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# 2020-06-19/20/21 DAILY UNM GLOBAL HEALTH COVID-19 BRIEFING

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UNM GLOBAL HEALTH COVID-19 BRIEFING

June 19-21, 2020

## Executive Summary

**NM Highlights:** Dr. Scrase on-line briefing. NM cases. Campgrounds closed through July 4th. Otero prison reports. Navajo nation's first police dies. Santa Fe cancels 4th July fireworks. Face coverings donated. NM infection rate drops.

**US Highlights:** AZ Governor issues Exec Order.

**Economics, Workforce, Supply Chain, PPE**: **Epidemiology Highlights**: Reopening hospitals metric. Comparison of mask effectiveness. Private practices suffer.

**Healthcare Policy Recommendations:** Maternal mortality.

**Practice Guidelines**: Recommendations on hepatobiliary surgery and neonate management.

**Drugs, Vaccines, Therapies, Clinical Trials**: Animal studies generate new vaccine candidates and vaccine platform. 16 new clinical trials registered.

**Other Science**: Respiratory secretions detected by trained dogs. MRI findings show brain lesions in non-survivors. Healthy blood vessels may protect children. Meta-analysis on pneumonia severity. Smoking and COVID-19 severity meta-analysis.

All of our past briefings are maintained in a UNM library repository here.

Our continuously curated practice guidelines in the context of COVID-19 can be found here.

Our continuously curated therapeutic evidence is maintained here.

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## NM Highlights

- NM Secretary of Human Services Dr. David Scrase gives COVID-19 update Friday, thanks Briefing team

  *KRQE:* After upswing due to Otero County detention facility cases, NM COVID-19 cases are again down over a 7-day average and the state is one of the few in the "green" in terms of public health gating criteria for reopening. Dr. Scrase discusses fall reopening of K-12 schools and the upswing in cases in neighboring states. He discussed literature showing shutdowns prevented 60 million infections in US, and that physical distancing and masks reduce transmission. He covered remdesivir allocations for the state. He discussed guidance to maintain isolation at home with COVID-19 until: at least 10 days have passed since symptoms first appeared, 3 days have passed with no fever, and symptoms have improved. Scrase notes that high-risk populations that make up 17% of the NM population, account for 77% of COVID-19 cases. At 47:40 into the video, Dr. Scrase acknowledges and thanks 68 people who have contributed to the COVID-19 Briefing.

- NM reports 3 more COVID-19 deaths and 136 additional cases on June 21

  As of today (6/21), the total positive cases and total deaths in the state are 10,565 and 469, respectively. The state has performed 293,431 tests, there are 134 individuals currently hospitalized for COVID-19, and 4,684 COVID-19 cases have recovered. NMDOH portal featuring epidemiologic breakdown of cases.

- Overnight state park campgrounds to stay closed through July 4th

  *KRQE*: Visitors with overnight camping reservations through July 4 will be issued a refund. Group shelters remain closed and all events are canceled. 31 state parks remain open for day-use.

- Otero prison reports 64 new positive cases

  *Santa Fe New Mexican:* According to the state Department of Health, 646 inmates at the Otero prison have tested positive for the coronavirus. The newly confirmed cases at the prison were among 172 reported statewide Saturday.

- Navajo Nation police force loses first officer to COVID-19

  *Salt Lake Tribune:* A Navajo Nation police officer, Michael Lee, died Friday at Banner-University Medical Center Phoenix, becoming the first officer on the tribal police force to die from COVID-19 in the line of duty, according to tribal officials. Lee served 29 years with the tribal department, beginning his law enforcement career as a police recruit with the Navajo Police Academy in October 1990.

- Santa Fe cancels Fourth of July fireworks display

  *Santa Fe New Mexican:* The city has canceled its annual community fireworks display due to both financial constraints and fire safety concerns, city spokeswoman Lilia Chacon said in an email Thursday. Gov. Michelle Lujan Grisham issued an executive order earlier this week urging New Mexico cities and counties to ban retail sale of fireworks due to drought.

