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2020-05-06 DAILY UNM GLOBAL HEALTH COVID-19 BRIEFING

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DAILY UNM GLOBAL HEALTH COVID-19 BRIEFING

May 6, 2020

Executive Summary

NM COVID case update. Temporary hospitals for non-COVID patients. Mandatory face coverings for businesses. NM income shortfall. Potential \$2 billion NM budget deficit. Relief fund for rural health care providers. Meals for children, seniors, and tribal members. National parks phased reopening. Rural hunger program. Bangladesh to make remdesivir. Healthcare worker infections. Indian police force infections. Shanghai Disneyland reopens. Mask diaper linings. Mask/respirator review. Hospitals need bailouts. Provider financial resources. African lockdown hunger. Virus jumped late 2019. Mortality rates decrease. Early case in France. International reopening recommendations. WHO: don't rush reopening. CDC: prison management. Timing important. Dedicated COVID-19 facility. Guidelines for: maternal-fetal medicine, neurosurgery, long-QT treatment, gastroenterology. UK testing in low demand. HIV screening efforts continued. Inactivated vaccine candidate. Natural products. Convalescent plasma effectiveness. Clinical trial tracker. 47 new trials. Children couch potatoes. Adolescents troubled. Climate effects deaths. Lupus anticoagulant. Shock in children. Intestinal viral replication. Tocilizumab patient recovery. Protein target. Genomic diversity.

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](#).

You may submit content for future briefings [here](#).

NM Highlights

- [New Mexico reports 7 more COVID-19 deaths and 153 additional cases](#)

As of May 6, the total positive cases and total deaths in the state are 4,291 and 169, respectively. The state has performed 85,684 tests, there are 193 individuals currently hospitalized for COVID-19, and 1,073 COVID-19 cases have recovered. New NMDOH portal featuring epidemiologic breakdown of cases.

- [VA creates temporary hospital "Camp Murphy" to care for non-COVID patients for Navajo Nation](#)

Andrew Welch, director of the Veterans Affairs Healthcare System says the VA is ready to help out in case of a virus surge, noting that the Gallup Indian Medical Center has witnessed an increase in COVID positive patients of late. Patients who are battling COVID from the Navajo Nation are currently being cared for inside the VA, and the temporary hospital stationed outside is equipped to handle more than 50 patients, should more COVID patients need care within the main hospital.

- [NM requires masks for businesses, more testing for prisons, and reduction in polling sites in Santa Fe](#)

Governor Michelle Lujan Grisham has announced [new face mask rules](#) for large grocery stores, retail stores, and restaurants open for takeout or delivery. As of May 6, 2020, all employees at such [businesses must wear face masks](#). Starting May 11, all workers at non-essential businesses will be required to wear face masks while at work. Additionally, a new initiative was announced to test staff and inmates at correction facilities. The state aims to tests all prison guards and inmates by May 13 as well as testing new incoming inmates. Santa Fe has also made the decision to close 11 polling sites for the upcoming primary elections, leaving 19 sites open. [Press releases](#).

- [Coronavirus pandemic can put a big dent in NM state government income](#)

Plummeting state revenues due to coronavirus pandemic are likely to wipe out \$2.1 billion - \$3.9 billion in previously

anticipated state government income by mid-2021. Gov. Michelle Lujan Grisham wants to tap more money from the state's \$18 billion Land Grant Permanent Fund to boost the economy. She is also considering rewriting the \$7.6 billion general fund spending plan for the next fiscal year.

- [State may have to cut budgets to account for potential \\$2 billion shortfall from COVID](#)

Despite large reserve funds, "strategic cutting" including into school funding may be necessary. Cutting is supported by Gov Grisham but would require approval from voters.

- [New Mexico delegation hails \\$114 million to 160 rural health care providers](#)

From a health care provider relief fund created under the CARES Act, \$114 million in funding has been distributed to 160 rural health care providers in New Mexico to aid in the fight against the Covid-19 pandemic. A minimum direct grant of \$100,000 will go to each rural health clinic and community health center. Rural acute care general hospitals and critical access hospitals will receive a minimum of \$1 million with additional support based on operating expenses. The facilities that receive the grants are expected to commit not to balance bill Covid patients.

- [NM feeds thousands of children, seniors, and tribal members during pandemic](#)

The state has delivered more than 5.4 million meals to youths, over 293,000 meals to seniors and more than 400,000 pounds of food items to those communities most in need. If the Pandemic Electronic Benefit Transfer Program is federally approved, it will supply \$97 million additional food benefits for NM families. Interested families should contact their school district food service office to apply for benefits. Disabled adults or seniors in need of food assistance can call 800-432-2080. Tribal members should reach out to their local emergency operations center for information on food and water distribution on Tribal land.

