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2020-05-27/28 DAILY UNM GLOBAL HEALTH COVID-19 BRIEFING

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DAILY UNM GLOBAL HEALTH COVID-19 BRIEFING

May 27-28, 2020

Executive Summary

NM Highlights: NM governor's press briefing. NM restaurants reopening. Navajo Nation updates. NM case count. CVS new testing sites. Mask Madness competition updates. Limited campus will return at UNM.

US Highlights: CA becomes fourth state with 100,000 known infections. Model shows relationship between COVID-19 and crime.

International Highlights: E.U. countries ban hydroxychloroquine. Will E.U. economic collapse create an historic centralized government?

Economics, Workforce, Supply Chain, PPE: Mental health impact. Face mask itch. Remote postdoctoral fellowships.

Epidemiology Highlights: Black vs. white hospitalization and mortality. African infection rates limited. Characteristics of COVID patients.

Healthcare Policy Recommendations: South Korea focuses on a single metric: time from symptom onset to hospitalization/quarantine. Full flight travel ban effectiveness. The role of case managers during COVID-19 crisis. Only half of Americans are ready to get vaccinated once the vaccine becomes available: a survey.

Practice Guidelines: Harvard authors' recommendations on restarting essential surgery during COVID-19 pandemic. UNM Project ECHO response to COVID-19 (includes osteoporosis management recommendations). Five online COVID-19 treatment simulations.

Testing: Validation of modified viral detection assays across multiple specimen types.

Drugs, Vaccines, Therapies, Clinical Trials: Remdesivir 5 days vs. 10. Anti-platelet therapy. Virtual screenings. S-HCQ better than R-HCQ. Stem cell therapy. Tocilizumab not effective. HCQ and CQ safety issues. Lopinavir-ritonavir no benefit. 79 new trials.

Other Science: Apolipoprotein E gene associated with severity. France cardiac arrests double. Lab tests that predict severity. ER inanimate surface contamination. Long-term SARS and MERS outcomes.

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

Our continuously curated therapeutic evidence is maintained here.

You may submit content for future briefings here.

NM Highlights

- NM Governor and leadership provides updates and announces additional easing of restrictions June 1

  Governor Michelle Lujan Grisham gave a live videoconference May 28. NM reached its peak number of new cases/day May 1, dropping on average thereafter. Dr. David Scrase pointed out that independent site https://www.covidexitstrategy.org/ shows NM one of only 3 states in the green in terms of reopening. The State R0 is now at 1.09. Governor announced that starting June 1, restaurants may operate dine-in service at 50% maximum occupancy and must use COVID-safe practices. Hair and nail salons, barber shops, tattoo parlors, and massage services may operate at 25% max occupancy. Indoor malls may open at 25% of max occupancy, food courts closed. Gyms may operate at 50% maximum occupancy. Drive-in theaters may open. Hotels may operate at 50% max occupancy. More state parks to reopen, but no camping or congregating on beaches. 14-day quarantine order for airport arrivals amended to permit certain business travel. Retailers and houses of worship continue to be able to operate at 25% of max occupancy. Bars remain closed. Face coverings must be worn in public settings. Mass gatherings and congregations prohibited. Stay home as much as possible, particularly if sick or vulnerable. Safe practices for various reopening activities provided here.

- Beginning May 27, most NM restaurants can provide limited outdoor or patio services

  The following stipulations apply: no dine-in service may be provided in indoor seating areas; outdoor dine-in service may only be provided to patrons who are seated; Tables must be placed with at least six feet of distance between one another; no more than six patrons may be seated at any single table; no bar or counter seating is permitted. Broader reopening is expected on June 1.

- The curve is flattening out on the Navajo Nation

  Some positive news came from the Navajo Nation on Tuesday. Although positive cases are still going up, the hospital visits are down 30-40 percent. "Everyone including the Navajo citizens, listened to the advice and the words of our health care professionals, and because of that we helped lessen the curve", said Navajo Nation President Jonathan Nez.

- NM reports 6 more COVID-19 deaths and 108 additional cases on May 28

  As of today (5/28), the total positive cases and total deaths in the state are 7,364 and 335, respectively. The state has performed 183,544 tests, there are 196 individuals currently hospitalized for COVID-19, and 2,684 COVID-19 cases have recovered. NMDOH portal featuring epidemiologic breakdown of cases.

