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2020-05-21 DAILY UNM GLOBAL HEALTH COVID-19 BRIEFING

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UNM GLOBAL HEALTH COVID-19 BRIEFING

May 21, 2020

Executive Summary

NM Highlights: NM case counts. Governor press conference slides. More businesses to open. Roswell early retirement incentives. UNM COVID-19 STEM research.

US Highlights: Michigan flooding. Earlier lockdown decreases deaths. Racial divide in nursing homes. Speeding fatalities on open roads.

International: UV bot cleaner. Swedish serological study.

Economics: N95 respirators supply optimization. Japanese personal protective measures implementation. Ventilator needs prediction algorithm

Epidemiology: Additional high-risk occupations. Social distancing strategies effective. Location-based service data useful.

Healthcare Policy: Toolkit for opening businesses. Health policy research agenda. Face mask policies vary.

Practice: Recommendations are given on brachytherapy, Dental practice, ECT for elderly with depression. Hospital communication services and telehealth is discussed for deaf and hard of hearing population.

Testing: CRISPR-based virus detection.

Drugs: Repurposed herb trial. COVID-19 quality.

Other Science: Oral vs fecal viral shedding. Dementia risk factor. Lung autopsies. News skewed toward mortality. Virus genomic landscape. Olfactory dysfunction risk factors. Predictive biomarker meta-analysis. ECMO treatment outcomes.

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

- [NM reports 11 more COVID-19 deaths and 163 additional cases on May 21](#)

As of today (5/21), the total positive cases and total deaths in the state are 6,472 and 294, respectively. The state has performed 152,767 tests, there are 205 individuals currently hospitalized for COVID-19, and 2,041 COVID-19 cases have recovered. NMDOH portal featuring epidemiologic breakdown of cases.

- [Governor Michelle Lujan Grisham: Press Conference slides](#)

Dr. David Scrase, HSD Secretary and Medical Advisory Team member, presented updated data during the May 20th Press

Conference. [These slides](#) are also available on cv.nmhealth.org. [Link here](#) to yesterday's press videoconference. In addition to Sec. Scrase's presentation, the Governor and Health Secretary Kathyleen Kunkel answered questions about expanded testing, budget shortfalls, and a June 18 special session. See more in next article.

- [Governor Lujan Grisham: NM on track to reopen more businesses June 1](#)

Governor says NM is on track to continue with reopening but the same adherence to guidelines are still advised. Since the reopening of May 16, it will take 10-14 days to see if there will be a new wave of infections. The current goal is to reopen salons, gyms, and malls by June 1.

- [City of Roswell offers incentives to retire early](#)

The City of Roswell faces a \$35 million budget deficit due to the crash in oil prices and current pandemic, and is. So, they offering employees, near retirement, a one-year payout to retire early. The city is also offering a severance package to any employee that wants to voluntarily leave the city. The city manager is hoping about 60 city workers will either take early retirement or severance packages.

- [UNM women STEM faculty research on COVID-19](#)

Short article written by Advance at UNM communication team on work being done by women STEM faculty at UNM to combat Covid-19. From the creation of hand sanitizers to virtual exhibitions and 3D printing face masks for health care workers, STEM faculty are on a mission to keep New Mexicans not only safe, but informed.

US Highlights

- [Michigan flooding response complicated by COVID-19](#)

USA Today: Record flooding caused by heavy rain and the failure of two dams has displaced up to 10,000 residents creating difficulty in social distancing as many have to move to the homes of friends, families and evacuation sites. Individuals showing symptoms are not allowed within the eight shelters.

- [Tens of thousands of U.S. deaths could have been prevented with earlier lockdowns](#)

MedRxiv preprint: Researchers from Columbia University School of Public Health used county-level observations of reported infections and deaths, in conjunction with human mobility data and a metapopulation transmission model, to quantify changes of disease transmission rates in US counties from March 15, 2020 to May 3, 2020. Counterfactual simulations indicated that, had these same control measures been implemented just 1-2 weeks earlier, a substantial number of cases and deaths could have been averted. Specifically, nationwide, 61.6% [95% CI: 54.6%-67.7%] of reported infections and 55.0% [95% CI: 46.1%-62.2%] of reported deaths as of May 3, 2020 could have been avoided if the same control measures had been implemented just one week earlier.

