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ALACHUA COUNTY MEDICAL SOCIETY

House Calls

WINTER 2020-2021

Covid-19
Long-term Complications to Your Health

Scott Medley, MD, with Michael Lauzardo, MD, Director of the UF Health Screen, Test and Protect COVID Program at the Emerging Pathogens Institute

Alachua County Medical Society, Inc - Insurance Co-op

Created by Physicians, for Physicians and their Staff

Program History

Background: The Medical Society Insurance Trust was established in Marion County nearly 40 years ago.

Purpose: Created by physician employers in the private practice of medicine as a way to provide comprehensive medical coverage to their employees and families.

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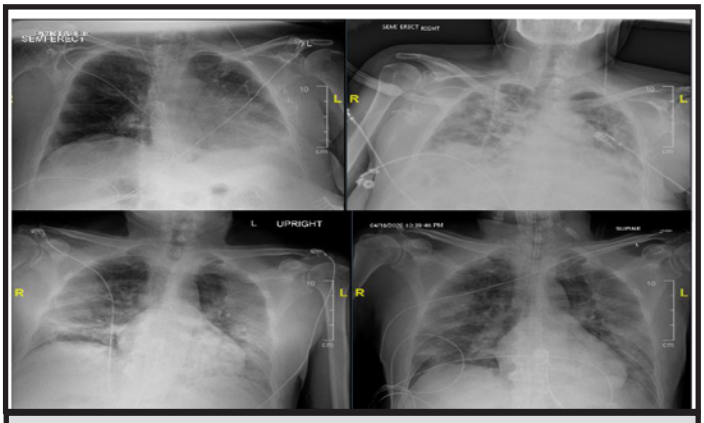

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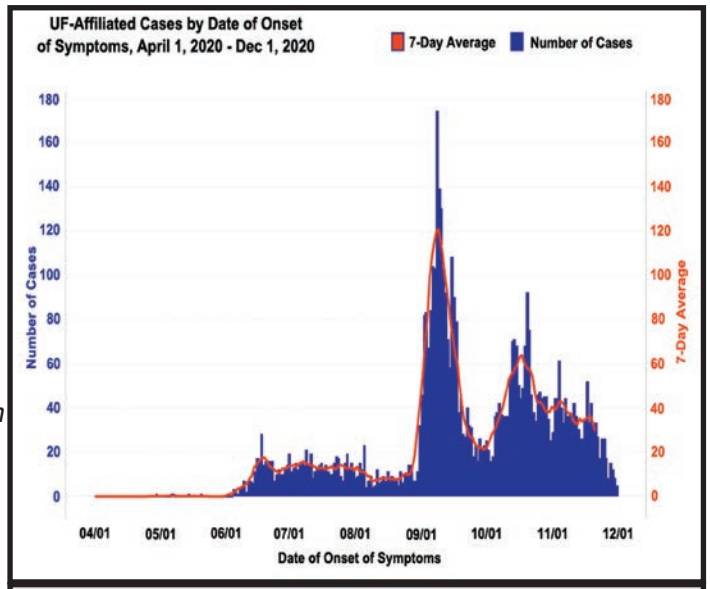

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Dr. Lauzardo is the Deputy Director of the UF Emerging Pathogens Institute and Director of the UF Health Screen Test & Protect Program, an initiative to help prevent the spread of COVID-19 as the University of Florida gradually returns faculty, staff and students to the campus environment. He received his medical degree from the University of Florida and a degree in Epidemiology from the London School of Hygiene and Tropical Medicine, University of London, London, UK. Dr. Lauzardo served his Residency at the Carolinas Medical Center, Charlotte, NC, followed by a Fellowship in Pulmonary Medicine at UF.

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Mr. Dietrich provides outpatient behavioral health services at SIMEDHealth's Gainesville, Newberry Road campus. He previously served as the Shands Behavioral Health Business Development Manager, and led the development of the Dupont global Employee Assistance Program and Worklife efforts. He received a masters in Health Sciences/ Rehabilitation Counseling through the University of Florida, and in Music Therapy from Austria's University of Salzburg. Markus maintains designations as both a certified employee assistance professional, and a certified addictions counselor.

