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2020-04-25/26 DAILY UNM GLOBAL HEALTH COVID-19 BRIEFING

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DAILY UNM GLOBAL HEALTH COVID-19 BRIEFING

April 25-26, 2020

Executive Summary

NM and Navajo Nation case reports. NM unemployment assistance. Mount Sinai experience. NYC antibody testing starts. US states reopening. US hospitals closure risk. UK universal weekly testing. Russia holiday spikes. Assessments of double-layered cloth masks. Microwave steam disinfection. N95 reuse. Ophthalmic equipment shields. Phased reopening. Inverse quarantine. Low GI endoscopy transmission. Nursing facility transmission. Predicting per-state cases. Forecasting hospital demand. Ventilator triage policies. CDC/OSHA meat processing. Antivirals and DOACs. Thrombotic ultrasound screening. Thromboembolic complications. CT findings reporting. Nasal cannulas over ventilators. Safe intubation/extubation. Convalescent plasma eligibility. Safe ultrasound. Invasive cardiac electrophysiology. Esophageal oncologic surgery. Mental health COPD. Antibody testing controversy. Combined antibody tests better. Immune response and severity. Abbott testing compared. New IgG test. Clinical trials dashboard. No extra ACEI/ARB risk. HCQ G6PD deficiency risk. High HCQ dose risk. Drug discovery review. Estrogen therapy hypothesis. Tocilizumab Tx proposed. Healthcare worker symptoms. Distinguishing CT features. Kidney tissue invasion. Pathophysiology review. T-cell response severity. Caucasian coagulopathy. CDC updates symptom list.

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 6 new COVID-19 deaths and 66 additional cases according to partial report](#)
The total positive cases and total deaths in the state are 2,726 and 99, respectively. As of today, the state has performed 56,615 tests, there are 148 individuals currently hospitalized for COVID-19, and 650 COVID-19 cases have recovered. New NMDOH portal featuring epidemiologic breakdown of cases.
- [Navajo Nation reported 1,637 cases and 59 deaths as of April 25](#)
The Navajo Department of Health and Navajo Area Indian Health Service have announced 97 new cases of COVID-19 and one additional death Saturday, April 25. The Navajo Nation now has a total of 1,637 positive cases with 59 confirmed deaths.
- [Information related to unemployment insurance and pandemic unemployment assistance](#)
Answers to common questions on Unemployment Insurance and Pandemic Unemployment Assistance are available here.
- [Online applications for pandemic unemployment assistance begin today \(4/26\)](#)
"If you are self-employed, an independent contractor, or a gig economy worker, you have lost your job/income due to the COVID19 pandemic, AND you have NOT YET applied for any UI or PUA benefits – start your application by FIRST applying for UI benefits at <http://jobs.state.nm.us>", tweeted Gov. Michelle Lujan Grisham. [Online application portal](#)

US Highlights

- [Adapting to the COVID-19 pandemic in New York City](#)
The experience of Mount Sinai Health System (MSHS) is described.

- [NYC will begin antibody testing and sample collection at local pharmacies](#)

Governor Cuomo is interested in the antibody testing of nurses, police officers, firefighters, bus drivers, grocery store clerks and other essential workers in determining the spread of the COVID.

- [U.S. states preparing to reopen businesses as coronavirus could push jobless rate to 16%](#)

Another wave of U.S. states are preparing to lift coronavirus restrictions this week against the warnings of many public health experts as the White House sees this month's jobless rate hitting 16% or higher. Health experts say increased human interaction could spark a new wave of cases of COVID-19.

- [Federal assistance requested due to the higher risk of rural hospitals closing](#)

A quarter of rural hospitals across the U.S. are at risk of closing according to Guidehouse report, however, 81% of these hospitals are essential to their communities. At least one confirmed case has been detected in 60% of these rural areas. Therefore, resources such as federal funds and medical equipment distribution were requested to support rural hospitals and communities.

International Highlights

- [Universal weekly testing as the UK COVID-19 lockdown exit strategy](#)

Lancet correspondence: The authors recommend evaluation of weekly SARS-CoV-2 antigen testing of the whole population in an entire city as a demonstration site (preferably several towns and cities, if possible), with strict household quarantine after a positive test. Quarantine would end when all residents of the household test negative at the same time; everyone else in the city can resume normal life, if they choose to.

