TRANSMISSION PATTERNS


After the COVID-19 state of emergency and lockdown ended in Spain in mid-June, public health authorities transitioned to controlling the spread of the disease within communities. At the beginning of summer, the government mandated outbreak reporting at the national level. This study examined notified outbreaks from mid-June to August 2, 2020. Outbreaks were defined as three or more cases with active infection and an epidemiological link. In this time period, a total of 673 outbreaks were reported, reaching 8,300 cases and 22,800 contacts total. Over 55% of these outbreaks were from social gatherings and occupational exposures. Social gatherings included family gatherings or private parties, as well as venues such as clubs, restaurants, and bars. Occupational exposure was most common in the fruit and vegetable sector, followed by the meat processing sector. Around 17% of outbreaks were from other settings, including long-term care facilities (7%), healthcare settings (3%), socially vulnerable groups (6%) and multiple family households (9%). 6,200 cases were still active at the end of the study period. These results show that mobility post lockdown increased outbreaks in early summer. Targeting control measures for social and occupational settings could be a solution to reducing COVID-19 transmission in Spain.

Low risk of COVID-19 among patients exposed to infected healthcare workers

Health visits have decreased due to the COVID-19 pandemic due to patients’ fear of exposing themselves and acquiring the infection upon visiting hospitals or clinics. Baker et al evaluated the risk of COVID-19 amongst 226 patients exposed to healthcare workers with confirmed COVID-19 between March and June 2020. COVID-19 was considered healthcare-associated if an exposed patient tested positive for SARS-CoV-2 within 14 days of a healthcare exposure. Of the 226 exposures with complete follow up, only 1 confirmed infection was documented (0.4%). This suggests that transmission from healthcare workers to patients is rare and that patients should feel safe resuming routine care, particularly in hospitals and clinics with comprehensive infection prevention and control programs. Proposed precautions included mandated masks usage; more than 50% of exposures occurred in instances where the infected healthcare worker was wearing a mask but the patient was not.

PHARMACEUTICAL INTERVENTIONS
Azithromycin in addition to standard of care versus standard of care alone in the treatment of patients admitted to the hospital with severe COVID-19 in Brazil (COALITION II): a randomized clinical trial

Researchers in Brazil conducted a randomized clinical trial to determine if treating COVID-19 patients with azithromycin is more effective at improving clinical outcomes of severe COVID-19 than the standard of care approach with hydroxychloroquine. They studied 15-day clinical status and 29-day survival in a group of 397 patients over the age of 18 with confirmed and severe infection at 57 health centers in Brazil. Patients were assigned to the experimental group with 500mg of azithromycin a day and 400mg of hydroxychloroquine twice a day (214 patients) or the control group with only 400mg of hydroxychloroquine twice a day (183 patients). Results showed that azithromycin is not more effective than the standard of care approach at improving clinical symptoms. Patients in both groups had similar results in mortality, incidence of secondary infections, time spent in hospital, and time without ventilation. Furthermore, in people under the age of 60 or people receiving antiviral medications, clinical status was worse at day 15 in the experimental group. As azithromycin was reported to be the second most commonly used drug against COVID-19 in a recent survey, these results are important to consider in the treatment strategy for COVID-19, as they show that the use of azithromycin in addition to current standard of care should be avoided.

Convalescent plasma in the management of moderate COVID-19 in India: An open-label parallel-arm phase II multicentre randomized controlled trial (PLACID Trial)*

In this open-label, parallel-arm, phase II, multicentre (39 public and private hospitals across 25 cities in India), randomized control trial, 464 confirmed COVID-19 patients were randomized to the standard care arm or to the intervention arm of convalescent plasma (two doses of 200 mL of convalescent plasma transfused 24 hours apart) in addition to standard care. In the control arm, 7.4% of patients progressed to severe disease and 14.6% died; in the intervention arm, 7.2% of patients progressed to severe disease and 13.6% died. The results of the study did not suggest that convalescent plasma therapy was associated with a reduction in progression to severe disease or a reduction in all-cause mortality after 28 days for moderate COVID-19 patients. Convalescent plasma treatment was associated with an improvement in shortness of breath and fatigue at day seven. Future studies could assess the effectiveness of convalescent plasma with high NAb titres.