- CVS to open 9 new COVID-19 drive-thru testing sites in New Mexico

  One must register in advance starting Friday, May 29. People stay in their cars and use the pharmacy drive-thru window to obtain a test kit and instructions. A CVS Pharmacy employee will watch the self-swab process to make sure that it is utilized correctly, and tests will then be sent to an independent lab to be processed. The test results will be available in about three days. The article lists the 9 locations.

- Vast creativity emerges from NM DOH "Mask Madness" competition

  On display are more than 500 masks submitted by New Mexicans for voting through June 3, with top-voted entries getting into a March Madness style single elimination tournament, where head-to-head voting will decide winners. One can vote once per day until June 3, after which the tournament will begin.

- UNM unveils plan to 'Bring Back the Pack'

  Tuesday press release reports limited campus return from June 1 to mid-summer and gradual increase with safety in mind. The Fall 2020 semester is currently on a hybrid plan between on-campus and virtual learning. Different UNM branch campuses across the state will set guidelines depending on COVID-19 severity of the area.

US Highlights

- California is the fourth state with at least 100,000 known cases

  NY Times: In California, which has become the fourth state with at least 100,000 known infections. Gov. Gavin Newsom seems to be moving closer to handing the reins of reopening to county public health officials. The state joins Illinois, New Jersey and New York with the highest case counts. (subscription)

- The relationship between coronavirus pandemic and crime in the United States

  This article used police-recorded open crime data to understand how the frequency of common types of crime changed in 16 large cities across the United States in the early months of 2020. Seasonal auto-regressive integrated moving average (SARIMA) models of crime in previous years were used to forecast the expected frequency of crime in 2020 in the absence of the pandemic. The forecasts from these models were then compared to the actual frequency of crime during the early months of the pandemic. There were no significant changes in the frequency of serious assaults in public or (contrary to the concerns of policy makers) any change to the frequency of serious assaults in residences. In some cities, there were reductions in residential burglary but little change in non-residential burglary. Thefts of motor vehicles decreased in some cities while there were diverging patterns of thefts from motor vehicles.

International Highlights

- EU Governments ban hydroxychloroquine for COVID-19, trial paused as safety fears grow

  France, Italy and Belgium followed a World Health Organization decision on Monday to pause a large trial of hydroxychloroquine due to safety concerns. Hydroxychloroquine has been found to decrease survival and induce arrhythmias. Only clinical trials will maintain use of hydroxychloroquine.

- Does new economic recovery plan create an historic moment for the European Union?

  The coronavirus has so fundamentally damaged the bloc's economy that it is now forcing European leaders to consider a unified and sweeping response once considered unthinkable, thereby taking E.U. steps closer to a shared budget and collective debt? The European Commission, on Wednesday proposed that it raise 750 billion euros, or $826 billion to finance recovery from the economic collapse brought on by the virus and the worst crisis in the E.U.'s history. The proposal had all the hallmarks of a historic moment, vesting greater authority in Brussels in ways that would make the E.U. more closely resemble a central government.

Economics, Workforce, Supply Chain, PPE Highlights

- The mental health impact of having inadequate safety equipment

  Occupational Medicine: Self-report surveys were conducted in four operational environments with 3435 personnel providing data. A total of 3401 personnel provided data on their perceptions of the adequacy of their equipment, of which 532 (15%) stated that they had a lot of concerns that they did not have the right equipment in working order. Analysis found individuals saying they had inadequate equipment had significantly greater odds of reporting symptoms of common mental health disorders (CMD), 2.49 (2.03-3.06), post-traumatic stress disorder (PTSD), 2.99 (2.11-4.24), poorer global health 2.09 (1.62-2.70) and emotional problems 1.69 (1.38-2.06). Analyses remained significant when adjusted for confounding factors.

- Face mask-induced itch

  An internet survey of the general population found that 60.4% reported using face masks during the previous week; 19.6% of these reported having itch. Those reporting sensitive skin, atopic predisposition, and facial dermatoses (acne, atopic dermatitis or seborrheic dermatitis) reported significantly higher rates of itch development. Responders who wore masks for longer periods more frequently reported itch. Almost 30% of itchy subjects reported scratching their face without removing the mask or after removing the mask. Wearing face masks is linked to development of itch, and scratching can lead to incorrect use of face masks, resulting in reduced protection.

