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2020-06-12/13/14 DAILY UNM GLOBAL HEALTH COVID-19 **BRIEFING**

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DAILY UNM GLOBAL HEALTH COVID-19 BRIEFING

June 12-14, 2020

Executive Summary

NM Highlights: NM case count. Increased road travel. ABQ ART to resume. Film industry to reopen.

US Highlights: Policy advocacy to end mass Incarceration.

International Highlights: COVID-19 cases in Italy. Temperature checks at Canada airports.

Economics, Workforce, Supply Chain, PPE: **Epidemiology Highlights**: Mask stability. Supply operations management. Masks going to transport companies. Digital tools for awareness. Customers like clean stores.

Epidemiology: Michigan hospitalization risk factors. Ranking the risks of reopening. Pandemic growth rate scaling. Outbreak detection and contract tracing. Worldwide mortality report. Screening pregnant women. Social learning model for pandemics.

Healthcare Policy Recommendations: Re-opening of sports centers. Minimize airborne transmission indoors. Open pathogen genomic analysis. South Korea's response to pandemic.

Practice Guidelines: The accumulating burden of non-COVID-19 illnesses. Caution on early intubation and mechanical ventilation in COVID-19. Recommendations on management of IBD, labor and delivery, spinal surgery (risk stratification), and home dialysis.

Testing: Robust antibody response. Missed patients with low viral load.

Drugs, Vaccines, Therapies, Clinical Trials: Observational study of ACEIs & ARBs. Benefit of lenzilumab. New COVID-19 trials.

Other Science: Cardiac biomarkers and mortality. Telemedicine in neurology. High rates of VTE.

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 <u>here.</u>

You may submit content for future briefings here.

NM Highlights

- NM reports 4 more COVID-19 deaths and 104 additional cases on June 14
 - As of today (6/14), the total positive cases and total deaths in the state are 9,723 and 435, respectively. The state has performed 263,665 tests, there are 162 individuals currently hospitalized for COVID-19, and 4,114 COVID-19 cases have recovered. NMDOH portal featuring epidemiologic breakdown of cases.
- Increased road travel in NM residents with reopening

 KRQE: Descartes Labs of Santa Fe tracks mobility through your cell phone data and it has shown NM residents are going out

more with reopening with a peak on Fridays. The company claims to not track individuals nor do they know specific cell phone numbers. Traffic has increased compared to data from April of this year. Similar trends are seen across states. CTO of Descartes Labs, Mike Warren, says that though mobility trends are similar in most states, the rise in cases is not the same. He says Arizona has seen a more notable spike compared to many other states. Emphasis is placed on following the guidelines of masks, hand hygiene, and staying 6 ft away from people in public.

ABQ ART service to resume on limited schedule

KOB: The ABQ RIDE transit system will resume ART service on a limited schedule Saturday, June 13. The city of Albuquerque is taking steps to implement COVID safety measures like increasing sanitation, limiting capacity, and running at limited schedules. The link has the modified schedule of ABQ RIDE.

Film industry to reopen soon in New Mexico

KOAT: The head of the Albuquerque Film Office, Karen Criswell says they're working on getting back up and running as soon as they get the green light from the state. New Mexico may benefit from COVID-19 because some in the film industry want to work here since it's not a densely populated state.

US Highlights

• Policy advocacy to end mass incarceration during pandemic

Health Education & Behavior: Using the Kingdon's model of policymaking, authors illustrate how a large California county can take this time, a window of opportunity, to address a public health problem: the incarceration of 2 million people. The system is overcrowded with disproportionately higher numbers of African American and Latinx inmates and a lack of safety in jails, detention centers, and prisons. The article highlights equity and justice-focused change through policy change. Authors believe public health professionals can help in decarceration and coming up with more humane alternatives to incarceration.

International Highlights

COVID-19 death toll in Italy rises by 78 to 34,301

Reuters: Italy's Civil Protection Agency said, 2.817 million people had been tested for the virus as of Saturday, out of a population of around 60 million. The total death toll now stands at 34,301, the fourth highest in the world after those of the United States, Britain, and Brazil.