- [In nursing homes pandemic is particularly virulent toward African-Americans and Latinos](#)

The New York Times: Nursing homes where these groups make up a significant portion of the residents — no matter their location, size, or government rating — have been twice as likely to be hit by the coronavirus as those where the population is overwhelmingly white. In this NYT graph comparing disparities in 17 states, NM is the only state where white population is harder hit.

- [Emptier US roads with more fatalities](#)

BBC News: National safety council reports a 14% increase in fatality rates per distance driven in March 2020 despite the miles driven decreasing by 18% the same month. Reports suggest that speeding is a key contributor to the deaths.

International Highlights

- [Singapore developed the Sunburst UV Bot to clean closed shopping mall](#)

Reuters: UV bot programmed for repetitive cleaning isn't cheap and could be harmful to humans if encountered. It is programed to shut off its UV lights when humans are detected. More to be deployed elsewhere in Singapore.

- [Preliminary results of Swedish serological study, 7.3% of Stockholm participants with antibodies](#)

Folkhalsomyndigheten: Sweden's Public Health Authority announced preliminary findings based on >1,200 specimens from 9 regions corresponding to April 27-May 3. Results show a lower overall infection rate than predicted by public health officials. This has raised concerns about the herd immunity approach that Sweden is taking. Sweden continues to report elevated per capita incidence compared to most of Europe, and its daily per capita deaths is currently the highest in Europe.

Economics, Workforce, Supply Chain, PPE Highlights

- [Optimizing the supply of N95 filtering facepiece respirators during COVID-19](#)

The authors offer strategies for optimizing supplies of N95 respirators in healthcare settings while maximizing the level of protection offered to healthcare personnel when there is limited supply in the United States during COVID-19 pandemic. The strategies are intended for use by professionals who manage respiratory protection programs, occupational health services, and infection prevention programs in healthcare facilities to protect healthcare personnel from job-related risks of exposure to infectious respiratory illnesses. Consultation with federal, state, and local public health officials is important. The authors use the framework of surge capacity and the occupational health and safety hierarchy of controls approach to discuss specific engineering control, administrative control, and personal protective equipment measures that may help in optimizing N95 respirator supplies.

- [Japanese personal protective measure adoption improves over time, except for touching of face](#)

This longitudinal, internet-based survey included 2,141 respondents. The baseline and follow-up surveys were conducted from February 25-27, 2020 and April 1-6, 2020, respectively. Participants were asked how often they implemented the 5 personal protective measures recommended by the WHO (hand hygiene, social distancing, avoiding touching the eyes, nose and mouth, respiratory etiquette, and self-isolation) in the baseline and follow-up surveys. The prevalence of 3 of the 5 personal protective measures significantly improved in the community transmission phase compared to the early phase. Social distancing measures showed significant improvement, from 67.4% to 82.2%. However, the prevalence of avoiding touching the eyes, nose and mouth, which had the lowest prevalence in the early phase, showed no significant improvement (approximately 60%). Multivariate logistic regression analysis revealed, men and persons of low-income households made fewer improvements than women and persons of high-income households.

- [Algorithm to predict daily ventilator needs](#)

To be utilized by a large hospital or a group of coordinated hospitals at the end of each day (e.g. 8pm) when the current number of non-ventilated Covid-19 patients and the predicted number of Covid-19 admissions for tomorrow are available. The algorithm is available for free at covidvent.github.io. A ventilator ordering and returning policy is also included.

Epidemiology Highlights

- [High transmission-risk occupations are not limited to health care workers](#)

Confirmed COVID-19 cases from governmental investigation reports in Hong Kong, Japan, Singapore, Taiwan, Thailand, and Vietnam were followed for 40 days after the first locally transmitted case, excluding all imported cases. They identified 103 possible work-related cases (14.9%) among a total of 690 local transmissions. The five occupation groups with the most cases were healthcare workers (HCWs) (22%), drivers and transport workers (18%), services and sales workers (18%), cleaning and domestic workers (9%) and public safety workers (7%). Possible work-related transmission played a substantial role in early outbreak (47.7% of early cases). Occupations at risk varied from early outbreak (predominantly services and sales workers, drivers, construction laborers, and religious professionals) to late outbreak (predominantly HCWs, drivers, cleaning and domestic workers, police officers, and religious professionals).