- Benefits of hiring remote postdoctoral fellows during COVID-19 pandemic

  Post-doctoral fellows who work remotely may become a standard practice in academia as thousands of scientists have had to work remotely during the pandemic. Remote work arrangements offer benefits such as decreased moving and commuting costs and decreased distractions from co-workers. These positive experiences may encourage reluctant professors to consider hiring remote post-docs..

Epidemiology Highlights

- Hospitalization and mortality among black and white patients with COVID-19

  In a large cohort in Louisiana, 76.9% of the patients who were hospitalized (N=1382) with COVID-19 and 70.6% of those who died (N=326) were black, whereas blacks comprise only 31% of the Ochsner Health population. Black race, higher age, higher Charleson Comorbidity Index, obesity, public insurance, and living in a low income area were associated with greater odds of hospital admission. However, black race was not associated with higher in-hospital mortality than white race, after adjustment for differences in sociodemographic and clinical characteristics on admission.

- Peak infection rates in Africa limited by a younger and a more rural-based population

  An augmented deterministic Susceptible-Infected-Recovered model predicted that rural areas and large youth populations may limit the spread and severity of the COVID-19 epidemic in Africa and outweigh the negative impact of HIV, tuberculosis and anemia. The large youth population may lead to more infections but most of these infections will be asymptomatic or mild and will probably go undetected.

- Characteristics of 8697 patients with COVID-19 in China: a meta-analysis

  Family Medicine and Community Health: A meta-analysis of 55 unique retrospective studies showed the most common symptoms experienced of patients with COVID-19 were fever and cough. Myalgia, anorexia chest tightness and dyspnea were found in some patients. A relatively small percentage of patients were asymptomatic and could act as carriers of the disease. Most patients showed normal leucocyte counts, elevated levels of C reactive protein and lymphopenia, confirming the viral origin of the disease.

Healthcare Policy Recommendations

- South Korea COVID-19 control: focus on reduced time from symptom onset to hospitalization

  To date, South Korea has 0.2 COVID-19 deaths per million, the US has about 300 per million, and New Mexico has about 155 per million. This article shows how South Korea focused their surveillance system on a single metric: shortening time from symptom onset to quarantine and hospitalization. Their target of 72 hours with rapid contact tracing both reduces transmission and gives patients treatment as early as possible to address complications immediately as they arise.

- Full travel ban might have prevented 86% of COVID-19 cases: data modelling study

  The authors used disease incidence data from China and data on air travel between China and Australia during and after the epidemic peak in China, derived from incoming passenger arrival cards. The modelled epidemic with the full ban fitted the observed incidence of cases well, predicting 57 cases on March 6th in Australia, compared to 66 observed on this date. The modelled impact without a travel ban results in more than 2000 cases and about 400 deaths, if the epidemic remained localized to China and no importations from other countries occurred. The full travel bans reduced cases by about 86%, while the impact of a partial lifting of the ban is minimal and may be a policy option.

- The role of case managers during COVID-19 crisis

  The paper discusses the roles and responsibilities of case managers and leaders known to address patients' needs during a crisis, with a special focus on telehealth, tele-case management, surge capacity, redeployment, discharge planning, and transitions of care.

- Only half of Americans are ready to get vaccinated once the vaccine becomes available

  Of 1056 respondents interviewed, 49% of Americans say they plan to get a vaccination, 31% say they are unsure, and 20% said they will not. Of the latter cohort 70% are concerned about vaccine side effects and 42% about contracting the virus from the vaccine. Black Americans and individuals over 60 years old were more likely to say they do not plan to get the vaccine if it becomes available.

Practice Guidelines

- Restarting essential surgery during COVID-19 pandemic

  The authors from Harvard propose interim safety recommendations for patients with no known COVID-19/previously infected with COVID-19 who are being considered for a surgery.

