AHNA COVID-19 Update
Tuesday, May 19, 2020

The American Holistic Nurses Association (AHNA) supports the Center for Disease Control (CDC) and the World Health Organization (WHO) in acknowledging the immediate global public health risk of the COVID-19.

This update is current to time of release. Previous updated information is reduced weekly to keep the report as concise as possible. For a comprehensive appraisal, please review subsequent weekly updates (since Feb 2020) at: https://www.ahna.org/Home/Resources/Coronavirus-COVID-19

Transmission

Proceedings of the National Academy of Science determined speech droplets generated by asymptomatic carriers of SARS-CoV-2 are increasingly considered a mode of disease transmission. "These observations confirm substantial probability normal speaking releases airborne virus particles, creating transmission in confined environments..." Normal speaking produces thousands of oral fluid droplets, called fomites. High viral loads of SARS-CoV-2 have been detected in oral fluids of COVID-19–positive patients, including asymptomatic ones. Highly sensitive laser light scattering observations have revealed that loud speech can emit thousands of oral fluid droplets (viral fomites) per second. In a closed, stagnant-air environment, they linger 8-14 minutes." This corresponds to droplet nuclei of ca. 4um diameter, or 12um to 21um droplets prior to dehydration." The coronavirus is 0.125 um. Medical-grade N95 masks are worn by medics because they can block particles of that size. Based upon this research: Guidance should be expanded to enforce mask wearing in any public environment. Until this occurs, individuals can best self-protect by:

- Avoid High Traffic areas and those with High Moisture / Humidity
- Avoiding Public transportation when possible. This is a hot spot, according to a working paper released on April 24 by Jeffrey Harris, professor in the Department of Economics at the Massachusetts Institute of Technology: "Maps of subway station turnstile entries, superimposed upon zip code-level maps of COVID-19 incidence, are strongly consistent with subway-facilitated disease propagation."
- Those in the high-risk categories identified by the C.D.C. should be especially cautious about going out to restaurants - particularly older people- look around once you arrive. Are the tables far apart? Will the chairs permit at least six feet of space between customers? "The biggest red flag would be crowding. If people are crowded near the entrance or around the bar, or there's a lot of interaction going on between staff and customers in proximity, then obviously they're not operating in a mode that's designed to prevent transmission of the virus." Craig W. Hedberg, a professor in the School of Public Health at the University of Minnesota
Fecal-oral transmission must be taken into consideration. A study conducted by F. Xiao, M. Tang, X. Zheng, Y. Liu, et al., Evidence for gastrointestinal infection of SARS-CoV-2, *Gastroenterology* (2020) demonstrated gastrointestinal viral replication with potential fecal-oral transmission. Stool viral RNA was positive in 48% of patients who were tested on both respiratory and stool specimens, with RNA persisting in the stool beyond the end of respiratory symptoms in 70.3% of patients. SARS-CoV-2 RNA can be detected in feces for up to a month in 83.3% of patients with a mild infection, raising suspicion for the gastrointestinal tract as an additional site of viral replication. H. Zhang, et al. The Digestive System Is a Potential Route of 2019-nCov Infection: a Bioinformatics Analysis Based on Single-cell Transcriptomes, bioRxiv.org (2020). The structural makeup of COVID-19’s lipids indicate the virus will behave differently than other viruses in an aquatic environment: the virus can survive an unknown length of time in an environment like a sewage system—other coronaviruses have been known to persist for up to 14 days in sewers. W. Ahmed, N. Angel, J. Edson, et al. First confirmed detection of SARS-CoV-2 in untreated wastewater in Australia: a proof of concept for the wastewater surveillance of COVID-19 in the community, *Sci. Total Environ.* (2020). "The transport of coronaviruses in water could increase the potential for the virus to aerosolize during pumping of wastewater at treatment works and near waterways that are receiving wastewater. During its discharge and transport through the catchment drainage network, the possibility of human exposure to contaminated waste exists. Atmospheric loading of coronaviruses in water droplets from wastewater is poorly understood but could provide a more direct respiratory route for human exposure... one that maintains contagiousness far longer than other infection routes" Professor Richard Quilliam, Stirling University, Scotland.

Clinical Updates

**Blood Type:** Mortality results in a recent pre-print *COVID-19 transmission risk factors - Alessio Notari, Giorgio Torrieri, PrePrint MedRxiv* reiterated a single study from China, "There is highly significant correlation also with blood type: positive correlation with types RH- (2×10^-5) and A+ (2×10^-3), negative correlation with B+ (2×10^-4)." Other evidence supported current knowledge of co-morbidity data, including age, smoking and obesity as indicators of mortality.

**Smoking:** The University of California San Francisco completed a high level statistical meta-analysis of over 11,590 SARS-CoV-2 patients. Researchers found that the risk of disease progression in those who currently smoke or previously smoked was nearly double that of non-smokers as were acute or critical conditions or death; *Smoking Nearly Doubles the Rate of COVID-19 Progression*

Pre-Hospital Integrative Care by Eastern Virginia Medical School (EVMS)

**Prophylaxis:** While there is very limited data (and none specific for COVID-19), the following "cocktail" may have a role in the prevention/mitigation of COVID-19 disease:
Vitamin C 500 mg BID and Quercetin 250-500 mg BID ■ Zinc 75-100 mg/day ■ Melatonin (slow release): Begin with 0.3mg and increase as tolerated to 2 mg at night ■ Vitamin D3 1000-4000 u/day ■ Optional: Famotidine 20-40mg/day

Home-Bound Mildly Symptomatic patients - may benefit from these recommendations:
Vitamin C 500mg BID and Quercetin 250-500 mg BID ■ Zinc 75-100 mg/day ■ Melatonin 6-12 mg at night (the optimal dose is unknown) ■ Vitamin D3 2000-4000 u/day ■ Optional: Hydroxychloroquine 400mg BID day 1 followed by 200mg BID for 4 days ■ Optional: Ivermectin 150-200ug/kg (single dose) ■ Optional: ASA 81/325mg/day ■ Optional: Famotidine 20-40mg/day

In symptomatic patients, monitoring with home pulse oximetry is recommended. Ambulatory desaturation below 94% should prompt hospital admission.

