prevalence of only 6.5% (population smoking prevalence in the country is 26.6%). But one should take confounding factors into consideration in interpreting this result.
<a href="#"><u>Considerations for Large Building Water Quality after Extended Stagnation</u></a>	OSF	pre-print	Legal, Ethics & Management	<b>Recommissioning is recommended to restore the water to baseline conditions for building reopening.</b>	Building closure-derived water stagnation could lead to chemical and microbiological issues upon reopening	Ideas, editorials, reviews or opinions		Water stagnation may lead to issues related to disinfectant residual stability (at Point Of Entry), decreased effectiveness of corrosion control, and microbial growth in the piping system. Water management plans should be in place, with regular flushings, full closures of the heater system, and monitor of the disinfectant residual level taken into consideration.
<a href="#"><u>ACE-2 Expression in the Small Airway Epithelia of Smokers and COPD Patients: Implications for COVID-19</u></a>	Eur Respir J	In Press	Biology	<b>ACE2 expression level is higher in airways of current smokers and those with COPD in COVID-19 patients.</b>	Smoking status and ACE2 expression	Basic science		ACE2 protein level were measured from COVID-19 patients including 10 current smokers with COPD (FEV1/FVC 61±7%), 9 non-smoker controls (FEV1/FVC 85±2%), and 8 healthy current smokers (FEV1/FVC 78±6%). Increase in expression was seen in COPD (2.52 ±0.66) versus non-COPD subjects (1.70±0.51; p=7.62×10 <sup>-4</sup> ) and smokers (2.77±0.91) versus non-smokers (1.78±0.39; p=0.024). The increased ACE2 expression pattern in smokers was confirmed in Cornell and BCCA cohorts.
<a href="#"><u>Out-of-Hospital Cardiac Arrest during the Covid-19 Outbreak in Italy</u></a>	NEJM	4/29/20	Epidemiology	<b>Compared to the same time period in 2019, there was a 58% increase in out-of-hospital cardiac arrests. The cumulative incidence of out-of-hospital cardiac arrests was significantly correlated with the cumulative incidence of COVID-19 in the same area.</b>	Are there cardiac events from COVID-19 that occur out of hospital that contributed to mortality?	Cross-sectional study	From the Lombardia Cardiac Arrest Registry, incidence of cardiac arrest in the Italian provinces of Lodi, Cremona, Pavia, and Mantua were studied.	See highlights
<a href="#"><u>Reduced Rate of Hospital Admissions for ACS during Covid-19 Outbreak in Northern Italy</u></a>	NEJM	4/28/20	Epidemiology	<b>Compared to the same time period in 2019 and prior to the local COVID-19 outbreak, there was a significantly reduced number of hospital admissions for acute coronary syndrome.</b>	How has COVID-19 impacted care seeking for other disease?	Cross-sectional study	Acute coronary syndrome admissions at 15 hospitals in northern Italy from February 20 to March 31 2020.	See highlights

These summaries were prepared by medical and graduate students at Washington University in St. Louis

Please note that medRxiv and bioRxiv articles have not yet been peer-reviewed.

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