• Canada mandates temperature checks for airline passengers

Reuters: Canada's Prime Minister, Justin Trudeau, enforces mandatory temperature checks for all airline passengers arriving and departing in the hopes of encouraging those who feel sick to stay home. Passengers with a fever in two measures 10 minutes apart will not be allowed to travel. The ban on non-essential travel will extend to late July in both Canada and the US. Canadian airport workers will wear non-medical masks.

Economics, Workforce, Supply Chain, PPE Highlights

Virus stability on PPE

MedRxiv: Viable SARS-CoV-2 in the presence of a soil load persisted for up to 21 days on experimentally inoculated PPE, including materials from filtering facepiece respirators (N-95 and N-100 masks) and a plastic visor. Conversely, when applied to 100% cotton fabric, the virus underwent rapid degradation and became undetectable in less than 24 hours. These findings underline the importance of appropriate handling of contaminated PPE during and following use in high-risk settings and provide interesting insight into the potential utility of cotton, including cotton masks, in limiting COVID-19 transmission.

Lessons from operations management to combat the COVID-19 pandemic

Journal of Medical Systems: The pandemic led to shortages in personal protective equipment (PPE), ventilators, and potential therapeutic drugs. The authors discuss several factors that contribute to these shortages like the bullwhip effect, a phenomenon where a small shock in consumer demand results in significantly larger demand shocks upstream in the supply chain. The ideal allocation method for limited supplies, such as PPEs and ventilators, should be based on relative demand,

rather than requested quantities. Therefore, resources should be allocated by demand that is managed from a centralized system.

- <u>US Department of Transport sends nearly 100 million face covering to US transport companies</u>

 **Reuters: US Dept. of Transports provides agencies like airports, Amtrak, and other transit entities with cloth coverings for passengers. Almost 87 million of the masks procured by FEMA will go to airports while the remainder are for critical infrastructure workers in the transport.
- #GetMePPE and GetUsPPE.org rapidly deploying digital tools for better healthcare

Journal of Medical Internet Research: Physicians, nurses, and other healthcare providers initiated the #GetMePPE movement on Twitter to spread awareness of the shortage of personal protective equipment (PPE) during the pandemic. The momentum resulted in a petition to urge public officials to address the PPE shortage through increased funding and production. Simultaneously, GetUsPPE.org was launched by a collaborative of physicians and software engineers to develop a digital platform for the donation, request, and distribution of multi-modal sources of PPE. The success of GetUsPPE.org demonstrates the potential of digital tools as a platform for larger healthcare institutions to rapidly address urgent issues in healthcare. In this manuscript, we outline this process and discuss key factors determining success.

• Customers report sanitary perception of retail stores leads to shopping, positive word-of-mouth

Science Direct: A structural equation model of surveys from 10 retail stores in South Africa shows sanitized retail entrances, counters, and shelves had a statistically significant effect on customer's self-reported behavioral intentions: "I will buy again in this retail store", "I will refer my friends to this retail store", "I will refer my relatives to this retail store", and "I will tell my friends good things about this retail store". Policies around social distancing and hours for elderly shoppers did not have large effects.