- [Model shows that social distancing strategies can help control transmission](#)

Constant, intermittent, and stepping-down social distancing (SD) strategies were modeled. The stepping-down strategy was the best long-term SD strategy to minimize the peak number of active COVID-19 cases and associated deaths. The stepping-down strategy also resulted in a reduction in total time required to SD over a two-year period by 6.5% compared to an intermittent or constant SD strategy. If people exercise caution while in public by protecting themselves (e.g., wearing a

facemask, proper hand hygiene and avoid agglomeration) the magnitude and duration of SD necessary to maintain control over the pandemic can be reduced.

- [Use of location-based service data to track spread of COVID-19 epidemic in China](#)

Spatiotemporal data of COVID-19 cases in mainland China and two categories of location-based service (LBS) data of mobile devices from the primary and secondary epidemic sources (Wuhan seafood market) tracked spread of generations of COVID-19 in China. At the beginning of the epidemic, the mixed first-generation and second-generation spreads appeared in most cities with confirmed cases. They strongly interacted to enhance the epidemic in Hubei province and provinces adjacent to Hubei. The third-generation spread started in Wuhan from January 17 to 20, 2020, and in Hubei from January 23 to 24. No obvious third-generation spread was detected outside Hubei. Urgent control measures include preventing the potential third-generation spread in mainland China, eliminating it in Hubei, and reducing the interaction influence of first-generation and second-generation spreads.

Healthcare Policy Recommendations

- [Operational toolkit for businesses considering reopening or expanding operations in COVID-19](#)

The JHU School of Public Health has released a new toolkit to help business owners who are considering reopening or expanding their operations to determine their establishments' risk of transmission COVID-19 and how to reduce it. With this toolkit, business leaders can work through a 4-stage process to calculate and understand their risk. Included are examples of mitigation measures to increase the safety of their employees and customers, an instruction manual, a business risk worksheet, and an assessment calculator.

- [Research agenda proposed for health policies](#)

Dutch authors propose an agenda for research of health policy from a governance perspective. Four areas of research are proposed: decision-making structures and practices, mediatization, organization of healthcare, and expertise. Within each theme pertinent questions are highlighted as research can help with the crisis.

- [Of the 25 countries with the highest number of cases, 16 recommend against public use of masks](#)

A quantitative content analysis of health agency mask guidelines was performed in late March among the 25 countries with the highest number of cases. Nine countries recommended masks in public/poorly ventilated places, whereas 16 recommended against it due to masks creating a false sense of security. Twelve did not offer recommendations.

Practice Guidelines

- [Brachytherapy recommendations during COVID-19 pandemic](#)

Practical considerations are discussed for brachytherapy (a form of radiotherapy) for a variety of clinical indications. A summary is provided on the evidence supporting the use of higher dose-per-fraction high-dose-rate regimens to allow treatment completion in a shorter course thereby limiting resource utilization and exposure risk. It is strongly recommended that for all modified fractionations being considered, strict respect for normal tissue dosimetric constraints be met.

- [Guidelines overview for dental care settings](#)

A review of several dentistry guidelines is provided. There is universal concurrence on directives such as postponing elective dental treatment, developing appropriate screening protocols through telecommunication, applying special additional droplet precautions when treating patients with dental emergencies, and sequestered treatment of infected /suspected patients in specially fitted suites with negative pressure. The recommended equipment and settings are described for clinics that can receive confirmed COVID-19 patients. The authors provide an overview of the dentistry practice in the post-pandemic era, as well as potential developments in antiviral drugs and vaccines.