PROGRESSION

BIOMARKERS as INDICATORS - NEJM Printed results of three biomarkers which forecast the mortality of individual COVID-19 patients with over 90% accuracy, more than 10 days in advance. Relatively high levels of Lactic dehydrogenase (LDH); seem crucial in distinguishing those requiring immediate medical attention. When LDH was evaluated in conjunction with Lymphocyte and high-sensitivity C-reactive protein (hs-CRP) results, it produced a statistically significant prediction of mortality. Yan, L., Zhang, H., Goncalves, J. et al. An interpretable mortality prediction model for COVID-19 patients. Nat Mach Intell 2, 283-288 (2020) "Severe Covid-19 may also lead to acute cardiac, kidney, and liver injury, in addition to cardiac arrhythmias, rhabdomyolysis, coagulopathy, and shock... organ failures may be associated with a cytokine release syndrome characterized by high fevers, thrombocytopenia, hyperferritinemia, and elevation of other inflammatory markers," Berlin DA, Gulick RM, Martinez FJ. Severe Covid-19. N Engl J Med. 2020 May 15

SUPPORTIVE CARE - "Patients with Covid-19 often present with volume depletion and receive isotonic-fluid resuscitation. After the first few days of mechanical ventilation, the goal should be to avoid hypervolemia. Fever and tachypnea in patients with severe Covid-19 often increase insensible water loss, and careful attention must be paid to water balance. If the patient is hypotensive, the dose of vasopressor can be adjusted to maintain a mean arterial pressure of 60 to 65 mm Hg. Norepinephrine is the preferred vasopressor. The presence of unexplained hemodynamic instability should prompt consideration of myocardial ischemia, myocarditis, or pulmonary embolism." Berlin DA, Gulick RM, Martinez FJ. Severe Covid-19. New England Journal of Medicine. 2020 May 15

SYSTEMIC EFFECTS OF COVID-19
It is well recognized that COVID-19 affects the lungs; Autopsy of 27 German patients, indicate SARS-CoV-2 is damaging to pharynx, heart, liver, brain, and kidneys. Writing and supplementary tables in Multiorgan and Renal Tropism of SARS-CoV-2 - New England Journal of Medicine reflect unrelated comorbidities (no preexisting renal dysfunction) are attributed to SARS-CoV-2 renal tropism. High viral load was evident in all kidney compartments with preferential targeting of glomerular cells. "On the basis of these findings, renal tropism is a potential explanation of commonly reported new clinical signs of kidney injury in patients with Covid-19, even in patients with SARS-CoV-2 infection who are not critically ill". Organotropism is a possible explanation to COVID-19 diffuse effects. Puelles, V., Lütgehetmann, M., Lindenmeyer, M., et al., University Medical Center Hamburg-Eppendorf, Germany, University Medical Center Göttingen, Germany.

RENAI - Patients with COVID-19 pneumonia have concurrent acute kidney injury. Intensive Care National Audit and Research Centre's report on COVID-19 in critical care from 1 May 2020 reported that about 31% of patients on ventilators and 4% not on ventilators needed renal replacement therapy for AKI. Theorized causes are hypovolemia, impaired hemodynamics, renal tubular viral injury, thrombotic vascular processes, glomerular pathology or rhabdomyolysis. Fever and increased respiratory rate increase insensible fluid loss- euvoemia is critical in reducing the incidence of AKI. Continual monitoring peripheral perfusion, capillary refill, peripheral edema, and postural hypotension is necessary in those with mild to moderate infection. Although proteinuria, hematuria, and AKI often resolved within 3 weeks, renal involvement is an indicator of higher mortality. " Stepwise multivariate binary logistic regression analyses showed that severity of pneumonia was the risk factor most commonly associated with lower odds of proteinuric or hemorrhagic remission and recovery from AKI," Guangchang Pei, Zhiguo Zhang, Jing Peng, et al., Renal Involvement and Early Prognosis in Patients with COVID-19 Pneumonia - Journal of the American Society of Nephrology (05/2020). Pre-print, Acute Kidney Injury in Hospitalized Patients with COVID-19 - medRxiv documents 3,235 patients' disease progression. AKI occurred in
1406 (46%) patients; 280 (20%) with AKI required renal replacement therapy. Mortality with AKI was 41% overall (52% in intensive care). Preliminary conclusions: Renal Injury is common, associated with worse mortality, and, of those discharged alive only 56% recovered baseline kidney function. The majority of patients that survive do not recuperate with complete kidney function. A machine-learned model using admission features had good performance for dialysis prediction and could be used for resource allocation.

- United Kingdom's National Institute for Health and Care Excellence produced Guidance for AKI prevention, detection and management.
- Guidelines for Pharmacological optimization in AKI.