- [Public holidays can spike coronavirus cases in Russia](#)

Russia could experience a spike in cases of the new coronavirus if people flout lockdown measures during public holidays scheduled for early May, a top health official said on Sunday.

Economics, Workforce, Supply Chain, PPE Highlights

- [Most double-layered cloth face coverings help reduce droplet transmission](#)

Researchers at University of Illinois tested the performance of 10 fabrics, ranging from cotton to silk, in blocking high velocity droplets, fabric breathability, and liquid retention. They found that most home fabrics substantially block droplets in a single layer. Without significantly compromising breathability, double layered fabric showed a blocking performance similar to that of a surgical mask.

- [Multilayer hybrid fabric masks show reduction in droplet transmission](#)

ACS Nano: Filtration efficiencies of the hybrid (eg. cotton-silk, cotton-chiffon, cotton-flannel) fabrics was >80% for particles <300 nm and >90% for particles >300 nm, which may be due to the combined effect of mechanical and electrostatic-based filtration. Cotton performs better at higher weave densities. Improper mask fit may decrease the filtration efficacy by 60%.

- [Microwave-generated steam protocol effective for decontaminating N95 respirators](#)

The authors report an average 6-log₁₀ plaque forming unit (PFU) (99.9999%) and a minimum 5-log₁₀ PFU (99.999%) reduction after a 3 minute microwave treatment. Using widely available materials, this effective method can be achieved while preserving fit and function after 20 sequential cycles.

- [N95 masks may be re-used three times when treated with UV or VHP or twice with dry heat](#)

A medRxiv preprint determined decay rates of masks treated with vaporized hydrogen peroxide (VHP), UV radiation, or dry heat (70C). VHP and UV yielded the best combination of mask preservation and rapid virus inactivation. UV showed slower inactivation time. Dry heat showed similar inactivation times to UV but had a higher mask degradation rate. Ethanol treatment caused mask integrity loss.

- [Minimizing droplet transmission using shields for ophthalmic equipment](#)

A Chinese group shows how they created protective shields for slit lamps, optical coherence tomography systems, and fundus cameras. The shields were made from clear, firm plastic as an effective barrier to use with other PPE.

Epidemiology Highlights

- [A phased lift of control: a practical strategy to achieve herd immunity at a national level](#)

The authors propose an exit strategy to develop herd immunity in a predictable and controllable way. Successive parts of the country stop stringent control, and Covid-19-related ICU admissions are distributed over the country as the whole. Vulnerable individuals need to be shielded until herd immunity has developed in their area.

- [Inverse quarantine for at high risk population](#)

The authors suggest targeted inverse quarantine will help keep an economy running, accelerate herd immunity and ensure protection of the most at-risk persons in a population during the pandemic.

- [Low risk of covid-19 transmission in GI endoscopy](#)

A very low risk of infection was shown for patients undergoing GI endoscopy, based on data from one tertiary referral center (n=851) and 41 hospitals (n=968). Only a slightly higher risk was observed for the HCWs involved in the endoscopy.

- [Papad presymptomatic infections and transmission in a skilled nursing facility](#)

Two serial point-prevalence surveys were conducted a week apart. Rapid and widespread transmission was demonstrated in a nursing facility. >50% of confirmed cases were asymptomatic and most likely contributed to transmission. Infection control strategies focused solely on symptomatic residents were not sufficient to prevent transmission.

- [Predicting a maximum limit to the total number of cases in the per state in the US](#)

This study uses Non-Linear fitting of Sigmoidal Growth Curves to predict disease peaks in each individual state. The U.S. is expected to reach 95% of the maximum limit of total cases by May 14, 2020. NM is estimated to achieve peak on May 7th.

Healthcare Policy Recommendations

- [Forecasting hospital demand and deaths for the USA and European Economic Area countries](#)

This study provides an update to the UW IHME prediction model. The model generates estimates for hospital capacity and death rates and when peaks in the epidemic are expected. These estimates emphasize the importance of implementing, enforcing, and maintaining social distancing to mitigate hospital system overload and prevent deaths.

- [Triage policies for ventilator use in U.S. hospitals](#)

A survey was conducted among program directors associated with the Association of Bioethics Program Directors (N=73 eligible, 92% response rate). Characteristics of institutions and policies are summarized, including triage criteria and triage committee membership. Over one half of respondents did not have ventilator triage policies. Policies have substantial heterogeneity, and many omit guidance on fair implementation.

