ZOONOSES

A serological survey of SARS-CoV-2 in cat in Wuhan

Zhang et al. investigated the serological prevalence of SARS-CoV-2 in cats by indirect ELISA and virus neutralization tests (VNTs). Between January and March 2020, 102 cats were sampled in Wuhan, China from three different sources: animal shelters, pet hospitals, and homes of COVID-19 patients. In addition, 39 cat sera collected in 2019 were used as negative controls. Of the 102 cats, 15 (14.7%) tested positive for SARS-CoV-2 infection and 11 (10.8%) had SARS-CoV-2 neutralizing antibodies through VNTs. The cats with the highest antibody titres were owned by COVID-19 patients. For two of the cats with neutralizing antibodies, the researchers tracked the dynamics of the antibody by sampling every 10 days over 130 days. Both cats had peak antibody concentration during the second sampling, which then continuously decreased in concentration for the remaining sampling period. The results of this study suggest the ability of SARS-CoV-2 to infect cats. However, further investigation into the process by which SARS-CoV-2 is transmitted from humans to cats is needed.

NON-CLINICAL TRENDS

The acceptance of COVID-19 tracking technologies: The role of perceived threat, lack of control, and ideological beliefs

Wnuk et al. conducted two studies to evaluate the acceptance of COVID-19 tracking technologies that pose a potential threat to privacy and civil rights. A total of 1,046 participants aged 18-70 were recruited in the first study through an online research panel in Poland between March 13-15, 2020 (shelter-in-place measures were implemented on March 12). In this first study, lack of control ($\beta = 0.28$, $p < 0.01$), personal threat ($\beta = 0.10$, $p < 0.01$), moral conservatism ($\beta = 0.16$, $p < 0.01$), and age ($\beta = -0.06$, $p < 0.05$) all predicted support for radical measures to counteract the pandemic. In the second study, the authors replicated the first study but added in ideological beliefs, such as right-wing authoritarianism (RWA) and individual endorsement of liberty. A total 1,680 persons were recruited through Facebook. Personal threat and lack of control were significant predictors again ($\beta = 0.28$, $p < 0.01$) and ($\beta = 0.15$, $p = 0.05$), respectively), but RWA ($\beta = 0.33$, $p < 0.01$) and endorsement of liberty ($\beta = -0.17$, $p < 0.01$) were also significant ($R^2 = 0.20$). The researchers found RWA was a moderator of the relationship between lack of control and attitudes towards surveillance. Women were also identified to be more likely to accept surveillance technologies than men ($\beta = 0.09$, $p < 0.05$). The findings of the studies suggest
that personal ideological beliefs are stronger predictors of attitudes towards surveillance than threats to safety and reduced personal control. These studies were conducted during the early response phase of the pandemic in Poland and may not be representative in the context of existing technological surveillance implementation.

**REGION SPECIFIC LESSON LEARNED**

**Limiting spread of COVID-19 in Ghana: Compliance audit of selected transportation stations in the Greater Accra region of Ghana**

Study investigators conducted an observational study to assess compliance with safety recommendations in public transportation stations in the Greater Accra region of Ghana. They assessed 45 stations between March 27th and 29th using the WHO hand hygiene assessment scale, accounting for availability and extent of handwashing, social/physical distancing, and public education. Investigators found that 80% of stations had at least one bucket hand washing station with flowing water and soap, though only 18% of stations were emphasizing the need for frequent hand washing and social/physical distancing. A total of 93% of the stations did not have alcohol-based hand sanitizers, and masks were used in limited capacity in over 90% of the stations. Only nine stations received advanced ranking for their level of compliance. This study emphasizes the importance and need to better support and enforce hand washing, social distancing and other transmission prevention methods at transportation stations.

**COVID-19 clinical outcomes and nationality: results from a Nationwide registry in Kuwait**

This study sought to assess country-wide differences in health outcomes between non-Kuwaiti and Kuwaiti patients diagnosed with COVID-19. Using a patient registry from Jaber Al-Ahmad Al-Sabah Hospital, Kuwait’s designated COVID-19 healthcare facility, investigators ran logistic regression models comparing death, ICU admission, acute respiratory distress syndrome (ARDS), and pneumonia. Data from symptomatic and asymptomatic patients who tested positive from February 24th to April 20th was assessed. Of the recruited patients, 26% were Kuwaiti and 73% were non-Kuwaiti. After adjustments it was determined that non-Kuwaiti patients had a two-fold increase in odds of death or ICU admission (OR: 2.14, 95% CI 1.12-4.32). Similarly, non-Kuwaiti patients had increased odds of ARDS and pneumonia, with an OR of 2.44 (95%CI 1.23-5.09) and OR 2.24 (95%CI 1.27-4.12), respectively. Investigators concluded that the pandemic may have amplified health disparities between Kuwaiti patients and marginalized subpopulations and more research is needed to better inform policy to develop public health interventions.
CLINICAL PRESENTATION AND MANAGEMENT