GASTROINTESTINAL, HEPATIC, & PANCREATIC INJURY - Manifestations and prognosis of gastrointestinal and liver involvement in patients with COVID-19: a systematic review and meta-analysis included 35 studies reporting epidemiological and clinical prevalence of gastrointestinal findings in 6,686 patients who met inclusion criteria. 15% reported digestive symptoms, 4% had GI comorbidities such as diverticulitis, 19% had pre-existing abnormal liver function, The Lancet Gastroenterology & Hepatology (5/2020).

- Subgroup analysis- severe cases had higher rates of liver injury.
- Pediatric patients in this meta-analysis had similar prevalence of gastrointestinal symptoms to adults with GI symptoms alone.
- Patients who presented with gastrointestinal system involvement had delayed diagnosis.

Research analysis significant conclusion: patients with gastrointestinal involvement were more likely to have complications. Beattie RM, Ashton JJ, Penman ID, COVID-19 and the gastrointestinal tract: emerging clinical data, Frontline Gastroenterology, 27 April 2020, reported 17.1% of SARS-CoV-2 patients with severe disease experienced GI effects, versus 11.8% non-severe patients. These GI manifestations secondary to SARS-CoV-2 infection occur through ACE2 receptors expressed in the gastrointestinal epithelium creating the potential for viral replication. Direct injury of the gastrointestinal system due to infected absorptive enterocytes being destroyed via the inflammatory process, leading to malabsorption, unbalanced intestinal secretion, and an activated enteric nervous system resulting in symptoms like diarrhea. H. Zhang, et al. The Digestive System Is a Potential Route of 2019-nCov Infection: a Bioinformatics Analysis Based on Single-cell Transcriptomes, Preprint at bioRxiv.org (2020).

Journal of Clinical Virology cites Hepatic Injury is evident in some patients, the degree of which can mirror severity of the disease, Patel, K., Patel, P., Vunnam, R., Gastrointestinal, hepatobiliary, and pancreatic manifestations of COVID-19, Vol 128, July (2020). American College of Gastroenterology (ACG),"abnormal liver enzymes are observed in 20-30 %" of SARS-CoV-2 patients. In a review of 148 patients in China, 50.7 % of patients were found to have abnormal liver functions at admission. Z. Fan, et al. Clinical Features of COVID-19 Related Liver Damage (2020).

Conceivable causes of hepatotoxicity are hypoxic injury, ACE2-mediated direct viral infection of hepatocytes, (the virus infects cholangiocytes dysregulating liver function), or hepatocellular injury secondary to hypotension or immune-mediated inflammatory injury, and / or drug hepatotoxicity (anti-virals), S.H. Wong, R.N. Lui, J.J. Sung, Covid-19 and the digestive system, J. Gastroenterol. Hepatol. (2020). Liver injury may also occur as ACE2 expression in liver tissue is upregulated as a compensatory proliferation of hepatocytes derived from bile duct epithelial cells, L. Pan, et al. Clinical Characteristics of COVID-19 Patients With Digestive Symptoms in Hubei, China: a Descriptive, Cross-sectional, Multicenter Study, (2020). "In the setting of primary biliary cholangitis (PBC), COVID-19 may aggravate cholestasis. Therefore, alkaline phosphatase and gamma-glutamyl transferase (GGT) levels should carefully be monitored. Given their immunocompromised state, patients with hepatic cirrhosis or cancer may be more susceptible" C. Zhang, L. Shi, F.-S. Wang, Liver injury in COVID-19: management and challenges, Lancet Gastroenterol. Hepatol. 5 (5) (2020), pp. 428-430. The ACE2 receptor is present within pancreatic islet cells. If enzymes are elevated pancreatic involvement should be suspected and acute diabetes


Future assessments and treatment guidance should include close evaluation of liver and gastrointestinal function.

**CEREBRO-CARDIOVASCULAR**- Thrombotic events, including acute ischemic stroke, are not uncommon in SARS-CoV-2. Larson et al., *Cerebro-Cardiovascular Implications of COVID-19* discusses physiological causes. Activation of the complement system is suggested. ACE2 has been found within venous and arterial brain tissue in SARS studies from 2004, *(J Pathol.; 203:631-637)*. Considering the high affinity of SARS-CoV-2 for this receptor, it is reasonable to assume viral infection of vascular tissue of the brain- such occurrences need demonstrated with histopathological studies.

COVID-19 cases with concurrent cardiac arrhythmia may increase the likelihood of cardioembolism formation. In a report published by *The Lancet*, Acute cerebrovascular disease following covid-19: A single center, retrospective, observational study, three of the eleven (27.3%) acute ischemic strokes were thought to be of cardioembolic nature, Li Y, Wang M, Zhou Y, Chang J, Xian Y, Mao L, Hong C, Chen S, Wang Y, et al. Coagulation defects have been found prevalent; in a multi-center retrospective cohort study Zhou and colleagues found elevated D-dimer levels strongly associated with in-hospital death, *Thromb Res.* 2020 Apr 10., which may predispose patients to thromboembolic events within the brain. Pre-existing intracranial stenosis coupled with hypoperfused brain regions, could increase risk of ischemic stroke during systemic inflammation. In the Li et al. study five of 11 patients (45.5%) with acute stroke were found to have large vessel stenosis, potentially supporting this hypothesis.