- New Mexico donating face coverings to small businesses

  *KRQE:* The masks, manufactured by the apparel company Hanes, were donated by the federal emergency management agency, for employees and customers who don't have their own. The department received 171,000 cloth masks and delivered 60,000 of them to Albuquerque Thursday. The rest will be delivered around the state by next week.

- New Mexico's coronavirus infection rate drops

  *Santa Fe New Mexican:* The state's transmission rate is 0.93. Having the infection rate fall below 1 is significant because that leads to a steady decrease in new cases if it stays under that threshold, Human Services Secretary David Scrase said. Downward trend suggests that people are taking precautions, such as wearing masks and social distancing.

## US Highlights

- Arizona strengthens measures following surge in cases - Office of the Governor

  *AZ:* Arizona is one of several states reporting increased COVID-19 incidence over the past several weeks, and it is among the first to implement additional restrictions in response to increased community transmission. Following a recent surge in reported COVID-19 incidence and hospitalization in the state — Governor Doug Ducey issued an executive order to enhance the state's response and strengthen social distancing measures. Arizona aims to strengthen testing and contact tracing capacity, including mobilizing the Arizona National Guard.

## Economics, Workforce, Supply Chain, PPE Highlights

- Counts of hospitalized patients as a metric for health system capacity planning for a reopening

  *Journal of Informatics in Health and Biomedicine:* Analysis of SARS-CoV-2 RT-PCR tests performed on 15,807 patients at Stanford facilities found that there was a marked slowdown in the hospitalization rate within ten days of shelter-in-place (SIP) orders, even as cases continued to rise. A shift towards younger patients in the age distribution of those testing positive for COVID-19 over the four weeks of SIP. The impact of this shift is a divergence between increasing positive case confirmations and slowing new hospitalizations, both of which affects the demand on health systems. Authors report that, without using local hospitalization rates and the age distribution of positive patients, current models are likely to overestimate the resource burden of COVID-19.

- Practice points from the American College of Physicians regarding evidence on mask effectiveness

  *Annals of Internal Medicine:* Currently, direct evidence on the comparative effectiveness of N95 respirators and surgical masks for preventing SARS-CoV-2 in health care and community settings is insufficient. Given limited direct evidence, these

practice points are based on indirect evidence from studies of SARS-CoV-1, MERS-CoV, influenza or influenza-like infections, and other respiratory infections. Currently, no evidence is available about the effectiveness of extended use or reuse of N95 respirators in health care settings, although extended use of N95 respirators is preferable to reuse of N95 respirators because it involves less risk for contact transmission.

- COVID19 hits private medical practices

  *JAMA:* Physicians in small private practices around the country have reported steep declines in revenues, drops so significant that some of them and their supporters have turned to GoFundMe to raise funds to help pay their overhead. Telemedicine has helped pick up only a small portion of the slack. A survey of 724 medical practices found that 97% had experienced a negative financial effect of the pandemic.

## Healthcare Policy Recommendations

- Maternal mortality from COVID-19 in the United States

  *Obstetrics & Gynecology*: The authors discuss challenges of maternal mortality counting in the US. Initial reports from the United States are consistent with those from China, demonstrating that approximately 8% of pregnant or postpartum women with COVID-19 have severe disease and approximately 1% are critically ill. They suggest the following to aid in the accurate reporting of maternal mortality: Identify all potential pregnancy-associated deaths during 2020 using standard processes, consider identifying cases on a rolling basis to quickly ascertain possible COVID-19–related cases, consider adding case identification of possible maternal deaths through the pregnancy checkbox on the CDC COVID-19 reporting form, consider reviewing 2020 cases with a subcommittee of the existing MMRC or adding additional dates for full committee MMRC review rather than delaying other reviews., enter all COVID-19–related deaths in the CDC's MMRIA system to allow for national aggregation of data, and consider changes made at the health care professional, facility, systems, and community level in response to the pandemic when assessing preventability and recommendations for action.