US Highlights

- [National parks to begin reopening in "phased approach" for spring and summer](#)

This will occur in May under guidance from the White House, CDC and state and local public health authorities and will include all units of the National Park System. This will be in tandem with the reopening of vacation destinations across the West. Establishment operation teams have developed guidelines which will allow staff and customers to work and travel safely.

- [Baylor rural hunger pilot program expanded to provide 5 million weekly meals](#)

The U.S. Department of Agriculture announced Tuesday it will ramp up the Baylor rural hunger program to feed rural low-income children through June 30. The program has expanded to 35 states plus Puerto Rico and is expected to feed approximately a half million children missing free or reduced-price school meals due to school closures.

International Highlights

- [Bangladesh pharmaceutical company to produce Remdesivir, cost per course between \\$295 and \\$781](#)

36 least-developed countries, as specified by the UN, qualify for a waiver from the World Trade Organization that permits manufacturing and exporting of certain patented inventions, like Remdesivir, without a license. One of Bangladesh's largest drug manufacturers, Beximco Pharmaceuticals Ltd, said it planned to produce the drug initially for domestic use and would seek government approval for exports.

- [Over 90,000 health workers infected internationally](#)

International Council of Nurses reports over 90,000 health workers (an estimated 6% infection rate) have been infected due to lack of PPE based on information collected in 30 countries. The council expressed concerns about lack of systematic testing of healthcare workers and reporting of positive cases.

- [Coronavirus spreads among Indian police force](#)

Almost 50,000 cases have been reported in India, and more than 450 cases were police officers. Despite the force being thin-spread while trying to enforce lockdown restrictions, many officers are requesting sick leave. Five more companies of paramilitary forces will be deployed to further tighten security in the containment zones in Ahmedabad.

- [Shanghai Disneyland will reopen next week](#)

Disneyland theme park in Shanghai will reopen on May 11 under “enhanced health and safety measures” including limited attendance and requiring all guests to book tickets in advance. Social distancing and increased sanitation efforts will also be in effect.

Economics, Workforce, Supply Chain, PPE Highlights

- [A "paper diaper" recommended for use with N95 respirator](#)

The authors from China recommend using a super-absorbent polymer (SAP), a harmless material capable of absorbing and retaining large amounts of liquid relative to its own weight. It is easily obtainable by cutting off the absorbent layer of daily and hospital necessities (e.g., paper diaper, sanitary napkin, incontinence pad). An N95 respirator with an SAP pad could rapidly absorb the sweat, water vapor, and exhaled splutter, but the SAP pad itself gets wet very slowly, which greatly reduced the humidity of respirators while wearing, leading to longer life cycle and improved comfort of respirators.

- [Review of masks and respirators for healthcare workers](#)

There is accessible data about the use of masks for influenza. This review summarizes all the available data for SARS-CoV-2. They conclude that clinical evidence is lacking in filtering facepiece respirators (FFR) use but agree that proper PPE (including FFR) are pivotal to provider health.

- [Hospitals experiencing financial difficulty prior to the pandemic need government support to stay open](#)

JAMA Network: Hospitals that are smaller, independent, rural, and have critical access status are particularly at risk. A call for policy makers to prioritize these facilities when allocating CARES Act and other funding.

- [Financial resources for vascular surgeons](#)

Vascular surgeons are under great financial pressure because of postponement of all non-emergency procedures. The federal government has announced a myriad of programs in the form of grants and loans to reimburse physicians for some expenses and loss of revenue. It is likely that unless the public health emergency subsidizes significantly, many practices will suffer dire consequences without additional financial assistance. The authors provide a concise listing of such programs and resources available to assist vascular surgeons, who are small businesses in accessing these opportunities.

- [Large fraction of African population may go hungry in a 14-day lockdown](#)

A survey of 20 African countries showed over 2/3 of people would run out of food and water if they had to stay home for 14 days. Over half stated they would run out of money. As such, millions still must leave their homes every day to go to work. The Africa CDC warns that, if lockdown measures are not tailored to local needs, there may be a risk of unrest and violence.

Epidemiology Highlights

- [Study suggests viral "jump" to humans occurred in late 2019](#)

Based on the results of multiple whole genome sequence studies, the time to most recent ancestor (tMRCA) for SARS COV2 is estimated to be as early as October 15, 2019 to as late as December 8, 2019, possibly indicating that the "jump" to humans occurred during this time. Notably, the article also talks about how the mutations investigated so far are likely neutral or deleterious but are still valuable data in terms of drug development.