Prophylactic low-dose heparin should be used to reduce the risk of venous thrombosis.Tang N, Bai H, Chen X, Gong J, Li D, Sun Z. Anticoagulant treatment is associated with decreased mortality in severe patients with coagulopathy, though significant venous or arterial thrombosis has occurred despite thromboprophylaxis using full dose heparin. Klok FA, Krup MJHA, van der Meer NJM, et al. Incidence of thrombotic complications in critically ill ICU patients with COVID-19. The benefits and risks of more intense anticoagulation or of using direct thrombin inhibitors in patients with severe COVID-19 is undetermined. Overall, low blood flow (induced by both vasoconstriction and stasis) together with endothelial injury and hypercoagulability (i.e., Virchow's triad) supports the higher risk of thrombosis in severe COVID-19 patients.

- **Upsurge of deep venous thrombosis in patients affected by COVID-19.**
- **Endovascular Therapy for Patients With Acute Ischemic Stroke During the COVID-19 Pandemic: A Proposed Algorithm - *Stroke***
- **Characteristics and clinical significance of myocardial injury in patients with severe coronavirus disease 2019 - European Heart Journal**
- **Guidance for Cardiac Electrophysiology During the Coronavirus (COVID-19) Pandemic from the Heart Rhythm Society COVID-19 Task Force; Electrophysiology Section of the American College of Cardiology; and the Electrocardiography and Arrhythmias Committee of the Council on Clinical Cardiology, American Heart Association - Heart Rhythm**

**REMDESVIR**- The federal government has approved remdesivir, however hospitals must devise a system to distribute it judiciously. Research quality and future treatment for a diverse population is dependent upon this. Gilead, which produces remdesivir has donated 1.5 million doses. Like most effective SARS-CoV-2 interventions, the need considerably exceeds the availability; half of the donated doses are available now but allocation guidelines have not been provided and hospitals are asking how to obtain them. Patients being 'prioritized' for current doses are healthcare providers and obstetric women, Dr. Auwaerter, Johns Hopkins.
REMDESIVIR and BARICITINIB (ACTT)-
Trial started mid-May for RDV vs. RDV plus baricitinib; a JAK1/JAK2 subtype inhibitor interferes with signal transduction STAT proteins, stopping gene expression in immunomodulatory cells.

HCQ + AZ- A team of pharmacists and clinicians at Beth Israel Deaconess Medical Center (BIDMC) cardiology confirmed concerns of hydroxychloroquine with and without azithromycin regarding QT interval in ICU patients with COVID-19, Bessière F, Roccia H, Delinière A, et al. Assessment of QT Intervals in a Case Series of Patients With Coronavirus Disease 2019 (COVID-19) Infection Treated With Hydroxychloroquine Alone or in Combination With Azithromycin in an Intensive Care Unit. JAMA Cardiology, May 01, 2020. "All ECGs were retrospectively reviewed by 2 masked cardiac electrophysiologists, prolonged QTc was defined as Δ QTc >60 milliseconds, compared with baseline or as a QTc of 500 milliseconds or greater. There were no baseline clinical factors with QT prolongation. Close monitoring of patients (including continuous QTc interval monitoring, daily ECGs, and laboratory tests), led to an interruption for 17 patients (42.5%), and may have averted further complications, including drug-induced torsades de pointes." Gap analysis demonstrates limited sample size, however the 90% QTc prolongation should give pause to administer hydroxychloroquine with or without azithromycin for COVID-19 cautiously, if studied further.

METHYLprednisOLone- A short course of methylprednisolone, initiated early in moderate to severe COVID-19 patients, reduced escalation of care and improved clinical outcomes in a (awaiting peer-review) single post-test quasi-experiment in a multi-center health system. The protocol, which examined methylprednisolone 0.5 to 1 mg/kg/day divided in 2 intravenous doses for 3 days, resulted in "Significant reduction in median hospital length of stay observed in the post-corticosteroid group (8 vs. 5 days, p < 0.001)." Fadel, R., Morrison, A., Vahia, A., et al. Early Short Course Corticosteroids in Hospitalized Patients with COVID-19 (medRxiv)

Critical Care Preparation
Acute care facilities unscathed by the first round of COVID-19, should continue groundwork to sustain critical care services, Goh, K.J., Wong, J., Tien, J. et al.Preparing your intensive care unit for the COVID-19 pandemic: practical considerations and strategies. Crit Care 24, 215 (2020). Deaths from COVID-19 have far exceeded the combined fatalities of MERS and SARS, yet the numbers are ever increasing. Park M, Thwaites RS, Openshaw PJM. COVID-19: lessons from SARS and MERS. Eur J Immunol. 2020;50:30e8-11. Leadership from clinical facilities who have weathered the COVID-19 initial SURGE will prove invaluable to upcoming hotspots in absence of governmental direction. New York Mount Sinai offered: Preparations to implement rapid identification and isolation protocols are the first priority; identify an isolation ICU area with negative pressure ventilation, even those created using HEPA filtered individual make-shift units are encouraged. Assemble a plan for a sustainable workforce (N95 fit test and train all employees), focus on infection control; and ensure adequate supplies, and PPE are accumulated. Identify weaknesses which may impact clinical quality and effective communication and plan intervention strategies in advance. In addition to the EAP, plan helplines and psychological support teams for frontline employees. Provide needed critical skill education, to include Team Nursing criteria and coordination. Table of Considerations to Maintain ICU Capacity

Resource Triage
Recommendations typically contain exclusion criteria including a Sequential Organ Failure Assessment (SOFA) score, and a re-evaluation requirement. Preventing provider burden in critical decision making is priority after recent suicides of HCW caring for COVID-19 patients. Joebges, S., Biller-Andorno, N. Ethics guidelines on COVID-19 triage-an emerging
The highest burden of COVID-19 will be felt in settings where there are weak health-care systems, lack of access to clean water and disinfectants, poor outbreak preparedness, PPE and medical technology shortages, and where significant challenges in enforcing physical distancing regulations are present. It is expected those who are unable to access the limited supply of intensive care resources will suffer and die at home, and ordinarily where family members would care for them, without PPE and access to relevant information, or palliative care resources the spread will amplify because of it. The preservation of palliative care becomes more relevant by the day.