Epidemiology Highlights

Correlates of hospitalization in 2040 patients with COVID-19 in Michigan

Journal of General Internal Medicine: Authors performed a retrospective review of patients diagnosed with SARS-CoV2 by a positive RT-PCR on naso-pharyngeal swab from the largest healthcare system in South-east Michigan (8 hospitals). Univariate correlates of hospitalization included:: Age > 60(OR:3.4, 95% CI: 2.8–4.1), male (OR:1.4, 95% CI: 1.2–1.7), Caucasian (OR:1.4, 95% CI: 1.0–2.0), obesity (OR:1.5, 95%CI: 1.2–1.9), CCI > 2 (OR:5.2, 95% CI: 4.2–6.5), ACE-I/ARBuse (OR:2.4, 95% CI: 2.0–2.9), tachycardia (heart rate > 100beats/min) (OR:1.6, 95% CI: 1.3–1.9), tachypnea (respiratory rate > 20 breaths/min, OR:5.3, 95% CI: 4.0–7.1), and hypoxia (oxygen saturation < 90%, OR:21.7, 95% CI: 8.0–59.1). Independent correlates of hospitalization included: Age >60 (aOR:2.1, 95% CI: 1.4–3.1), CCI > 2 (aOR:3.2, 95% CI:2.1–4.8), male (aOR:1.9, 95% CI: 1.5–2.5), obesity (aOR:1.8,95% CI: 1.4–2.4), ACE-I/ARB use (aOR:1.5, 95% CI: 1.1–2.0), tachycardia (aOR:1.5, 95% CI: 1.1–2.0), tachypnea(aOR:2.9, 95% CI: 2.1–4.1), and hypoxia (aOR:15.0, 95%CI: 4.7–48.0).

Expert ranked activities by coronavirus risk level

MLive News: Four public health experts in Michigan used five factors to evaluate how risky a given activity might be: whether it's inside or outside; proximity to others; exposure time; likelihood of compliance; and personal risk level. Some of the highest risk places include: bars; large music concerts; sports stadiums; gyms; amusement parks; and churches. The lowest risk activities include: playing tennis; getting takeout from a restaurant; getting fuel; going for a walk, run or bike ride; visiting libraries and museums; golfing; camping; and getting groceries.

- The COVID-19 pandemic: growth patterns, power law scaling, and saturation
 - *Physical Biology:* Authors analyzed the growth behavior of the top 25 most affected countries by means of a local slope analysis and found three distinct patterns that individual countries follow depending on the strictness of the lockdown protocols: rise and fall, power law, or logistic.
- Model suggests new outbreaks identified by increase in death limit feasibility of contract tracing

 Wellcome Open Research: Their modeling suggests by the time first cases in a new location are mostly deaths that there already hundreds to thousands of cases, a situation that would make control via contact tracing extremely challenging. In such situations, efforts focusing on social distancing measures such as school closures and self-isolation may be more likely to

mitigate epidemic spread. Inferring the number of COVID-19 cases from recently reported deaths.

• Worldwide differences in COVID-19-related mortality

Ciência & Saúde Coletiva: Mortality statistics due to COVID-19 worldwide are compared using data from the European Centre for Disease Control and Prevention, and Our World in Data websites. The analyses included 78 countries and territories which reported 10 or more deaths by April 9. On day 10, India had 0.06 deaths per million, Belgium had 30.46 and San Marino 618.78. On day 20, India had 0.27 deaths per million, China had 0.71 and Spain 139.62. On day 30, four Asian countries had the lowest mortality figures, whereas eight European countries had the highest ones. In Italy and Spain, mortality on day 40 was greater than 250 per million, whereas in China and South Korea, mortality was below 4 per million. Mortality on day 10 was moderately correlated with life expectancy, but not with population density. Asian countries presented much lower mortality figures as compared to European ones. Life expectancy was found to be correlated with mortality.

• Pregnancy and pandemic disease surveillance

Clinical Infectious Diseases: Letter--Today, we continue to rely on universal HIV testing of pregnant women to estimate community HIV prevalence and to prevent vertical transmission. In the United states, the earliest evidence-based insights into community prevalence in the months-old COVID-19 pandemic came from the study of pregnant women. Pregnant women actively seek care and testing in both sickness and health. The vast majority request screening for a wide variety of disorders. The opportunity to extend such screening to emerging infectious diseases must not be lost again.

• Social learning model for prediction of CoVid-19 infection, transmission and recovery rates

Safety Science: Authors modeled the process of infection rate growth and decline for the recent global pandemic. They show that the traditional person-to-person \$\mathbb{R}\$0 model is a special case of their societal learning theory.