- [Electroconvulsive therapy for geriatric depression during COVID-19 pandemic](#)

The authors describe their approach to conducting ECT in depressed geriatric patients in Canada. They implemented a rigorous patient prioritization process with color-coded cases classification (red -emergent, orange -highly urgent, yellow - urgent but can wait for up to 4 weeks, green -can be clinically monitored without treatment but provide quick access if the

acuity changes, gray -stable long term). Patients selected for treatment were screened clinically for COVID-19, and if positive, were tested with PCR. They also went through a revision of the informed consent procedure to reflect the added risk of infection. ECT was then performed in a room modified to provide negative pressure and allow optimum air circulation between patients. All staff were geared in full PPE changed between patients while the room was ventilated and sterilized.

- [Deaf and hard of hearing hospital communication and telehealth services recommendations](#)

The recommendations are provided for hospital communications services (National Association for the Deaf and consumer groups) (available [here](#)) and on Telehealth (available [here](#)) for deaf and hard of hearing population.

Testing

- [CRISPR tool scales up to interrogate a huge line-up of viral suspects](#)

A review is provided on CRISPR technique. Use of new CRISPR-based technology can simultaneously detect nucleic acids of many viruses and pinpoint specific ones, such as the virus that causes COVID-19.

Drugs, Vaccines, Therapies, Clinical Trials

- [Randomized open trial on Lianhuaqingwen Capsules, a repurposed Chinese Herb](#)

Lianhuaqingwen (LH) was studied in a prospective multicenter open-label randomized controlled trial among confirmed COVID-19 cases. Patients (n = 284) were randomized to receive usual treatment alone or in combination with LH capsules (4 capsules, thrice daily) for 14 days. Primary endpoints were resolution of symptoms (fever, fatigue and coughing). The recovery rate was significantly higher in treatment group as compared with control group (91.5% vs. 82.4%, P=0.022). The median time to symptom recovery was shorter in treatment group (median: 7 vs. 10 days, P<0.001). Time to recovery of fever (2 vs. 3 days), fatigue (3 vs. 6 days) and coughing (7 vs. 10 days) was also significantly shorter in treatment group (all P<0.001). The rate of improvement in chest computed tomographic manifestations (83.8% vs. 64.1%, P<0.001) and clinical cure (78.9% vs. 66.2%, P=0.017) was also higher in treatment group. Groups did not differ in the rate of conversion to severe cases or viral assay findings (both P>0.05). No serious adverse events were reported.

- [Analysis of 189 COVID-19 trials: strengths and weaknesses](#)

A retrospective analysis of 189 trials through February 20, 2020 was conducted. There were 69.3% interventional studies, 21.7% observational studies, 5.3% diagnostic tests, and 3.7% other studies. Although many COVID-19 studies include randomization in their design, the lack of additional double-blind and placebo-controlled elements in their designs result in a less robust evaluation of intervention safety and efficacy. Furthermore, similar or repeated research and small sample studies have possibly led to a shortage of recruitable patients and become a barrier to the completion of large multicenter clinical trial studies.

- [30 New COVID-19 Trials registered today at clinicaltrials.gov](#)

Treatment trials: Anti-inflammatory Clarithromycin, Extracorporeal Membrane Oxygenation, RT-PCR, INFLAMmasome and Platelets, ACT-20, Levilimab (BCD-089), iNOPulse, Nebulized Heparin, Ad5-nCoV, Mavrilimumab, Therapeutic Tx with Immunomodulatory MSC, GCO-002. At time of writing, a total of [1565](#) were active, [92](#) completed, and [3](#) posted results.

Other Science

- [Oral and fecal viral shedding of COVID-19 patients](#)

A retrospective cohort of COVID-19 patients (n=401) admitted to Chinese hospital were included in this study. Positive rate of fecal SARS-CoV-2 RNA in children was significantly higher than adults. No difference in gastrointestinal symptoms was observed between patients with positive and negative fecal samples, suggesting that SARS-CoV-2 may use the intestine as a reservoir without altering the intestine functions. Viral RNA in fecal samples had higher positive rates and viral loads than the paired respiratory samples. The longest duration of positive fecal samples observed was 43 days suggesting that SARS-CoV-2 test of rectal swabs is crucial to minimize false negatives.