Ensured availability of opioid medication for air hunger can be achieved by instituting simplified procedures of the International Narcotics Control Board. Engaging technology partners- even at the local level- to virtually provide rapid training and telehealth technology, would present greater access to palliative care teams from a home care environment. This would also enable family members to partake in health decisions and discussions, especially at end-of-life. Establish links to contact tracing activities and testing sites to collect data. In Italy, it was noted that those most at risk of severe effects of COVID-19 were the least likely to be triaged into intensive care. The need for an accessible alternative of comfort and compassion has never been greater.

Related: Globalpalliativecare.org & No Intubation: Seniors Are Changing Their Living Wills

Collaboration: Crises have a funny way of forcing all of us to focus on a purpose and work together more harmoniously. We don't worry as much about power and control because we have so little against this virus. Team Nursing Revisited During COVID-19. "There are not that many resources out there but I had the great fortune to have Dr. Lambertsen as my mentor while a doctoral student at Teachers College where I did my dissertation on team nursing. As I made this video - I could picture her smiling at me and reminding me as always did that timing is everything." Rose O. Sherman, EdD, RN, NEA-BC, FAAN

Phylogenetic trees constructed from viral genomes sampled from patients contain information about the historical pattern of transmission and dispersal of infectious diseases. Mathematical models of viral evolution, allow researchers to infer critical epidemiological parameters, such as transmission rates. "Our goal is to develop more accurate statistical methods for estimating epidemiological parameters of infectious diseases from phylogenetic data, such as transmission rates and the basic reproduction ratio, and apply these methods to improving our understanding and predictions for COVID-19," - University of Oregon biologist Stilianos Louca. Sequenced viral genomes are submitted in real-time from researchers around the world to two primary, open-access databases: GenBank of the National Center for Biotechnology Information; and the GISAID Initiative, originally known as the Global Initiative on Sharing All Influenza Data.

HealthMap
The international alarm about the COVID-19 pandemic was sounded first by HealthMap website run by Boston Children's Hospital. On 30 December 2019, the data-mining program spotted a news report of a new type of pneumonia in Wuhan, China. The one-line email bulletin noted that seven people were in critical condition and rated the urgency at three on a scale of five. Artificial Intelligence researchers are teaming with tech companies to build data-mining programs for social media and traditional news to alert to areas where SARS-
CoV-2 testing should be employed. This is not a replacement for testing or public health contact tracing. "The hope is that you would actually have the two working together," says John Brownstein, an epidemiologist at Boston Children's who co-founded HealthMap in 2006.

**INTERMEDIATE SOURCE**

Thought to have originated from bats, intermediate hosts are still unknown. A study assembled the complete genome of a coronavirus identified in 3 sick Malayan pangolins. *Analyses showed that this pangolin coronavirus (pangolin-CoV-2020) is genetically related to the SARS-CoV-2 but that it did not emerge directly from pangolin-CoV-2020.*

https://doi.org/10.1371/journal.ppat.1008421 (PLoS Pathogens)

**INTERNATIONAL SPREAD**

A pre-print study of 126 countries revealed faster pandemic spread in areas with higher: 1. proportions of international tourism, 2. greetings of physical contact, 3. population density, and 4. pollution via CO2/SO emissions. Gap: Countries with low GDP administer fewer tests, which can affect results. *COVID-19 transmission risk factors - Alessio Notari, Giorgio Torrieri, PrePrint MedRxiv.* Though the effects of social distancing have curbed the spread of SARS-CoV-2, the lifted restrictions have produced hotspots of infection. There is growing debate regarding the contribution of school closures to reduced transmission; a correlated rebound is expected. A German research network studying transmission related to age commented, "We have to caution against an unlimited re-opening of schools and kindergartens in the present situation. Children may be as infectious as adults." *An analysis of SARS-CoV-2 viral load by patient age: Germany is one of several countries who have seen considerable case decline, and maintained it, practicing strict response and coordinated mitigation efforts.*

Global Situation Report

Johns Hopkins Global Tracker Report for May 19, 2020 at 0730 CST: 4,829,232 cases confirmed cases: 1,226,015 since 5/5/20 (613,007 per week is an increasing rate- testing availability a likely factor) 319,031 fatalities (66,929 over two weeks is a decreasing rate!)

John Hopkins Coronavirus Interactive Map

"It is important to put this on the table: this virus may become just another endemic virus in our communities, and this virus may never go away." - WHO emergencies expert Mike Ryan.

WHO COVID-19 Situation Report for May 14


The 73rd World Health Assembly which opened today, will focus on the COVID-19 pandemic. Member States will deliver statements, report their progress in fighting the coronavirus, share knowledge on the evolving situation and consider a draft resolution on COVID-19.
The WHO created an app built for needs expressed by 20,000 global health workers: Two-thirds of respondents felt ill-prepared in infection prevention and control, case management, use of PPE, risk communication and community engagement. The World Health Info App for HCW is a free download from Apple App Store and Google Play Store in Arabic, Chinese, English, French, Russian, Spanish.