NON-CLINICAL TRENDS

Global socio-economic losses and environmental gains from the Coronavirus pandemic*

Efforts to curb the effects of COVID-19 have had a profound impact on the global economy, the environment, and society. This study aimed to assess the ways in which the pandemic has reduced economic activity and altered environmental outcomes through a multi-region input-output analysis (MRIO). This analysis represents the economic fluctuations of a local
The MRIO was used to conduct a supply chain analysis, a disaster analysis, and environmental impacts with data from 6 countries and 38 regions. Using direct losses by businesses globally, results demonstrated that total consumption loss was $3.8 trillion, which equates to 4.2% of the global GDP. The global workforce experienced a reduction by 4.2%, resulting in a 6.0% loss in income. Larger economies with higher case numbers or more strict containment measures experienced more of these losses, specifically due to reductions in transportation and tourism as well as international trade. Greenhouse gas emissions reduced by 4.6%, the largest reduction in history. Global PM$_{2.5}$ and air pollutants have also experienced reductions. These reductions have likely occurred due to a decline in use of manufacturing and transport/tourism sectors as well as decreases in power, gas, and water use, particularly in Asia. This study ultimately demonstrates the loss in socio-economic activity and gain in environmental markers, a tension created by COVID-19 prevention and mitigation efforts.

**CLINICAL PRESENTATION & MANAGEMENT**

**Association Between Administration of Systemic Corticosteroids and Mortality Among Critically Ill Patients With COVID-19 A Meta-analysis**

This meta-analysis aimed to identify the relationship between corticosteroids and all-cause mortality in severely ill patients with suspected or confirmed COVID-19. The use of corticosteroids in reduction of COVID-19 severity has stimulated controversy and interest, however, limited data exists on the efficacy of the drug class. A recent randomized trial conducted in the UK revealed dexamethasone as an effective corticosteroid in reducing absolute mortality. Thus, understanding the role of corticosteroids proves impactful. Trials for this study were selected from ClinicalTrials.gov, the Chinese Clinical Trial Registry, and the EU Clinical Trials Register, from December 31, 2019, to April 6, 2020, and a total of seven trials were utilized for the ultimate analysis. The seven trials selected consisted of 1703 critically ill patients, with a median age of 60, from a total of five continents. The analysis determined intake of corticosteroids was associated with lower all-cause mortality at 28 days after randomization among critically ill patients who were and were not receiving invasive mechanical ventilation. As per previous studies, this association is also stronger in patients who were not taking vasoactive medication than in those were. The analysis did not determine significant differences between types of corticosteroids (dexamethasone vs. hydrocortisone) and corticosteroid dosage was challenging to determine. The study suggests a causal ability for corticosteroids to reduce mortality in critically ill COVID-19 patients, however, exploration of corticosteroid related complications is needed.

**Clinical manifestations, risk factors, and maternal and perinatal outcomes of coronavirus disease 2019 in pregnancy: living systematic review and meta-analysis**

This systematic review evaluated COVID-19 in pregnancy and found that in an analysis of 11432 women from 28 studies, approximately 10% of pregnant women were positive or
suspected to be positive for COVID-19 with 7% testing positive during universal screening and 18% testing positive after presenting with symptoms. Pregnant women were also found to be less likely to present with fever or myalgia as symptoms of COVID-19 compared to similar non-pregnant women; however, among pregnant women with COVID-19, the most common symptom was fever (40%) and cough (39%). Among pregnant women with COVID-19, 13% presented with severe COVID-19, 4% required ICU admission, and 3% required a ventilator. Those who are pregnant had 1.62 times the odds of requiring an ICU admission than those who are not pregnant. Risk factors for severe COVID-19 during pregnancy include hypertension, pre-existing conditions such as diabetes, older age, and high BMI. Pregnant women with COVID-19 had 3.01 times the odds of having a preterm birth and 3.13 times the odds of their infants requiring NICU admission compared to those who did not have COVID-19.

**Association of vitamin D status and other clinical characteristics with COVID-19 test results**

A retrospective cohort study of patients with 25-hydroxycholecalciferol or 1,25-dihydroxycholecalciferol (vitamin D) level measurements within one year of a COVID-19 test assessed risk of COVID-19 positive test results with vitamin D status. Results indicated 15% of participants tested positive for COVID-19. For participants who were vitamin D deficient, 19% tested positive for COVID-19, whereas only 12% tested positive for non-deficient levels of vitamin D. Patients with vitamin D deficiency had 77% higher risk of COVID-19 positivity compared with vitamin D sufficient patients (relative risk, 1.77; 95% CI, 1.12-2.81; P=0.02). The results of this study showed increased risk of COVID-19 was associated with vitamin D deficiency, which indicates opportunities to explore using vitamin D treatment for vitamin D deficiency to subsequently reduce incidence of COVID-19.