- UNM project ECHO response to COVID-19: professional education and bone health guidelines

  Project ECHO (Extension of Community Healthcare Outcomes), developed at the University of New Mexico in 2003, is technology-enabled collaborative learning that uses videoconferencing to expand healthcare workforce capacity, increase access to specialty level care, and reduce health disparities in underserved communities. There are now at least 825 ECHO programs addressing a broad range of disease states and conditions, based in 48 states and 39 countries. Project ECHO responded by temporarily redeploying all staff to activities devoted to best practiceCOVID-19 care forpublic health officials, scientists, and frontline healthcare workers in the USA and abroad. Bone Health TeleECHO listed guidelines for orthopedic care during COVID-19 pandemic with an emphasis on osteoporosis. Treatment plans include non-bisphosphonate injections in drive-thru setting or using nursing home-visits to administer medication. Virtual platforms are offered to address the canceled conferences across the globe and for patient care. The skills to launch and maintain an ECHO program can be acquired through no-cost “Immersion training” provided at UNMHSC and in other countries, and now available in an online format.

- COVID-19 treatment simulation examples

  NEJM: Engage in these five treatment simulations that mimic the real-life uncertainty of medicine.

Testing

- Validation of modified viral detection assays across multiple specimen types

  Modified CDC-based assays N1 and N2 were able to detect SARSCoV- 2 accurately across a range of sample types. The authors compared the matrix effect on the analytical sensitivity of SARS-CoV-2 detection by qRT-PCR in nasal swabs collected in viral transport medium, bronchoalveolar lavage, sputum, plasma, cerebral spinal fluid (CSF), stool, VTM, phosphate buffered saline, and Hanks' Balanced Salt Solution. Initial limits of detection (LoD) were subsequently narrowed to confirm an LoD for each specimen type and target gene. SARS-CoV-2 N1 assay detection sensitivity was comparable between specimen types. Of the specimen types detected using the N2 assay, CSF was the most sensitive.

Drugs, Vaccines, Therapies, Clinical Trials

- No clinical difference between Remdesivir for 5 days or 10 days in an open-label trial

  This is a randomized, open-label, phase 3 trial involving hospitalized patients with confirmed SARS-CoV-2 infection, oxygen saturation of 94% or less while they were breathing ambient air, and radiologic evidence of pneumonia. Patients were randomly assigned in a 1:1 ratio to receive intravenous remdesivir for either 5 days or 10 days. All patients (N=397) received 200 mg of remdesivir on day 1 and 100 mg once daily on subsequent days. The primary end point was clinical status on day 14, assessed on a 7-point ordinal scale. After adjustment for baseline clinical status, patients in the 10-day group had a distribution in clinical status at day 14 that was similar to that among patients in the 5-day group (P=0.14). The most common adverse events were nausea (9% of patients), worsening respiratory failure (8%), elevated alanine aminotransferase level (7%), and constipation (7%).

- Anti-platelet therapy might be effective in improving the ventilation/perfusion ratio

  A proof-of-concept study in Italy matched 5 control patients with 5 SARS-CoV-2 patients having severe respiratory failure requiring helmet continuous positive airway pressure (CPAP), who had bilateral pulmonary infiltrates and a pro-thrombotic state identified as a D-dimer > 3 times the upper limit of normal. Beyond standard of care, treated patients received 25 micro-g/kg/body weight tirofiban as bolus infusion, followed by a continuous infusion of 0.15 micro-g/kg/body weight per minute for 48 hours. Before tirofiban, patients received acetylsalicylic acid 250 mg infusion and oral clopidogrel 300 mg; both were continued at a dose of 75 mg daily for 30 days. Fondaparinux 2.5 mg/day sub-cutaneous was given for the duration of

the hospital stay. All controls received prophylactic or therapeutic dose heparin, according to local standard operating procedures. Treated patients experienced a mean (SD) reduction in alveolar-arterial O2 gradient of -32.6 mmHg (61.9, P = 0.154), -52.4 mmHg (59.4, P = 0.016) and -151.1 mmHg (56.6, P = 0.011; P = 0.047 vs. controls) at 24, 48 hours and 7 days after treatment. PaO2/FiO2 ratio increased by 52 mmHg (50, P = 0.172), 64 mmHg (47, P = 0.040) and 112 mmHg (51, P = 0.036) after 24, 48 hours and 7 days, respectively. All patients, but one, were successfully weaned from CPAP after 3 days. This was not true for the control group. No major adverse events were observed.