Noteworthy Increases: Moldova is reporting approximately 4 times the global per capita daily incidence. Armenia- 5 times the global average, Sweden- 6 times the global average, Belarus- 10 times the global average. For reference, the United States is currently 6-7 times the global average. Russia continued upward trend: 10,598 new cases. Santiago, Chile initiated complete lockdown with mandatory quarantine imposed for the entire province after a 60% increase in COVID-19 incidence, including 2,660 new cases reported in a 24-hour period- the testing rate in Chile is one of the highest in the Americas.

Africa: According to BMJ Global Health there could be as many as 250 million COVID-19 cases and 190,000 deaths across the continent in the first year of the pandemic. Only 2 countries remain unaffected.

Despite some countries beginning to reopen, others are imposing renewed restrictions amid infection resurgence. (The Washington Post) Effective communication and adherence to precautions in New Zealand have provided the freedom to begin releasing social constraints. Sweden continues to relax social distancing measures: the country did not close down but did limit close quarter events; consequently the countries fatality rate is higher than most. Many elsewhere, including the United States, explore the balance of containment and diffusion, countries that had already opened up are closing down again: Over 100 million in Northeast China back under lockdown.

United States of America

<table>
<thead>
<tr>
<th>Case Summary</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Last updated</td>
<td>2020-05-19 12:00 CDT</td>
<td>Data source</td>
<td></td>
</tr>
<tr>
<td>United States</td>
<td>1,549,792</td>
<td>91,364</td>
<td>291,898</td>
</tr>
<tr>
<td>World</td>
<td>4,801,943</td>
<td>318,481</td>
<td>1,786,875</td>
</tr>
</tbody>
</table>

9 states reported more than 40,000 cases, including New York over 300,000; New Jersey over 125,000; and Illinois and Massachusetts, more than 75,000. 36 states and Guam, are reporting widespread community transmission. The numbers are reflecting 'pre-opening' data.

Nicholas Reich, a biostatistician at University of Massachusetts Amherst, and colleagues merged diverse disease progression models into "ensemble" projection. The team weekly releases figures to the CDC which publishes an update (slight delay). Ensemble model incorporates projections from over ten highly ranked university programs. It forecasts a USA cumulative death toll of 110,000 by June 6, 2020.

Preliminary Estimate of Excess Mortality

New York City, March 11-May 2, 2020 (CDC MMWR) Counting only confirmed or probable COVID-19 associated deaths, underestimates COVID-19 fatalities. Data excludes the untested, false negative, or those infected after negative tests. 32,107 deaths were reported, of these, 24,172 were in excess of the seasonal expected baseline, (95% confidence interval = 22,980-25,364). Updated fatality estimates should also include those whom died outside of a health care setting. The occurrence of "excess mortality" is documented across the country.

Georgia's statistical COVID-19 debacle is being sorted with a newly created GEORGIA COVID DASHBOARD. "I have a hard time understanding how this happens without it being deliberate," microbiology and molecular genetics PhD and state Rep. Jasmine Clark to Journal Constitution. "Literally nowhere ever in any type of statistics would that be acceptable."

TESTING
The FDA Authorized its first at home COVID-19 kit: Everlywell COVID-19 Test Home Collection Kit which can be sent to specified laboratories for diagnostic testing. Individuals are screened using an online questionnaire reviewed by a health care provider. This allows an individual to self-collect a nasal sample at home.

During the Subcommittee on Health of the Committee on Energy and Commerce Protecting Scientific Integrity in the COVID-19 Response hearing, Representative Lisa Blunt Rochester cited "We have [1.6 million tests available] per week. We need 30 million tests per week [to reopen safely]. The Scientific Method was pushed aside for political gain... this virus is out there, we need to be able to isolate it and stop it from infecting more people." Rush advocates the House of Representatives address/push forward a strategic pandemic response on behalf of the American people. O'Halleran, of Arizona, reported 'hotspot' of 170k in the rural Navajo Nation. "Some supplies have been delivered but testing is inadequate...16 still died yesterday. One area has 400 cases in 4000 people but cannot get tests". Richard Bright Ph.D. NIH Senior Advisor and Infectious Disease expert stated scientists are needed to review where the hot spots are located and disseminate equitable and timely methods of distribution to these areas. The federal government could do this by:

1. "Ramping up production" [of test kits, reagents and swabs] and 2. Diagnostic equipment care to run the tests. The equipment is failing due to excessive use without routine maintenance; without this component testing is futile. A coordinated testing plan is needed to include all components in the national strategy.

Ms. Eshoo, Chairwoman for the committee responded, "Dr. Bright you are the finest of all scientists in this country. You've issued your warning. You've given the American people hope. I pray we will optimize the time we have remaining. Facts are really stubborn things; U.S. has more cases, more deaths than anywhere else on earth. You have given this committee a road map and we have witnessed your integrity. Thank you for your courage, your willingness to testify here today. You should rest assured you have made a difference today."


Reopening

One of the concerns of many states is obtaining test kits or supplies. In the "Opening America Up Again" the President instructed Governors "As different localities have different needs, including low-income individuals, older adults, persons with disabilities, persons with limited English proficiency, and members of communities of color, states should each develop testing plans and rapid response programs that fit the needs of their communities and ensure equitable delivery of testing to individuals with civil rights protections. States should make full use of the testing resources available to them...

leverage commercial, hospital and academic laboratories in addition to public health laboratories."