## Practice Guidelines

- Recommendations on hepatobiliary surgery during COVID-19 pandemic

  *Clinics and research in Hepatology and Gastroenterology*. Chinese and Harvard authors standardized the procedures for out-patients and hospitalization hepatobiliary surgery and divided the surgery into three categories: elective, limited, and emergency. Patients with no COVID-19 who required limited-term or emergency surgery can have open surgery. It is important to reduce the operation time, medical staffs' exposure, and the impact of pneumoperitoneum on lung expansion. It is recommended to use anesthesia intubation under general anesthesia to reduce the exposure risk of anesthesiologist. A one-time use filter can be placed between the tracheal intubation and breathing circuit to reduce contamination of the breathing circuit. Laparoscopic surgery has the advantages of being more rapid and comprehensive in the exploration of the abdominal cavity in emergency and limited hepatobiliary surgery. Once the operating room receives an alert of a suspected or confirmed new type of coronavirus infection, prepare the room in accordance with the three types of isolation protocols, droplet, air, and contact isolation, and provide level three protection accordingly. The hospital should prohibit patient sitter as much as possible More effort should also be invested in the online follow-up.

- International comparison of guidelines for managing neonates during pandemic

  *Nature*: The authors performed an analysis of the early, quasi ad hoc process of national and local guidelines from 20 countries developed for managing neonates born to SARS-CoV-2 positive mothers during the month of March 2020. Disease burden varied between countries at the time of analysis. In most countries, asymptomatic infants were allowed to stay with the mother and breastfeed with hygiene precautions. Discrepancies were detected between national guidance regarding triaging, use of personal protection equipment, viral testing, and visitor policies. Local protocols deviated from the national guidelines.

## Drugs, Vaccines, Therapies, Clinical Trials

- New vaccine provides protection against SARS-CoV-2 challenge: an animal study

  *BioRxiv preprint*: Israel researchers generated a recombinant Vesicular Stomatitis Virus (VSV)-ΔG-spike vaccine, in which the glycoprotein of VSV was replaced by the spike protein of the SARS-CoV-2. The vaccination of hamsters with recombinant VSV-ΔG-spike resulted in rapid and potent induction of neutralizing antibodies against SARS-CoV-2. Importantly, single-dose vaccination was able to protect hamsters against SARS-CoV-2 challenge, as demonstrated by the abrogation of body weight loss of the immunized hamsters compared to unvaccinated hamsters. Whereas lungs of infected hamsters displayed extensive tissue damage and high viral titers, immunized hamsters' lungs showed only minor lung pathology, and no viral load. Taken together, the authors suggest recombinant VSV-ΔG-spike as a safe, efficacious and protective vaccine against SARS-CoV-2 infection.

- Engineered human mesenchymal stem cells can serve as a novel vaccine platform

  *BioRxiv preprint:* The authors describe the engineered human mesenchymal stem cells (hu-MSC) expressing SARS-CoV-2 proteins which serve as a small device which can be gradually cleared by the immune system. After 20 days of immunization almost all the mice had antibody production in serum (7/8), and at least 50% of the mice showed strong positive antibody expression. The antibody response tests showed that this approach is effective and fast for use as a novel vaccine platform.

- Immunogenicity of vaccination with the replication-deficient viral vectored vaccine candidate

  *BioRxiv preprint*: Clinical development of the COVID-19 vaccine candidate ChAdOx1 nCoV-19, a replication-deficient simian adenoviral vector expressing the full-length SARS-CoV-2 spike (S) protein was initiated in April 2020 following non-human primate studies using a single immunization. The authors compared the immunogenicity of one or two doses of ChAdOx1 nCoV-19 in both mice and pigs. Whilst a single dose induced antigen-specific antibody and T cells responses, a booster immuniszaion enhanced antibody responses, particularly in pigs, with a significant increase inSARS-CoV-2 neutralizing titers.

- 16 new COVID-19 Trials registered June 19 at clinicaltrials.gov

  Treatment trials: Hydroxychloroquine, PTC299, Methylprednisolone, Abivertinib, Ivermectin, Ibrutinib. At time of writing, a total of 2054 were active, 164 completed, and 4 posted results.