- [CDC and OSHA meat processing plant guidance](#)

Interim Guidance from CDC and the Occupational Safety and Health Administration (OSHA) released April 16 to help facilities decrease the spread of COVID-19.

Practice Guidelines

- [Withhold oral anticoagulants from antiviral-treated patients: alarming increase in drug plasma levels](#)

A series of inpatient cases of SARS-CoV-2 is reported. The patients were given antiviral drugs without stopping direct oral anticoagulant (DOAC) therapy. DOAC plasma levels were measured and results compared with those recorded before hospitalization. DOAC patients treated with antiviral drugs showed an alarming increase in DOAC plasma levels. In order to prevent bleeding complications, the authors believe that physicians should consider withholding DOACs from patients with

SARS-CoV-2 and replacing them with alternative parenteral antithrombotic strategies for as long as antiviral agents are deemed necessary and until discharge.

- [Urgent call for ultrasound screening: 22% of ICU SARS-CoV-2 patients have venous thrombotic events](#)
The reported is the experience of Italian practitioners: 22.2% of patients (83% male, 68±7 years old; BMI 29.3±4.4 kg/m²; C-reactive protein 25.7±9.2 mg/dl, fibrinogen 657.1±200.6 mg/dl) admitted to ICU due to SARS-CoV-2 interstitial pneumonia had venous thrombotic events.
- [Thromboembolic complications of COVID-19: Netherlands health care authorities' report](#)
The National Institute for Public Health of the Netherlands asked the experts of Radiology and Vascular Medicine to provide guidance for the imaging workup and treatment of thrombotic important complications. A question-answer format is used.
- [North America consensus statement on reporting CT findings related to COVID-19](#)
The guidance of the Radiological Society of North America Experts Endorsed by the Society of Thoracic Radiology, the American College of Radiology, and RSNA are provided to radiologists on reporting CT findings potentially attributable to COVID-19 pneumonia, including standardized language to reduce reporting variability. When features of COVID-19 pneumonia are present in endemic areas, contact referring providers to discuss the likelihood of viral infection.
- [Benefits of high-flow nasal cannulas over ventilators: University of Chicago report](#)
To check the “truly remarkable” effect of high-flow nasal cannulas reported by the local practitioners, a team from U Chicago Medicine’s emergency room took dozens of COVID-19 patients who were in respiratory distress and gave them HFNCs instead of putting them on ventilators. The patients all fared extremely well, and only one of them required intubation after 10 days.
- [Technique for safe intubation/extubation of patients with COVID-19](#)
Can J Anaesth describes a step-wise procedure for safer intubation and extubation of patients with COVID-19.
- [Eligibility criteria for donors of convalescent plasma in Italy](#)
Int J Transfus Med outlines a protocol for selecting a donor for convalescent plasma.
- [Safe ultrasound examination and equipment clean-up: international guidelines](#)
This statement of the World Federation for Ultrasound in Medicine and Biology describes the guidance on equipment cleaning and safe performance of ultrasound examination within the context of COVID-19.
- [US guidelines and priority plan for invasive cardiac electrophysiology procedures](#)
The guidelines were recently published by the HRS COVID-19 Task Force, the American College of Cardiology (ACC) Electrophysiology Council, and the American Heart Association (AHA) Electrocardiography and Arrhythmias Committee, to be found [here](#). The purpose of this manuscript is to provide a priority plan for invasive cardiac electrophysiology procedures during the COVID-19 that is consistent with, yet simplified in comparison to, prior recommendation.
- [Esophageal oncologic surgery in COVID-19 emergency: international recommendations](#)
Recommendations of international experts are provided on Esophageal oncologic surgery management.
- [Mental health resources for COPD population during the pandemic](#)
Patients with chronic obstructive pulmonary disease (COPD) are at a higher risk for COVID-19 as well as for depression and anxiety. The COPD foundation provides resources on maintaining emotional well-being for patients, their families and caregivers: <https://www.copdfoundation.org/downloads/MainEmtn-Health-FINAL.pdf>

Testing

- [Controversies on antibody testing and the true rates of COVID-19](#)
The survey results, from Germany, the Netherlands, and several locations in the US, find that from 2% to 30% of populations have already been infected with the virus. The numbers imply that confirmed COVID-19 cases are a smaller fraction of the

true number of people infected than some had estimated, and that the majority of infections are mild. Scientists have questioned the accuracy of the antibody tests and complain that several of the research groups announced their findings in the press rather than in preprints or published papers, where their data could be scrutinized. Critics are also wary because some of the researchers are on record advocating for an early end to lockdowns and other control measures and claim the new prevalence figures support that call.