States are reporting 'bidding wars' to obtain supplies, leaving lesser financed in dire need of assistance, an added demonstration of the discriminatory nature of healthcare; a 'privilege of wealth' versus a human right. "The FEMA-sourced material will be provided to states, territories and tribes for a limited duration to help increase testing capacity in support of their individualized reopening and testing plans. Once sourced and procured, the intent is to have this material shipped directly within each state, territory or tribe for their ultimate distribution... [which] develops its own distribution strategy to align with its testing plan and unique needs." Amid efforts to reopen States are asking, where are the tests? How do we
accomplish reopening safely? The President cites the 'unprecedented' pandemic as a barrier to providing guidance toward distribution and strategic response, but at what point does the word 'unprecedented' stop being an excuse and become a call to action and prevention? States on a local level are also in 'unprecedented' times, searching for direction from the national organizations the nation has funded to strategize for such events. The house subcommittee acknowledged a responsibility to strategic planning and mitigation of seeding and spreading. To respond, we must test, quickly and extensively.

**Mass Testing**

Without mass testing there is delay in identifying viral outbreak- we have yet to evaluate the effects from 'reopening.' Analysis published in Health Affairs found that social distancing measures had significant effects in reducing SARS-CoV-2 transmission. Based on analysis conducted at the county level researchers concluded restrictions to essential services and the closure of restaurants, bars, gyms, and entertainment businesses were associated with statistically significant reductions in community transmission. "People will be tempted to look at the data this week and start proclaiming victory over the virus... but this week's data reflect the reality from early May and late April, when much of the country was still on lockdown. Johns Hopkins University anticipates we will not know the extent of the transmission from reopening, for five to six weeks. Related: Coronavirus Test Shortages Trigger a New Strategy: Group Screening - Scientific American

**Public Education**

A viral video from Japan aims to show how easily germs and virus spread in restaurants when just one person is infected. The experiment simulates the atmosphere at a buffet restaurant or on a cruise ship. It was conducted by the public broadcasting organization NHK, working with public health experts.

**Emotional Health**

Without legal regulating entities stepping up to protect them, retail workers are de facto enforcers of public health guidelines, confronting customers who refuse to wear masks or maintain distance. The amplified threat of violence to what should be an obvious courtesy, is alarming. A security guard in Van Nuys, California, received a fractured arm attempting to help remove two customers refusing to wear masks. When a convenience store cashier refused sale to an unmasked man demanding cigars, he punched her thrice in the face. These accumulative reactionary events are a reflection of deeper emotional stress. Be it the extreme loneliness of isolation or absence of unemployment checks, job security, childcare, and respite from daily family tensions, mental healthcare just became an immediate priority.

Healthcare worker resilience is of urgency now that major news outlets are listening. In China, health-care workers on the onset of COVID-19 reported high rates of depression (50%), anxiety (45%), and insomnia (34%) and in Canada, 47%, cited a need for psychological support. This weeks' New York Times, 'I Can't Turn My Brain Off': PTSD and Burnout Threaten Medical Workers was a valuable wake-up call to American society. Before COVID-19, health care workers were already vulnerable to depression and suicide; the NYT interviewed Mental health experts documenting the threat to the healthcare system if nurses and other clinicians mental health remain untreated. AHNA's Stress Management & Resilience for Healthcare Workers resources were some of the first publications specific to nurses in the COVID-19 response. The American Nurses Association has partnered with the American Psychiatric Nurses Association, Emergency Nurses Association, Association of Critical Care Nurses, and American Nurses Foundation and with grant funding established The Well-Being Initiative: Virtual Tools to Support Nurses' Mental Health- comprehensive, online resources to support nurses.
Similar to Compassion Caravan Listening Circles, NursesTogether Support Conversations are Peer-to-peer phone calls. Conversations are available around the clock offering a safe space to openly share with colleagues.

Happy App "warm line" offers 24/7 access to a trained Support Giver; Nurses have access to their first call at no cost.

The MoodFit App enables nurses to set goals using best-practice methods such as mindfulness meditation, breathing exercises, lifestyle tracking (sleeping and nutrition) and set up custom reminders. Download through Google Play or the Apple App Store. In account registration, enter program code ANF30 for customized nurse-focused messaging.

Volunteer to facilitate Nurses Together calls: https://www.signupgenius.com/org/nursestogether#/  

Mental Healthcare

"The impact of the pandemic on mental health is already extremely concerning... social isolation, fear of contagion, and loss of family members is compounded by the distress caused by loss of income and often employment." Dr. Tedros Adhanom Ghebreyesus, Director-General of the World Health Organization.

Stay-at-home measures have come with a heightened risk of children witnessing or suffering violence and abuse. According to the UN, parents across the globe are increasingly reporting irritability, restlessness and nervousness in their children.  

German COVID-19 Survey on Mental Health: Primary Results & Mental Health Status Among Children in Home Confinement During the Coronavirus Disease 2019 Outbreak in Hubei Province, China - JAMA Pediatrics

Individuals with disabilities, crowded dormitory settings, and those who live and work on the streets are also particularly vulnerable. "Social isolation, unemployment, homelessness, relationship breakdown (divorce/separation), domestic violence, and worsening physical health, may all particularly effect people with psychosis given their vulnerability to social determinants of health," D.M. Anglin, S. Galea, P. Bachman Going upstream to advance psychosis prevention and improve public health, JAMA Psychiatry (2020).