- Modeling of repurposed drugs in S-protein inhibition

  The study conducted virtual screening using docking calculations, a molecular modeling technique that predicts how a protein interacts with small molecules. FDA approved drugs (n=9091) were screened. The 24 best-scored ligands had binding energy below –8.1kcal/mol and were selected as potential candidates to inhibit the SARS-CoV-2S-protein by preventing the human cell infection and their replication. Ivermectin was among those promising candidates that controlled replication in vitro.

- S-Hydroxychloroquine as a potentially superior drug compared to R-HCQ

  Preprint: The clinical outcome from previous CQ or HCQ trials were the collective manifestation of both R and S enantiomers with inherent different pharmacodynamic, pharmacokinetic properties, and toxicity liabilities. S-chloroquine (S-CQ) and S-hydroxychloroquine (S-HCQ) were found to be 27% and 60% more active against SARS-CoV-2, as compared to R-CQ and R-HCQ, respectively.

- Stem cell therapy: Consideration as a potential treatment for SARS-COV-2-induced lung injury

  Acute lung injury (ALI), results from a wide variety of lung injuries. Viral infection is the main cause of morbidity and mortality in ALI and acute respiratory distress syndrome (ARDS) patients. Future research on stem cell-based therapy for lung injury caused by influenza viruses including SARS-CoV-2 is therefore required.

- Intravenous tocilizumab has no clinical impact on SARS-CoV-2 pneumonia patients

  Tocilizumab, a humanized monoclonal antibody, targets IL-6 receptors blocking downstream pro-inflammatory effects of IL-6. In a prospective study of 51 Italian patients hospitalized with severe COVID-19 pneumonia, tocilizumab intravenous treatment revealed a significant drop in body temperature and CRP value and increase in lymphocyte counts. Tocilizumab treatment therefore seem to have beneficial effect on fever and inflammatory markers without any impact on clinical outcome.

- Hydroxychloroquine and chloroquine safety issues

  A multinational registry analysis showed that after controlling for multiple confounding factors, when compared with mortality in the control group (9.3%), hydroxychloroquine (18.0%; hazard ratio 1.335, 95% CI 1.223-1.457), hydroxychloroquine with a macrolide (23.8%; hazard ratio 1.447, 1.368-1.531), chloroquine (16.4%; hazard ratio 1.365, 1.218-1.531), and chloroquine with a macrolide (22.2%; hazard ratio 1.368, 1.273-1.469) were each independently associated with an increased risk of in-hospital mortality. Risk of de-novo ventricular arrhythmia during hospitalization increased compared with the control group (0.3%), hydroxychloroquine (6.1%; hazard ratio 2.369, 1.935-2.900), hydroxychloroquine with a macrolide (8.1%; hazard ratio 5.106, 4.106-5.983), chloroquine (4.3%; hazard ratio 3.561, 2.760-4.596), and chloroquine with a macrolide (6.5%; hazard ratio 4.011, 3.344-4.812).

- Lopinavir-ritonavir (Kaletra) did not accelerate recovery or improve mortality rates

  The study's 199 patients with confirmed severe acute respiratory syndrome coronavirus 2 infection were randomly assigned to receive standard care plus 400mg of lopinavir and 100mg of ritonavir twice a day for 14 days or standard care alone. For both groups the time to clinical improvement— the primary end point—was a median of 16 days. Researchers stopped the intervention early for 13 patients who experienced mainly gastrointestinal adverse events.

- 79 New COVID-19 Trials registered yesterday and today at clinicaltrials.gov

  Treatment trials: Tannin, IgG/IgM Antibody Test, Reactogenicity and immunogenicity of mRNA-1273, Antigen Testing, EIDD-2801, Hydroxychloroquine & Axithromycin, Hydroxychloroquine with Lopinavir & Ritonavir, Ozanimod, TAF/FTC for pre-exposure, SCB-2019, Dornase Alfa, Ivermectin, TD-0903, LSALT Peptide, Stellate Ganglion Block, COLchicine vs. Ruxolitinib, Viral specific T-cells, Tocilizumab, Pulmozyme, Ivermectin & Doxycycine, Acai Berry, Favipiravir. At time of writing, a total of

1686 were active, 101 completed, and 3 posted results.