- [Dementia as a risk factor for mortality in COVID-19](#)

In this retrospective study the data from 627 subjects admitted to Acute Medical wards with COVID 19 pneumonia were analyzed. Dementia was diagnosed in 82 patients (13.1%). The mortality rate was 62.2% (51/82) among patients affected by dementia compared to 26.2% (143/545) in subjects without dementia ($p < 0.001$, Chi-Squared test). In a logistic regression model age, and the diagnosis of dementia resulted independently associated with a higher mortality, and patients diagnosed with dementia presented an OR of 1.84 (95% CI: 1.09-3.13, $p < 0.05$). Among patients diagnosed with dementia, the most frequent symptoms of onset were delirium, especially in the hypoactive form, and worsening of the functional status.

- [Pulmonary vascular endothelialitis, thrombosis & angiogenesis in COVID-19 cases](#)

NEJM: Autopsies of lungs from patients who died from COVID-19 ($n=7$) and influenza-associated respiratory failure ($n=7$) demonstrated diffuse alveolar damage and perivascular t-cell infiltration typical of ARDS, but thrombosis with microangiopathy and intussusceptive angiogenesis were significantly more common in the COVID-19 patients. SARS-CoV-2 was seen within vascular endothelial cells, and there were significantly greater numbers of ACE-2-positive endothelial cells in the lungs of COVID-19 patients.

- [News coverage of the pandemic focuses more on death rate than prevention of disease spread](#)

Using Google Videos as the search engine, the study analyzed topics of COVID-related videos from January and February. 43.6% of videos focused on death and death rate. 37.4% focused on anxieties surrounding the outbreak. Less than 10% focused on disease prevention. The authors make suggestions to reframe messages to encourage and promote coping strategies and health sustaining behaviors.

- [Virus genomic landscape to identify non-synonymous mutations for use in diagnosis and drug design](#)

This study presents a comprehensive phylogenetic analysis of SARS-CoV2 isolates to understand discrete mutations that are occurring between patient samples. Detailed investigation on nucleotide substitution unfolded 100 substitutions in the coding region of which 43 were synonymous and 57 were non-synonymous type. The nonsynonymous substitutions were found to be distributed over different hCoV proteins with maximum on spike protein. An important di-amino acid change RGto KR was observed in ORF9 protein.

- [Olfactory dysfunction is negatively associated with older age and more common in women](#)

In a prospective, cross-sectional study ($n=103$) in Switzerland, olfactory dysfunction was prevalent in 61.2% of COVID patients. It is positively associated with female gender and negatively associated with older age. It is strongly correlated with severity of dysgeusia.

- [Association of inflammatory markers with the severity of COVID-19: a meta-analysis](#)

A total of 16 studies ($n= 3962$ patients) with COVID-19 were included in the analysis. Random-effect results demonstrated that patients with COVID-19 in nonsevere group had lower levels for C-reactive protein ($P < 0.001$), PCT ($P < 0.001$), IL-6 ($P < 0.001$), ESR ($P = 0.005$), SAA ($P = 0.020$) and serum ferritin ($P < 0.001$), compared with those in severe group. Moreover, survivors had a lower level for IL-6 than non-survivors ($P < 0.001$). These results were consistent through sensitivity analysis and publication bias assessment.

- [ECMO may be an effective treatment for patients with SARS-CoV-2 pneumonia](#)

A descriptive analysis ($n=129$) was performed on critically ill patients with SARS-CoV-2 pneumonia who were admitted to ICU of the two referral hospitals. 59 patients received mechanical ventilation and 21 of them received extracorporeal membrane oxygenation (ECMO). For those patients with ECMO, 12 died by April 7. The PaCO₂ prior to ECMO was lower (54.40 mm Hg [29.20-57.50 mm Hg] vs 63.20 mm Hg [55.40-72.12 mm Hg]; $p = 0.006$), and pH prior to ECMO was higher (7.38 [7.28-7.48] vs 7.23 [7.16-7.33]; $p = 0.023$) in survivors than non-survivors.

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