Early estimation of the risk factors for hospitalization and mortality by COVID-19 in Mexico

Two multiple logistic regression models of epidemiological data collected from the Mexican Ministry of Health were used to estimate the risk factors for SARS-CoV-2 related hospitalization and mortality in Mexico. Data was collected on 10,544 individuals (57.68% men) with an average age 46.47±15.62. The main findings were that men were roughly 1.54 times more likely to become hospitalized and die from the disease than women (95% C.I. 1.37–1.74); patients aged 50–74 and patients older than 74 were more likely to be hospitalized and die than those aged 25–49 (OR 1.96, 95% C.I. 1.63-2.34 and OR 3.74, 95% C.I. 2.80-4.98, respectively). Patients with comorbidities (hypertension, obesity, and diabetes) were more likely to be hospitalized and die than those with no comorbidities (OR 2.1 95% C.I. 1.50–2.93). Because Mexico has a significant proportion of the population living with two or more comorbidities, there is a high risk of SARS-CoV-2 related mortality.

Comorbidities associated with mortality in 31,461 adults with COVID-19 in the United States: a federated electronic medical record analysis

This retrospective cohort study evaluated the associations between comorbidities and mortality among patients with COVID-19. Looking at medical records of adults (18-90 years) from January 20, 2020 to May 26, 2020, findings revealed the median age to be 50 years, and the most common morbidities were chronic pulmonary disease and diabetes mellitus. Higher odds of mortality were associated with the following demographics: older age, male sex, being black compared to white. For existing comorbidities, higher odds of mortality were associated with history of heart attack, congestive heart failure, dementia, chronic pulmonary disease, varying levels of liver disease, renal disease, and metastatic solid tumor. The results of this study indicated the importance of developing appropriate care and strategies for individuals who identify with the demographics and have the comorbidities associated with COVID-19 mortality.

PEDIATRIC PRESENTATION

Community-Onset SARS-CoV-2 Infection in Young Infants: A Systematic Review

This systematic review synthesized and assessed studies of laboratory-confirmed community-onset SARS-CoV-2 infection in infants less than 3 months of age published between November 1, 2019, until June 15, 2020. Across 38 publications meeting the inclusion criteria, a total of 63 infants were included in the analysis, with sex reported for 59 infants, of whom, 41 (69%) were male. Of those cases with known contact history, 69% of the pediatric patients had been exposed to a Covid-19-infected person or a symptomatic
contact. Fever was the most common symptom among infants (73%), followed by respiratory problems (66% overall) including rhinitis (36%), cough (38%), or respiratory distress (6%); however, diarrhea (14%), emesis (14%), seizures (3%), and hematologic abnormalities such as neutropenia (56%), lymphopenia (16%), and thrombocytopenia (7%) were also reported. Fifty-eight (92%) infants were hospitalized, with 13 (21%) admitted to the intensive care unit (ICU), and 2 (3%) required mechanical ventilation. No deaths were reported. Most cases were mild-to-moderate; however, this study does suggest that SARS-CoV-2 infectivity can present in young symptoms with generalized symptoms and in the absence of respiratory symptoms.

SARS-CoV-2–Associated Deaths Among Persons Aged <21 Years — United States, February 12–July 31, 2020

This study aimed to look at SARS-CoV-2 associated death among individuals <21 years of age in the United States. Individuals who were included in this study met the definition for a SARS-CoV-2 associated death between February 12 - July 31st, 2020, 27 health jurisdictions identified 121 deaths that met criteria. Results suggest that 10% (12) of deaths were in infants <1 year of age, 20% (24) in children 1-9 years of age, and 70% (85) in 10-20 years of age. Of the 121 decedents, 63% (76) identified as male, 45% (54) identified as Hispanic, 29% (35) Black, and 4% (5) were American Indian or Alaska Native (AI/AN). Among the 121 decedents, 75% (91) had at least one underlying medical condition, 45% (54) had two or more underlying medical conditions, and 25% (30) had no reported underlying medical condition. The most common medical conditions were chronic lung diseases such as asthma (28%), cardiovascular conditions (18%), neurological and developmental conditions (22%), and obesity (27%). Researchers conclude that young adults, Hispanic, Black, AI/AN, and individuals with underlying medical conditions are disproportionately represented among deaths associated with SARS-CoV-2 in persons <21 years of age. Additional action is needed among healthcare workers, community members, and health departments to mitigate the health disparities disproportionately impacting these populations.