- [Decreased weekly mortality rates attributed to COVID-19](#)

Levels of laboratory-confirmed COVID-19 activity remained similar or decreased compared to the previous week. Mortality attributed to COVID-19 decreased compared to last week but remains significantly elevated and may increase as additional death certificates are counted.

- [Early SARS-Cov-2 circulation in France](#)

A published paper that supports previous news reports of SARS-CoV-2 circulating in France in December 2019, a month before the country's first reported case. The study analyzed 14 retained samples from patients with influenza-like illness from early December 2019 to mid-January 2020 with negative PCR tests for other respiratory infections, including influenza, and

found 1 specimen positive for SARS-CoV-2. The patient's medical history included no travel or other direct links to China, which suggests that community transmission may have occurred earlier than previously thought.

Healthcare Policy Recommendations

- [Experts from different countries review evidence and make recommendations for reopening](#)
Based on specific experiences from Korea, Singapore, Hong Kong, Taiwan, and South Africa, the authors suggest the need for the following prior to reopening society: 1. Interventions to reduce risk of transmission from travelers (ex: post-arrival quarantine, showing proof of prior infection, or rapid testing for those who are seronegative) 2. Extensive testing with surveillance and tracking of new outbreaks, and 3. Adequate supply of PPE to protect health care workers. Even after reopening, countries may consider encouraging teleworking, discouraging social gatherings, and implementing universal masking.
- [WHO warns against rushed end to coronavirus lockdowns](#)
WHO recommends a careful and phased approach to ending lockdowns. Governments decide how and when to restart but U.N. organization would offer risk management advice if needed.
- [CDC case management guidance for correctional facility administrators](#)
This guidance includes topics on: operational and communications preparations for COVID-19; improved hygiene practices; social distancing strategies; limiting transmission from visitors; infection control, including PPE and potential alternatives during shortages; verbal screening and temperature check protocols for incoming incarcerated/detained individuals, staff, and visitors; medical isolation and quarantine of contacts, including considerations for cohorting when individual spaces are limited; healthcare evaluation for suspected cases; clinical care; and considerations for persons at higher risk of severe disease course.
- [Letter to the editor: timing is important](#)
The outcomes of patients with COVID are closely tied to the time of admission to the hospital, time of admission to the intensive care unit and how patients are managed with drug interventions. Each component should be carefully considered if more lives are to be saved during the pandemic.
- [Guidance for building a dedicated health facility](#)
Authors provide guidance for building a dedicated health facility to contain spread of dangerous pathogens. They address design elements including space, staffing, ventilation, infection control, waste disposal, safety of HCWs, and which parties would ideally be involved in designing and planning such a facility.

Practice Guidelines

- [Recommendations for maternal-fetal medicine practitioners during COVID-19](#)
Am J Obstet Gynecol: Italian experts provide the guidelines for maternal-fetal medicine practitioners regarding prenatal visits, scheduling obstetrical ultrasound, non-stress tests and biophysical profile, visitor policies, and involvement of trainees.
- [COVID-19 and neurosurgery: review and discussion of guidelines](#)
This literature review has focused on the amount and dynamics of neurosurgery publications without digging into concrete recommendations. Globally, there has been a broad call to reduce "elective" neurosurgical operations. Consequently, neurosurgeons are expected to devise alternative plans of how and when to treat non-emergent neurosurgical patients. Nonetheless, apart from clear-cut emergent cases, the timing of neurosurgery may be crucial, even in some elective procedures, such as intracranial tumors or cervical myelopathy. These situations often require decision-making coordinated with senior neurosurgeons.
- [Long QT in COVID-19 patient treated with HCQ +azithromycin: possible benefits of lidocaine: a case report](#)
The algorithm is proposed based on a case study of a patient with a QTc of 620 ms with a notched broad T wave following HCQ+ azithromycin. After 100 mg intravenous lidocaine QTc was 550. The authors developed a flow chart to manage the risk of QT prolongation and torsades de pointes (TdP) while treating patients in the hospital with combination therapy. Correct K

and Mg, monitor EKG.

- [Indian guidelines for gastroenterologists on prevention and management of COVID-19](#)

Three Indian GI professional bodies (Society of Gastrointestinal Endoscopy of India (SGEI), Indian Society of Gastroenterology (ISG), and Indian National Association for the Study of the Liver (INASL) provide their guidance for gastroenterologists and GI endoscopists.