Healthcare Policy Recommendations

• Measures for early and safe re-opening of sports centers

Building and Environment: The following measures are suggested: For operators: controlling the maximum number of visitors and routing inside the buildings, providing masks, gloves, glasses and regular disinfection of payment terminal keyboards, door handles and other surfaces, appointing a COVID-19 supervisor and instructions for employees including pointing visitors to unsafe behavior; For visitors: required reservation of a time slot, only visiting with members from the same household, avoiding public transport, using the sanitary facilities at home instead of in the center, only starting exercise after having washed the hands and leaving the center immediately after having finalized your physical activity; For employees: working at home as much as possible, regular washing of the hands before every meal, after use of the sanitary facilities, after having traveled with public transport, and after cleaning, not sharing tools with other employees, keeping personal tools clean and disinfected; For suppliers: announcing arrival 15 min in advance, wearing gloves, announcing where the goods will be placed, giving preference to delivery at the doorstep. The authors suggest the concept of a "certificate of equivalence" that could allow indoor sports centers to re-open safely and more rapidly.

Recommendations on minimizing airborne transmission of COVID-19 indoors

Environmental International: The authors argue that existing evidence is sufficiently strong to warrant engineering controls targeting airborne transmission as part of an overall strategy to limit infection risk indoors: ventilation enhanced by particle filtration and air disinfection, avoiding air recirculation and avoiding overcrowding. The use of engineering controls is recommended in public buildings, including hospitals, shops, offices, schools, kindergartens, libraries, restaurants, cruise ships, elevators, conference rooms, and public transport.

10 recommendations for supporting open pathogen genomic analysis in public health

Nature Medicine: The recommendations include: Support data hygiene and interoperability by developing and adopting a consistent data model. Strengthen application programming interfaces. Develop guidelines for management and stewardship of genomic data. Make bioinformatics pipelines fully open-source and broadly accessible. Develop modular pipelines for data visualization and exploration. Improve the reproducibility of bioinformatics analyses. Utilize cloud computing to improve the scalability and accessibility of bioinformatics analyses. Support new infrastructure and software development demands with an expanded technical workforce. Improve the integration of genomic epidemiology with traditional epidemiology. Develop

best practices to support open data sharing.

• South Korea's responses to stop the COVID-19 pandemic

American Journal of Infection Control: The Korean Centers for Disease Control and Prevention's daily briefings were thoroughly reviewed. Information about hospital countermeasures and government coordination was collected via telephone interviews with 4 infection control team leaders, 1 emergency department nurse, and 1 infectious disease physician in Korea. COVID-19 diagnostic test kits were quickly developed, enabling extensive early detection of potential cases. Other key steps were tracking cases, finding exposed individuals, coordinating case assignments with healthcare facilities, and selective clinic screenings for visitors' entering hospitals with mandatory mask wearing. Consequently, after overcoming the initial peak of the outbreak, which was related to a religious group activity, Korea has been able to maintain daily new cases at around 100 and to less than 50 daily cases in the second week of April.

Practice Guidelines

The accumulating burden of non-COVID-19 illness requires attention: Italy data

Internal and Emergency medicine: During the lockdown in a hospital in Milan, the ED admissions dropped from the mean of 2361/month in December 2019–February 2020 to 1102 (– 53%) and 861 (– 63%) in March and April 2020, respectively. The ED admissions by medical specialties showed a significant drop in traumatology, dermatology, gastroenterology/hepatology and cardiology, with an increase of accesses for respiratory diseases (from a mean of 12% in previous months to 36% and 29% in March and April 2020, respectively). At the same time, red codes at triage admission doubled (3.9% in March and 2.7% in April 2020) compared to the 1.5% of the prior Internal and Emergency medicine 3 months, with a concomitant significant reduction of white codes. The authors worn that some clinical conditions will further progress with a significant increase in morbidity and mortality. A recent study showed that the mortality from acute heart attack in Italy has almost tripled for late clinical presentation caused by patients avoiding hospitals for fear of SARS-CoV-2 infection, a phenomenon that is being observed also in other European countries and in the USA. To prevent this, it is essential that patients with chronic conditions should be at least monitored and managed with telephone or online health consultation, identifying those who need urgent access to care, prioritizing outpatient visits based on disease severity.