- [Combined antibody tests more sensitive than individual antibody type](#)

medRxiv preprint: Meta-analysis suggests combined IgG/IgM test is a better choice in terms of sensitivity than measuring either antibody type alone. ELISA tests are recommended due to high sensitivity and specificity levels.

- [Lab tests and host immune response differ based on severity of COVID-19](#)

The routine laboratory tests and host immunity in COVID-19 patients from one Wuhan hospital with different severity of illness were compared after patient admission. A total of 65 SARS-CoV-2-positive patients were classified as mild (n=30), severe (n=20), and extremely severe (n=15) illness. The hyperfunction of CD4+ and CD8+ T cells was associated with extremely severe SARS-CoV-2 infection.

- [Comparison of Abbott ID Now and Abbott m2000 methods for virus detection](#)

The authors compared the results from 524 paired foam nasal swabs on the two platforms (rapid vs. standard) at 5 different sites in symptomatic patients meeting current criteria for a diagnosis of COVID-19. There was high agreement among the platforms for negative tests (99.4%), but less agreement on positive tests (74.7%).

- [Detection of IgG using lanthanide-doped nanoparticles-based lateral flow immunoassay](#)

7 samples that were positive by RT-PCR and 12 that were negative but clinically suspicious were examined for IgG. One of the negative samples was determined to be SARS-CoV-2 IgG positive, while the results for the other samples were consistent with those obtained by RT-PCR. Thus, this assay can achieve rapid and sensitive detection of anti-SARS-CoV-2 IgG in human serum and allow positive identification in suspicious cases; it can also be useful for monitoring the progression COVID-19 and evaluating patients' response to treatment.

Drugs, Vaccines, Therapies, Clinical Trials

- [A real-time dashboard of clinical trials for COVID-19](#)

In a research letter in *Lancet Digital Health*, the authors from McMaster University present the development of a [R Shiny dashboard](#) that tracks in real time more than 500 Covid-19 clinical trials recorded at the Chinese Clinical Trial Registry, ClinicalTrials.gov, Clinical Research Information Service - Republic of Korea, EU Clinical Trials Register, ISRCTN, Iranian Registry of Clinical Trials, Japan Primary Registries Network, and German Clinical Trials Register.

- [No association of ACEI/ARBs with different outcomes in hypertensive patients](#)

JAMA Cardiology: Retrospective, single-center case series (n=1178) hospitalized patients in Wuhan. There were 362 patients with hypertension (30.7%), of whom 115 (31.8%) were taking ACEI/ARBs. The in-hospital mortality in the patients with hypertension was 21.3%. The percentage of patients with hypertension taking ACEIs/ARBs did not differ between those with severe and nonsevere infections (32.9% vs 30.7%; $P = .65$) nor did it differ between non-survivors and survivors (27.3% vs 33.0%; $P = .34$). Similar findings were observed when data were analyzed for patients taking ACEIs and those taking ARBs.

- [Hydroxychloroquine caused severe haemolysis crisis in patient with G6PD deficiency](#)

G6PD is the most common enzyme deficiency in humans with 400M cases worldwide. It has known risk for haemolytic crisis when patients is exposed to oxidative agents (fava beans, drugs, infections), hydroxychloroquine being a suspected trigger. Case report shows first case of severe haemolytic crisis in a patient with G6PD deficiency, initiated by severe COVID-19 infection and hydroxychloroquine use.

- [Hazards of high adjunctive chloroquine dose for patients with SARS-CoV-2: RCT](#)

This parallel, double-blinded, randomized, phase IIb clinical trial enrolled 81 adult inpatients with SARS-CoV-2 ((41 [50.6%] to the high-dosage group and 40 [49.4%] to the low-dosage one). The preliminary findings of this study suggest that the higher CQ dosage should not be recommended for critically ill patients with COVID-19 because of its potential safety hazards,

especially when taken concurrently with azithromycin and/or oseltamivir.