Testing

- [UK misses testing target for the fourth day running](#)

The UK government has placed mass testing and contact tracing at the top of their agenda as they seek to relax lockdown parameters; however, the Prime Minister stated that the 100,000 tests/day goal was unable to be met due to low demand. Criticism has arisen around claims that the government met the goal on April 30th, as 40,000 out of the 122,000 tests were incorrectly marked as completed. Despite low demand, the Prime Minister aims to increase the country's testing capacity to 200,000 tests/day.

- [University of Chicago Increases Routine HIV ED screening by incorporating HIV test into COVID workflow](#)

University of Chicago has conducted routine HIV screening in its ED since 2011 and was able to continue screening by incorporating a HIV blood test into its Influenza Like Illness (ILI) testing and treatment area, a secondary space of the ED created in response to the pandemic. From March 5th through April 18th, 1789 HIV tests were conducted accounting for 20.8% of the total 8616 ED visits, which is on par with pre-pandemic screening of 22.4% of ED visits. 6 positive HIV cases were identified including two with ILI, representing acute HIV. Patients were notified of their new diagnosis, started on ART a median of 1 day following diagnosis, and attended comprehensive follow-up care visits.

Drugs, Vaccines, Therapies, Clinical Trials

- [Rapid development of an inactivated vaccine candidate for SARS-CoV-2](#)

Chinese researchers report in *Science* the pilot-scale production of a purified inactivated SARS-CoV-2 virus vaccine candidate (PiCoVacc), which induced SARS-CoV-2-specific neutralizing antibodies in mice, rats and non-human primates. These antibodies neutralized 10 representative SARS-CoV-2 strains, suggesting a possible broader neutralizing ability against SARS-CoV-2 strains. Three immunizations using two different doses (3 µg or 6 µg per dose) provided partial or complete protection in macaques against SARS-CoV-2 challenge without observable antibody-dependent enhancement of infection. This data strongly supports clinical development of SARS-CoV-2 vaccines for humans.

- [Natural product-derived phytochemical as potential agents against coronavirus virus research](#)

The authors conducted a review of 55 primary research articles on phytochemicals against different human and animal coronaviruses identified from the PubMed database. Approximately 10 compounds have been found to have potential for the inhibition of coronavirus in humans. Most of these compounds are classified as polyphenols and/or contain a conjugated fused ring structure.

- [Phytochemicals' treatment potential structural chemistry](#)

Researchers investigated the potential inhibitory effects of plant-extracted compounds (phytochemicals) from fauna inhabited in Pakistan and India with previously known pharmacological activity and found 60 compounds with binding affinity to Mpro (main protease) of SARS-COV2. Among these compounds include previously known anti-inflammatory compounds and antioxidants such as robustone, lycopene, and isopomiferine.

- [Liu Shen capsule, a traditional Chinese medicine, found to decrease virus replication in lab setting](#)

Liu Shen (LS) showed a dose-dependent effect of LS on infected cells (Vero E6) leading to reduced viral particle formation and viral-induced cell death. Quantification of mRNA levels on a different set of LS-treated infected cells (Huh-7) using rt-pcr showed a decrease in production of pro-inflammatory cytokines and components of the NF-κB signaling pathway.

- [Anti-nCoV drug chemical compounds from Indian spices identified to target SARS-CoV-2 main protease](#)

The authors examined the structure of 45 chemical compounds from Indian spices using PubChem or Zinc databases. Four

small chemicals were further analyzed based on their binding affinity with SARS-CoV 2 main protease. The compounds Carnosol, Rosmanol, and Arjunglucoside-I demonstrated strong and stable binding affinities to the protease's active site.

- [Examination of convalescent plasma effectiveness in past viral outbreaks](#)

The authors reviewed the history of convalescent plasma use during previous viral outbreaks and pandemics with particular focus on hemorrhagic fevers, influenza, and other coronaviruses.

- [Global Coronavirus COVID-19 Clinical Trial Tracker](#)

Canadian authors report the development of a real-time dashboard of clinical trials for COVID-19 available at <https://www.covid-trials.org/>

- [47 new COVID-19 trials registered today at clinicaltrials.gov](#)

Treatment trials: convalescent plasma, tocilizumab, ruxolitinib, hydroxychloroquine/zinc, mesenchymal stem cells, quercetin, ciclesonide, fluoxetine, methylprednisolone, favipiravir,, lopinavir/ritonavir, otilimab. At time of writing, a total of 1207 were active, 58 completed, and 4 posted results.