**Risk factors for COVID-19-related mortality in people with type 1 and type 2 diabetes in England: a population-based cohort study.**

Holman et al conducted a cohort study in England to assess potential risk factors associated with COVID-19 mortality in patients with type 1 and type 2 diabetes. The mean age was 46.6 years for type 1 diabetes and 67.5 for type 2. In the first 19 weeks of 2020, weekly deaths for patients with type 1 diabetes and type 2 diabetes rose by 51% and 64% respectively compared to a 3-year weekly average. Both groups had a higher risk of mortality in Black and Asian individuals than White, with type 2 diabetes also having higher risk in mixed ethnicities. Males had an increased risk COVID-19-related mortality. Increased COVID-19-related mortality was associated with cardiovascular and renal complications of diabetes, glycemic control and BMI. Preceding hyperglycemia was strongly associated with mortality; an HbA1c of 7.6% or higher in type 2 diabetes significantly increased COVID-19 mortality; with the most risk in participants with an HbA1c of 10% or higher in type 2 diabetes (HR 2.23) and in type 1 (HR 1.61). Furthermore, participants with BMI under 20 kg/m2 and those with obesity also had an increased mortality.
NON-PHARMACEUTICAL/PUBLIC HEALTH INTERVENTIONS

Local lockdowns outperform global lockdown on the far side of the COVID-19 epidemic curve

The authors developed a stochastic, spatially-structured model of SARS-CoV-2 transmission among counties using parameters from Ontario, Canada on demographics, epidemiology, testing, and travel; the purpose was to assess the effects of different reopening plans after the flattening of the curve. A reopening and reclosing strategy at the county-level (local) based on triggers for county-level infection prevalence was compared to a strategy at the provincial-level (global) based on triggers for provincial-level infection prevalence. In the scenario where the trigger levels lead to the same number of cases between the two strategies, the results indicated that county-by-county approaches led to fewer person-days of closure (22% fewer person-days at the optimal trigger). The model findings indicate that local strategies should be considered for reopenings and reclosings but poor coordination in triggers and varying testing rates among counties could undermine this strategy and lead to increases in cases and person-days lost to closure.

COVID-19 and HIV spotlight the U.S. imperative for permanent affordable housing

This report outlined the importance of the availability of affordable housing during the COVID-19 pandemic. Evidence has shown that providing permanent affordable housing has improved outcomes during the HIV/AIDS epidemic due to people being less at risk of becoming infected with HIV and those who are living with HIV being able to better manage their HIV when stably housed. Increased rates of job loss, evictions, and subsequent homelessness due to the economic windfall of the COVID-19 pandemic further supports the importance of permanent affordable housing being made available in order to prevent the spread of COVID-19.

PEDIATRIC PRESENTATION

Clinical characteristics and viral RNA detection in children with coronavirus disease 2019 in the Republic of Korea

This study assessed the course of symptom manifestation and the length of time SARS-CoV-2 RNA was detectable in children (under the age of 19) positive for COVID-19. Before diagnosis, 47 of 71 symptomatic children (66%) in the study had unrecognized symptoms, and after diagnosis, 18 of 71 symptomatic children (25%) developed symptoms. Six children (9%) were diagnosed when symptoms started. SARS-CoV-2 RNA was detectable for an average of 14.1 days in asymptomatic children and 17.6 days for symptomatic children. Implications for this study indicate symptom screening is an ineffective method to identify COVID-19 positivity in children, and screening through laboratory testing will better identify COVID-19 positive cases in younger populations with unrecognized symptoms.
*Please note all studies published in medRxiv and bioRxiv are preprints and have not yet undergone a rigorous peer review process.

ADDITIONAL RESOURCES
UCSF Library COVID-19 Research and Information Resources
UCSF Institute for Global Health Sciences COVID-19 Resources
UC Davis One Health Institute COVID-19 FAQs
Harvard Viswanath Lab Myths vs Facts

Note on this Document: This document was assembled by graduate and doctoral students attending the University of California, San Francisco with the intent of facilitating the rapid dissemination of information to the global community in order to help during this time. Lucía Abascal, Anika Kalra, Shivali Joshi, Sarah Gallalee, Alyssa Bercasio, and Canice Christian contributed to these summaries. This work is volunteer based.

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