• Caution on early intubation and mechanical ventilation in COVID-19

Annals of Intensive Care review: The authors summarize the data from several articles with conflicting views about mechanical ventilation as a means to prevent progression to severe lung injury. Some authors believe that vigorous spontaneous inspiratory efforts can lead to patient self-induced lung injury (P-SILI). Practitioners should consider health complications associated with mechanical ventilation; however, the authors acknowledge that the idea of de-ventilation based on P-SILI is radical. The true impact of ventilation during the pandemic may never be known as many factors come into play.

The Gobal guidance for inflammatory bowel disease treatment research trials

Journal of Crohn's and Colitis: The authors suggest 10 rules to guide patients and researchers in continuing the necessary work on IBD: (1) continue trials as long as safety for patient and research site are secured (2) consider recruiting those who lack therapeutic alternatives (3) patients positive for COVID-19 should not be enrolled but should have standard therapy (4) keep low corticosteroid exposure (5) avoid minimizing duration of immunosuppression during trial (6) avoid unblinding patients unless safety is of concern (7) decrease patient exposure to COIVD-19 with telemonitoring (8) allow time window changes (9) document emergent COVID-19 related changes (10) resume standard therapy if a participant withdraws.

• Labor and delivery guidance for COVID-19

The American Journal of Obstetrics & Gynecology MFM provides practical recommendations covering: (1) screening, testing, and preparation for patient visit and admission (2) screening patients in L&D triage (3) changes to L&D workflow with PPE and visitor policy (4) intrapartum care (5) postpartum care (6) care for confirmed or suspected COVID-19 patients (7) care for critically ill COVID-19 pregnant patients.

• French guidelines for management of spinal surgeries during COVID-19 pandemic

World Journal of Clinical cases: French Spine Surgery Society elaborated 3 levels stratification of patient cases: Level I: Urgent

surgical indications: cervical or lumbar radiculopathy with acute motor deficit; disc herniation with cauda equina syndrome; spinal epidural hematoma; septic conditions including epidural abscess, spinal fractures with neurologic deficit; spinal tumors with neurologic deficit. Level II: Surgical indications associated with a potential loss of chance for the patient: radiculopathy with hyperalgesia, cervical myelopathy with rapidly progressive neurologic signs, unstable vertebral fracture without neurologic deficit, unstable spine tumor without neurologic deficit. Level III: Non-urgent surgical indications: degenerative spinal conditions without neurologic deficit, spinal deformities, revision surgery related to previous instrumentation failure without instability or neurologic deficit. The authors also report French experience in a COVID-19 cluster region illustrated by two clinical cases.

• Canadian Society of Nephrology COVID-19 recommendations on home dialysis

Canadian Journal of kidney health and disease: The review of the recommendations identified 7 broad areas of home dialysis practice management that may be affected by the pandemic: (1) peritoneal dialysis catheter placement, (2) home dialysis training, (3) home dialysis management, (4) personal protective equipment, (5) product delivery, (6) minimizing direct health care provider and patient contact, and (7) assisted peritoneal dialysis in the community. The authors make specific suggestions and recommendations for each of these areas.

Testing

More robust antibody response in severe vs. mild COVID-19 cases

Clinical Chemistry: 192 RT-PCR confirmed COVID-19 inpatients in China were studied. 83 of them (43%) were classified as severe cases. Single or serial serum samples (N=1,019) collected from these 192 patients were tested for SARS-CoV-2 spike protein receptor binding domain (RBD)-specific Ig Mor total antibodies (IgA/IgG/IgM). In addition, 144 control sera collected in the same period were tested. All control samples were negative in the IgM assay and 98.6% (142/144) were negative in the total antibody assay. 34.3% (12/35) and 14.3% (5/35) of studied mild patients were consistently serologically negative for IgM and total antibody respectively. The titers of severe cases for the total antibody test were statistically higher than those of mild cases from days 7-42 post-symptom onset. Over 99% of severe patients from day 13 of disease onset or beyond were positive by the total antibody test. The overall positivity rate of severe cases (98.7%) was higher than that of mild cases (83.0%) (P<0.00001; chi-square test).