Increased incidence of psychosis has been predicted with the rise in anxiety and depression related to social distancing, S.K. Brooks, R.K. Webster, L.E. Smith, L., et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence, Lancet, 395 (10227) (2020), pp. 912-920, and the potential for suicide increases as the pandemic lingers, Chan et al., 2006. In these cases, pre-existing vulnerability and psychosocial stress is more likely then viral related psychosis. Among the elderly, behavioral challenges related to psychosis are presently presumed associated to psychosocial stressors of isolation during COVID-19 (Hu et al., 2020; Zulkifli et al., 2020).

Evidence suggests few patients will develop psychosis associated with steroid or viral exposure; psychosis in infected patients presents potential infection control risks to clinical teams similar to clinicians working in mental health services. Symptoms of paranoia in mental health patients regard contamination from being in close contact with other people.
Persons with schizophrenia were less likely to comply with self-isolation, vaccination, or mask-wearing, all increasing the risk of infection. *P.A. Maguire, R.E. Reay, J.C. Looi, A sense of dread: affect and risk perception in people with schizophrenia during an influenza pandemic* Australasian Psychiatry, 27 (5) (2019), pp. 450-455.

A rapid review of the impact of epidemic and pandemics on psychosis, included fourteen papers covering persons with viral infection revealed a range of 0.9% to 4%, often accompanied by corticosteroid treatment, a common prescription in respiratory infections. The pandemic in the eighteenth century and subsequent acute "psychoses of influenza" have been documented during multiple pandemics. *A.P. Kępińska, C.O. Iyegbe, AC. Vernon et al* Schizophrenia and influenza at the century of the 1918-1919 Spanish Influenza pandemic: mechanisms of psychosis risk. Frontiers in Psychiatry, 11 (72) (2020).

Increased vigilance for psychosis symptoms in patients with COVID-19 is warranted. How to support adherence to physical distancing requirements and attend to persons with mental health challenges requires community support. Telehealth technology should be an option, "people with psychosis do - at least in advanced economies - have access to online and mobile-based technologies that seem to be acceptable and feasible in this population," (Alvarez-Jimenez et al., 2014; Firth et al., 2015). Certain governments have aggressively sought to provide mental illness services Zhou et al., 2020

**An option not yet considered:** The US government has previously funded a plethora of programs for Veterans to prevent, diagnose, and treat PTSD, Anxiety, and Depression. The Veterans Administration offers most resources online. Should the government disperse and advertise these resources to the general public, this would be a prudent method of delivering evidence based mental health care to those who need it immediately.


- **CBT-i Coach** teaches users about sleep, let's them track their sleep and take a sleep assessment, then guides them through the process of developing positive sleep routines.
- **Mindfulness Coach** provides tools to help users practice mindfulness meditation.
- **Mood Coach** for depression provides positive activity scheduling based on the principles of behavioral activation treatment for depression.
- **Moving Forward** teaches problem-solving skills, which can be used alone or in conjunction with problem-solving training.
- **PTSD Coach** provides information about PTSD and options for professional care, a self-assessment, opportunities to find support, and tools - all designed to help Veterans manage the stresses of daily life with PTSD.
- **PTSD Family Coach** is similar to the PTSD Coach, but it adds guidance for those whose family roles have changed since the onset of PTSD, including tips and information for self-care and for maintaining relationships, as well as ideas for helping a loved one get treatment.

Make the Connection features a series of self-assessments and screenings and self-help strategies that can be used anonymously anytime, anywhere.

**Resources**

**POPULATION SPECIFIC RESOURCES:**
Publication of population specific guidance for COVID-19 is diverse and plentiful. AHNA is now unable to cover every specialty/topical update weekly. We will continue to try to provide links to the most valuable recent research.

**GERIATRICS**
[Israel ad hoc COVID19 committee. Guidelines for care of older persons during a pandemic - Journal of the American Geriatrics Society](https://www.jagss.org) & [COVID-19 Guidance for Older Adults](https://www.ghi.org)
The COVID-19 pandemic has had an impact on healthcare systems around the world with 3.0 million infected and 208,000 resultant mortalities as of this writing. Information regarding infection in pregnancy is still limited.

General Guidelines in the Management of an Obstetrical Patient on the Labor and Delivery Unit during the COVID-19 Pandemic - American Journal of Perinatology

Early estimates of the indirect effects of the COVID-19 pandemic on maternal and child mortality in low-income and middle-income countries: a modelling study - The Lancet Global Health

Society for Maternal-Fetal Medicine & NIH COVID-19 Treatment Guidelines: Special Considerations in Pregnancy and Post-Delivery


VIRTUAL HEALTHCARE

Virtual care: new models of caring for our patients and workforce - The Lancet Digital Health & HHS Awards $15 Million to Support Telehealth Providers During the COVID-19 Pandemic.

RESEARCH FUNDING

Novel, High-Impact Studies Evaluating Health System and Healthcare Professional Responsiveness to COVID-19 (R01). This Funding Opportunity Announcement invites R01 grant applications for funding to support novel, high-impact studies evaluating the responsiveness of healthcare delivery systems, healthcare professionals, and the overall US healthcare system to the COVID-19 pandemic. Topics such as effects on quality, safety, and value of health system response to COVID-19; the role of primary care practices and professionals during the COVID-19 epidemic; understanding how the response to COVID-19 affected socially vulnerable populations; and digital healthcare including innovations and challenges in the rapid expansion of telehealth response to COVID-19. grants.gov

Not an AHNA member? Learn more.