Other Science

- Apolipoprotein E (APOE) e4 genotype associated with severe COVID-19 in a UK cohort

  The Journals of Gerontology: Series A: This UK Biobank genetic study in patients of European ancestry found that the APOE e4e4 allele is associated with an increased risk of severe COVID-19 infection (OR=2.31, 95% CI: 1.65-3.24 p=1.19E-06), independent of pre-existing dementia, cardiovascular disease, and type-2 diabetes. In older adults, pre-existing dementia is a major risk factor for COVID-19 severity (about 3-fold). The APOE e4 genotype is associated with both dementia and delirium, with the e4e4 (homozygous) genotype associated with a 14-fold increase in risk of Alzheimer's. APOE e4 affects lipoprotein function (and subsequent cardio-metabolic diseases) and moderates' macrophage pro-/anti-inflammatory phenotypes. SARS-CoV-2 uses the ACE2 receptor for cell entry. ACE2 is highly expressed in type II alveolar cells in the lungs, where APOE is one of the highly co-expressed genes.

- Out-of-hospital cardiac arrest (OHCA) doubles during the COVID-19 pandemic in Paris, France

  Lancet Public Health: This observational study (n=30,768) compared OHCA case incidence and patient characteristics from a 6-week period during the COVID-19 pandemic in Paris and its suburbs (March 16 to April 26, 2020) with corresponding periods over the preceding 8 years. A transient two-fold increase in OHCA incidence, coupled with a reduction in survival, was observed during the specified time period of the pandemic when compared with the equivalent time period in previous years with no pandemic. Although this result might be partly related to COVID-19 infections, indirect effects associated with lockdown and adjustment of health-care services to the pandemic are probable. The authors advocate that these factors should be taken into account when considering mortality data and public health strategies.

- Laboratory findings of COVID-19: a systematic review and a meta-analysis

  Scandinavian Journal of Clinical and Laboratory Investigation: A 28-paper systematic review showed the most prevalent laboratory findings significantly associated with severity were increased C-reactive protein (CRP; 73.6%, 95% CI 65.0-81.3%), followed by decreased albumin (62.9%, 95% CI 28.3-91.2%), increased erythrocyte sedimentation rate (61.2%, 95% CI 41.3-81.0%), decreased eosinophils (58.4%, 95% CI 46.5-69.8%), increased interleukin-6 (53.1%, 95% CI 36.0-70.0%), lymphopenia (47.9%, 95% CI 41.6-54.9%), and increased lactate dehydrogenase (LDH; 46.2%, 95% CI 37.9-54.7%). A 7-study meta-analysis with 1905 patients showed that increased CRP (OR 3.0, 95% CI: 2.1-4.4), lymphopenia (OR 4.5, 95% CI: 3.3-6.0), and increased LDH (OR 6.7, 95% CI: 2.4-18.9) were significantly associated with severity.

- Low SARS-CoV-2 RNA contamination of inanimate surfaces in emergency unit

  Clinical Microbiology and Infection: 26 samples were taken from emergency unit and sub-intensive care ward. RT-PCR was run and found 2 of 26 surfaces were positive for low-level SARS-CoV-2 RNA. These two collections were from the external surface of CPAP helmets. The study concluded that infection spread through inanimate objects may be less extensive than previously reported.

- Long-term outcomes in SARS and MERS survivors: a meta-analysis

  Journal of Rehabilitation Medicine: 28 studies were included in the analysis on SARS (severe acute respiratory syndrome) and MERS (Middle East respiratory syndrome) survivors. Common complications up to 6 months were: impaired diffusing capacity for carbon monoxide (prevalence 27%, 95% CI 15-45%); and reduced exercise capacity ((mean 6-min walking distance 461 m, CI 450-473 m). The prevalence of post-traumatic stress disorder (39%, 95% CI 31-47%), depression (33%, 95% CI 20-50%) and anxiety (30%, 95% CI 10-61) beyond 6 months were considerable. Low scores on Short-Form 36 were identified at 6 months and beyond.

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