MODELS

Covid19: Unless one gets everyone to act, policies may be ineffective or even backfire

This study utilized epidemic models to analyze the effect of social contact policies on the diffusion of COVID-19. A preliminary analysis of survey data on the number of individual contacts of respondents before and after the COVID-19 outbreak revealed that larger diffusions of the virus were correlated with larger average reductions in contacts. A stylized model of epidemics on networks was built to assess the impact of quarantine policies on the diffusion of COVID-19 in complex networks, which are populations in which some
individuals have many more contacts than other individuals. The study researchers found that if a population contains individuals who have high numbers of contacts, the act of reducing numbers of contacts generates a new network that is smaller, but denser. In this scenario, the disease will die out in the original social network, but become endemic in the new network. As such, quarantine and social distancing policies can come with unintended, and even detrimental, consequences. The authors argue that social-distancing interventions can be made more effective with policies that reduce contacts by a constant amount, such as school shutdowns, and by targeting individuals known to have more contacts.

TRANSMISSION PATTERNS

The emergence of SARS-CoV-2 in Europe and North America

This study used a genomic epidemiology approach to determine when and how the SARS-CoV-2 pandemic emerged and spread in Europe and North America. The first SARS-CoV-2 viral genome sequenced in the United States, “WA2”, was sampled in Seattle, Washington on February 24, 2020 and is genetically similar to “WA1”, the viral variant from the first-diagnosed COVID-19 patient. It was unknown at the time whether the WA2 variant in Seattle had evolved from cryptic transmission of WA1 in Washington State in mid-January, or whether WA2 was independently introduced to Washington from outside of the United States. The study researchers found robust evidence indicating the WA2 outbreak clade in Washington resulted from an introduction from Zhejiang, China at an inferred date of February 1st, 2020 (95% HPD Jan. 14 – Feb. 15). In Europe, the researchers believe the COVID-19 outbreak in Italy was unlikely to be caused by the outbreak in Bavaria, Germany, and instead was independently introduced from China. The researchers conclude with an emphasis on the value of intensive, community-level virus surveillance interventions during pre-pandemic periods.

Social Disadvantage, politics, and SARS-CoV-2 trends: a country-level analysis of United States Data

This study retrospective analysed 1023 United States counties to understand social, demographic and political factors that may be associated with incidence of COVID-19 cases. Between June 1, 2020 to June 30, 2020, 66.3% of counties were increasing in cases, and 33.7% saw no increasing case counts. Counties with increasing case counts had a significantly higher Social Deprivation Index compared to non-increasing counties, were more likely to be metropolitan areas, had a higher proportion of Black residents, and voted for the Republican presidential candidate. The results of this study indicate the need to take into account the different social and political factors associated with SARS-CoV-2 case incidence for the public health response to the COVID-19 pandemic.
UNIVERSAL SCREENING AND TESTING

Pooled Testing for Surveillance of SARS-CoV-2 in Asymptomatic Individuals

The study suggests that pooling strategy is a cost-effective way to increase testing capacity among certain populations with low pretest probability, limited availability of trained personnel, and shortages in test reagents. This study introduced a manual pooling strategy to screen asymptomatic healthcare professionals. Three different schemes were analyzed with ten (N=5), five (N=3), and seven (N=3) specimens per pool. Despite pool size, pools with a positive specimen with Ct <36 were detected. From May 21st to July 31st, 700 pools (7000 specimens) were tested using the CDC assay (N=368) and the Panther assay (N=332). Results show that eight positive pools were detected which is equal to 0.11% positivity rate among asymptomatic healthcare professionals. The researchers concluded that a 10-specimen manual pooling algorithm maintaining a one directional workflow is effective for surveillance testing of SARS-CoV-2 in asymptomatic healthcare professionals.

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. Sunya Akhter, James Feng, Caihla Petiprin, Alyssa Bercasio, Guntas Padda, and Micaela Reyna contributed to these summaries. This work is volunteer based.

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