Nasal swab testing misses patients with low viral loads

MedRxiv peprint: The study found high concordance (Cohen's kappa >0.8) only for patients with viral loads above 1,000 copies/mL. Those with viral loads below 1,000 copies/mL, the majority in our cohort, exhibited low concordance (Cohen's kappa = 0.49); most of these would have been missed by nasal testing alone. These findings counsel caution in use of nasal testing in healthcare settings and contact-tracing efforts, as opposed to screening of asymptomatic, low-prevalence, low-risk populations. Nasal testing is an adjunct, not a replacement, for nasopharynx sampling.

Drugs, Vaccines, Therapies, Clinical Trials

OHDSI large-scale observational network study: ACEIs and ARBs confer no extra risk

MedRxiv preprint: An observational study, carefully designed to control for confounding via propensity score adjustment and negative controls, studied COVID-19 infection risk and outcomes for over 1.1 million people taking antihypertensive medications. The study showed that angiotensin converting enzyme inhibitors (ACEIs) and angiotensin receptor blockers (ARBs) conferred no risk or benefit for: 1) COVID-19 diagnosis; 2) COVID-19 hospitalization; 3) hospitalization with pneumonia and; 4) hospitalization with pneumonia, acute respiratory distress syndrome (ARDS), acute kidney injury (AKI) or sepsis (PAAS). The authors conclude there is no clinically significant increased risk of COVID-19 diagnosis or hospitalization with ACEI or ARB use. Users should not discontinue or change their treatment to avoid COVID-19. OHDSI is an international network of researchers and observational health databases.

• Small study shows benefit of lenzilumab in high risk patients with severe pneumonia

MedRxiv preprint: Hospitalized patients with COVID-19 pneumonia and risk factors for poor outcomes were treated with lenzilumab 600 mg intravenously for three doses through an emergency single-use IND application. Clinical improvement was

observed in 11 out of 12 (92%), with a significant improvement in oxygenation and a median time to discharge of 5 days.

• 19 New COVID-19 Trials registered June 12-14 at clinicaltrials.gov

Treatment trials: Mesenchymal Stem Cells, Hydoxychloroqine, Ivermectine, Nangibotide, Ibudilast (MN-166). At time of writing, a total of 1978 were active, 143 completed, and 4 posted results.

Other Science

- Cardiac biomarkers associated with increased mortality, severity, and cardiac injury

 Journal of Medical Virology: A meta-analysis of 17,794 patients with COVID-19 showed patients with high cardiac troponin I

 (OR=5.22, 95%CI=3.73-7.31, p<0.001) and AST levels (OR=3.64, 95%CI=2.84-4.66, p<0.001) were more likely to develop adverse outcomes. High troponin I >13.75 ng/L combined with either advanced age >60 years or elevated AST level >27.72

 U/L was the best model to predict poor outcomes.
- Satisfactory transition to telemedicine: analysis of 2,589 child neurology encounters

 Neurology: This was a cohort study with retrospective comparison of 14,780 in-person encounters and 2,589 telehealth encounters including 2,093 audio-video telemedicine and 496 scheduled telephone encounters. There were no differences in patient age and major ICD10 codes before and after transition. Clinicians considered telemedicine satisfactory in 93% of encounters and suggested telemedicine as a component for follow-up care in 89% of encounters. Technical challenges were reported in 40% of encounters. In-person assessment was considered warranted following 5% of encounters. Patients/caregivers indicated interest in telemedicine for future care in 86% of encounters. Participation in telemedicine encounters compared to telephone encounters was less frequent amongst patients in racial or ethnic minority groups.
- High rates of venous thromboembolic events (VTEs) found through systematic screening

 Thieme: In a Swiss hospital 58 patients, 29 in the ICU and 29 in the medicine ward, were screened for VTE by duplex ultrasound. VTEs were found in 17 (58.6%) of the ICU 29 patients and in 6 (20.7%) medicine ward patients.

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