## Other Science

- Immediate scent detection by trained dogs

  *BioRxiv preprint*: Dogs were trained to detect SARS-CoV-2 in respiratory secretions of infected patients and evaluated their performance experimentally, comparing it against the gold standard (rRT-PCR). Viral detection took one second per specimen. After scent-interrogating 9,200 samples, trained dogs achieved independently and as a group very high sensitivity, specificity, predictive values, accuracy, and likelihood ratio, with very narrow confidence intervals. As a group, they achieved SEN 95.5% (95% CI 90.4 - 97.9), SPC 99.6% (99.5 - 99.8), PPV85.7% (79.2 - 90.5), NPV 99.9% (99.8 - 100), ACC 99.6%.

- Early postmortem brain MRI findings show brain lesions in COVID-19 non-survivors

  *Neurology*: In this prospective, single-center, case series study of 62 patients who died from COVID-19, 19 fulfilled the inclusion criteria. Parenchymal brain abnormalities were observed in 4 decedents: subcortical micro- and macro-bleeds (2 decedents), cortico-subcortical edematous changes evocative of posterior reversible encephalopathy syndrome (PRES, one decedent), and nonspecific deep white matter changes (one decedent). Asymmetric olfactory bulbs were found in 4 other decedents without downstream olfactory tract abnormalities. No brainstem MRI signal abnormality was observed.

- Healthy blood vessels may protect children from coronavirus complications

  *Nature* commentary *on Lancet* Article*:* A large survey by the US Centers for Disease Control and Prevention in Atlanta, Georgia, found that children aged 17 and under, who make up 22% of the US population, account for fewer than 2% of confirmed COVID-19 infections across the United States. In addition, of 2,572 children included in the survey, only 5.7% went to hospital and only three died. Several theories have been proposed to explain why children aren't getting so ill. These include the possibility that they have a stronger and more effective initial immune response to the virus than adults or that they might have greater immunity due to recent exposure to similar viruses. However, a growing number of researchers

think that the difference between rates of severe disease in adults and children might be the condition of their blood vessels. Many adults with serious COVID-19 experience clotting in their blood vessels, which leads to organ damage. The clotting seems to be linked to dysfunction of the endothelium, the smooth tissue that lines blood vessels and normally prevents clotting. Normally, blood clots form only to stop bleeding from an injury, but if the endothelium is damaged, clots can also form. In a *Lancet* study of three people with COVID-19, two of whom died, the authors found that SARS-CoV-2 had infected the endothelium and caused inflammation and clotting. Because the study was so small, this connection will need to be investigated further, but endothelial dysfunction may be the mechanism underlying many complications in severe and fatal cases of COVID-19 in adults.

- Clinical features, outcomes, and severity of severe SARS-CoV-2 pneumonia: meta-analysis

  *American Journal of Infection Control*: A meta-analysis of 12 cohort studies including 2445 COVID-19 patients compared associations with non-severe (non-ICU) and severe (ICU) cases. Severe disease was associated with a smoking history (P=0.003) and comorbidities including chronic obstructive pulmonary disease (OR=5.08, P<0.001), diabetes (OR=3.17, P<0.001), hypertension (OR=2.40, P<0.001), coronary heart disease (OR=2.66, P<0.001), cerebrovascular diseases (OR=2.68, P=0.008), and malignancy (OR=2.21, P=0.040). Clinical signs significantly associated with severe disease included fever and dyspnea. (P<0.05) Laboratory markers associated with severe disease include decreased lymphocyte and platelet counts, and increased leukocyte count, C-creative protein, procalcitonin, lactose dehydrogenase, aspartate aminotransferase, alanine aminotransferase, creatinine kinase, and creatinine levels (P<0.05). In addition, patients in the severe group were more likely to have complications and had a much higher mortality rate and lower discharge rate than those with non-severe disease (P<0.05).

- Most meta-analyses agree that smoking is associated with severity of COVID-19

  *Journal of Public Health*: Six meta-analyses focusing on this issue were indexed by PubMed until 20 May 2020. All but one agrees that smoking is associated with increased risk of sever COVID-19. The letter in disagreement by Lippi et al. titled 'Active smoking is not associated with severity of COVID-19' was critiqued in this publication for flaws in data collection, statistical analysis, and inference of conclusions. The author of this letter believes that consensus should be that smoking does increase risk of severe disease in COVID-19, in accordance with the majority of meta analyses published to date.

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