- [Review of drug discovery and medicinal chemistry efforts against SARS-CoV2](#)

A comprehensive review article in ChemMedChem *highlights* the past and present drug discovery and medicinal chemistry efforts against SARS-CoV, MERS-CoV and COVID-19 targets.

- [Hypothesis: conjugated estrogen therapy could benefit COVID-19 patients](#)

Author advocates for estrogen therapy, citing better female COVID-19 outcomes, animal experiments where estrogen treatment silences the inflammatory reactions and decreases virus titers, as well as mouse experiments.

- [Tocilizumab - new therapeutic strategy for severe and critical cases](#)

In a letter to the editor of the journal *Travel Medicine and Infectious Disease*, the author argues for the use of tocilizumab as an IL-6-blocking treatment that may prevent the development of severe disease outcomes.

Other Science

- [Psychological disturbances associated with physical symptoms in healthcare workers](#)

Both physical and psychological symptoms were assessed in 906 healthcare workers. The commonest reported symptoms were headache (31.9%), throat pain (33.6%), anxiety (26.7%), lethargy (26.6%), and insomnia (21.0%). 5.3% screened positive for moderate to very-severe depression, 8.7% for moderate to extremely severe anxiety, 2.2% for moderate to extremely severe stress, and 3.8% for moderate to severe levels of psychological distress. After adjusting for age, gender and comorbidities, it was found that depression (OR 2.79, 95% CI 1.54-5.07, $p=0.001$), anxiety (OR 2.18, 95% CI 1.36-3.48, $p=0.001$), stress (OR 3.06, 95% CI 1.27-7.41, $p=0.13$), and PTSD (OR 2.20, 95% CI 1.12-4.35, $p=0.023$) remained significantly associated with the presence of physical symptoms experienced in the preceding month.

- [Unique distinguishing CT characteristics for diagnosis](#)

13 CT scans from COVID-19 patients and 92 CT scans of patients with influenza pneumonia were retrospectively reviewed. Peripheral and non-specific distributions in COVID-19 showed a markedly higher frequency compared with the influenza group ($p<0.05$). Most lesions in COVID-19 showed balanced lobe localization, while in influenza pneumonia they were predominantly located in the inferior lobe ($p<0.05$). COVID-19 presented a clear lesion margin and a shrinking contour compared with influenza pneumonia ($p<0.05$). COVID-19 had a patchy or combination of GGO and consolidation opacities, while a cluster-like pattern and bronchial wall thickening were more frequently seen in influenza pneumonia ($p<0.05$).

- [Postmortem results show direct evidence of COVID-19 invasion into kidney tissue](#)

Kidney abnormalities were analyzed in 26 autopsies from patients with severe COVID-19 by light microscopy, ultrastructural observation and immunostaining. The findings indicate that SARS-CoV-2 virus can directly infect the renal tubular epithelium and podocytes, which was associated with AKI and proteinuria in these patients with COVID-19. Factors contributing to acute kidney injury included systemic hypoxia, abnormal coagulation, and possible drug or hyperventilation-relevant rhabdomyolysis.

- [COVID-19 pathophysiology: a narrative review in Clinical Immunology Journal](#)

Clinical Immunology: Here the authors reviewed the current knowledge about this disease and including explanations of the different symptomatology between children and adults.

- [Effective CD8+ T cell response might influence the severity of pneumonia](#)

J Infect: Study shows that adaptable change in IL-10 level might contribute to the relatively mild pneumonia symptoms in children with pneumonia. Bacterial co-infection might be a risk factor of severe pneumonia.

- [COVID-19 coagulopathy in Caucasian patients](#)

COVID-19 coagulopathy was studied in Caucasian sample. The authors hypothesize that the diffuse bilateral pulmonary inflammation observed in COVID-19 is associated with a novel pulmonary-specific vasculopathy which they have termed pulmonary intravascular coagulopathy (PIC) as distinct to DIC. Pulmonary vasculopathy may contribute to racial susceptibility to COVID-19 mortality. Article behind paywall.

- [Six new possible symptoms are added to CDC's list for COVID-19](#)

Chills, repeated shaking with chills, muscle pain, headache, sore throat and a loss of taste or smell are the six new symptoms the CDC cautioned could be signs of the coronavirus. They previously listed fever, cough and shortness of breath.

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