Other Science

- [Physical activity decreased 5.1-fold and screen time increased 3.8-fold in youth during pandemic](#)

A study among 2427 children and adolescents (6–17 years) in five schools in Shanghai, China showed a decrease in median physical activity from 540 min/week (before the pandemic) to 105 min/week (during the pandemic). Total screen time increased from 610 to 2340 minutes/week. As physical activity may provide protection from viral infections and these negative impacts may extend into adulthood, the authors argue intervention is needed.

- [Psychological health problems prevalent in Chinese adolescents during the outbreak of COVID-19](#)

Cross-sectional study of adolescents in China found a high prevalence of psychological health problems, which are negatively associated with the level of awareness of COVID-19. They also found that depressive symptoms were more prevalent among students in rural areas than in cities.

- [Effects of temperature and humidity on the daily new cases and new deaths of COVID-19](#)

Temperature and relative humidity were both negatively related to daily new cases and deaths i.e. A 1 degrees C increase in temperature was associated with a 3.08% (95% CI: 1.53%, 4.63%) reduction in daily new cases and a 1.19% (95% CI: 0.44%, 1.95%) reduction in daily new deaths, whereas a 1% increase in relative humidity was associated with a 0.85% (95% CI: 0.51%, 1.19%) reduction in daily new cases and a 0.51% (95% CI: 0.34%, 0.67%) reduction in daily new deaths.

- [Lupus anticoagulant and abnormal coagulation tests in patients with COVID-19](#)

In this study, 20% of patients with COVID-19 had a prolonged activated partial-thromboplastin time (aPTT). In 90% of these cases, the cause was lupus anticoagulant, with no associated bleeding. Patients with COVID-19 susceptible to thromboses.

- [Atypical Kawasaki hyperinflammatory shock in children during COVID-19 pandemic](#)

Lancet Letter: the authors from a pediatric intensive care unit in UK report an unprecedented cluster of eight children with hyperinflammatory shock, showing features similar to atypical Kawasaki disease, Kawasaki disease shock syndrome, or toxic shock syndrome. Some of the children with ages between 4 and 14 had known family exposure to COVID-19. Demographics, clinical findings, imaging findings, treatment, and outcome for this cluster of eight children are presented.

- [Study shows viral replication in human enterocytes](#)

Researchers investigate whether SARS CoV2 can replicate in human intestinal absorptive cells (enterocytes) given emerging data suggesting that ACE2 expression is most abundant in the brush border of this cell type. Using human small intestinal organoids (hSLOs), the researchers infected enterocytes with SARS COV2 and used dsRNA immunofluorescence and measured virus titers and viral mRNA expression to confirm possible infectivity. Immunofluorescence staining for the nucleocapsid (NP) protein on the infected cells 24 hours after infection showed a positive signal with subsequent spread throughout the entire organoid by 60 hours. Live virus titers and viral RNA expression concurrently increased. These results potentially explain the reason behind the gastrointestinal signs and symptoms seen in some cases and could also reinforce the idea of fecal-oral transmission.

- [Severe SARS-CoV2 pneumonia case recovered after 33 days in Modena, Italy – tocilizumab Tx](#)

Letter to the Editor: Clinical course of 72 y/o Caucasian male with PMHx significant for limited atherosclerosis, systemic arterial HTN, and stable chronic B-cell lymphocytic leukemia and a brief discussion on risks/benefits of noninvasive vs advanced respiratory support. Notable about this article is a day by day graph of D-dimer, CRP, and platelets, showing the timepoint where tocilizumab is introduced.

- [Unique domain in nucleocapsid \(N\) protein as potential drug targeting site](#)

This study aims to look at the nucleocapsid (N) protein structure of SARS-CoV-2. Much research is geared toward to spike (S) protein and proteases. Their data suggests SARS-CoV-2 has a unique pattern for binding ribonucleotides and can be a possible site of drug intervention.

- [Emergence of genomic diversity and recurrent mutations in SARS-CoV-2](#)

Virus genomes from over 7,500 people infected with COVID-19 were analyzed with respect to diversity of the SARS-CoV-2 virus genome. Scientists identified 198 recurrent genetic mutations in the virus, which highlight how the virus is adapting and evolving to its human hosts. "Three sites in Orf1ab in the regions encoding Nsp6, Nsp11, Nsp13, and one in the Spike protein are characterized by a particularly large number of recurrent mutations (>15 events) which may signpost convergent evolution and are of particular interest in the context of adaptation of SARS-CoV-2 to the human host". This convergence cautiously suggests that the vaccine strategy is still viable.

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