Covid-19: It's Complicated

Jackie Owens, ACMS Executive Vice President

As we've observed after almost a year into this pandemic, Covid-19 has long-term effects. Many are with patients who originally experienced minimal symptoms, making us rethink the idea that mild cases of Covid-19 recover within two weeks. Covid-19 starts in the lungs and often affects the heart, kidneys, the digestive and nervous systems. About 25% of Covid patients experience symptoms after 90 days. 10% of Covid patients suffer from long-term effects, with symptoms lasting longer than 12 weeks and spanning multiple organ systems. In addition, the ongoing pandemic has contributed to a decline in the emotional wellbeing of the our communities and the healthcare profession as a whole.(1)

In this issue of House Calls, we focus on the impacts of Covid-19 on the kidneys, lungs, heart and on mental health. We have an excellent interview with Michael Lauzardo, MD, of the UF Health Emerging Pathogens Institute, and a personal account of life as a Contact Tracer during the pandemic by Emily Klann. We conclude the issue with an enlightening perspective on the pandemic by our Editor, Dr. Scott Medley.

We're also offering a new CME program this issue, free to all members - 2 Journal CME options:

1. **"The SARS CoV-2 Coronavirus-19 Pandemic: A Renal Perspective"** by Sathish George, MD, PhD; and
2. **"SARS-CoV-2 Illness: Focus on Pulmonary Disease"** by Joseph Tonner, MD

Each article is for a maximum of 1 AMA PRA Category 1 Credit for physicians. After reading the article, take the Post-test immediately following and submit it to us for processing. Don't forget to join us virtually for a 2 hour required CME on **"Prescribing Controlled Substances"** by Martha Brown, MD on January 12th. This will be the last CME opportunity prior to license renewal this year (January 31, 2021.

With the expectations of an FDA-approved vaccine on the horizon, we have hopes of soon moving into Phase III of the Covid-19 pandemic – establishing vaccine protections to relieve constraints. Covid-19 continues to mutate, however, complicating matters beyond a straight line prediction. So keep your guard up a few more months until we truly get this pandemic behind us.(2)(3)

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Journal CME

The SARS CoV-2 Coronavirus-19 Pandemic: A Renal Perspective

By: Sathish George, MD, PhD

Date of Release; December 15, 2020 **Expiration Date:** December 14, 2021 **Estimated Completion Time:** 30 minutes
How to Earn this CME Credit:
1. Read the Article and complete the post-test online at UF CME.

CME Credit Eligibility:
A minimum passing grade of 80% must be achieved. Certificates of credit/completion will be emailed automatically after completion of post-test with a passing grade and course evaluation.

Learning Objectives: Upon completion of this activity, participants should be able to:
1. Cite how the SARS CoV-2 virus replicates within the human body.
2. Identify the impact of SARS CoV-2 on the renal system and patients who become infected.
3. Recognize the impacts of SARS CoV-2 on renal transplant patients.
4. Determine the interaction of Renin-Angiotensin blockers when prescribing to manage hypertension, diabetes, cardiovascular and renal disease, with relation to SARS CoV-2.

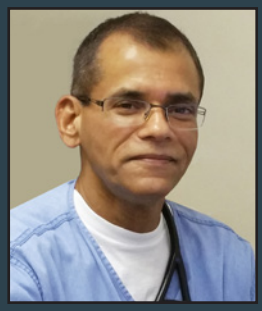
Target Audience: This educational activity is intended for physicians.

Accreditation: The University of Florida College of Medicine is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

Credit: The University of Florida College of Medicine designates this enduring material for a maximum of 0.5 *AMA PRA Category 1 Credit™.* Physicians should claim only the credit commensurate with the extent of their participation in the activity.
Disclosures: Dr. George disclosed that he has no relevant financial relationships. No one else in a position to control content has any financial relationship(s) to disclose.
CME Advisory Committee Disclosure: Conflict of interest information for the CME Advisory Committee members can be found on the following website: https://cme.ufl.edu/disclosure/.

Contact Information: For questions, please contact Jackie Owens at evp@acms.net.

The SARS CoV-2 Coronavirus-19 Pandemic: A Renal Perspective



Sathish K. George, MD, PhD
Nephrology Associates of North Central Florida

At the time of this writing, the SARS CoV-2 pandemic has already resulted in 46 million infections worldwide and 1.2 million deaths. Of these, approximately 10 million cases and 236,000 deaths have occurred in the US, profoundly impacting the lives of many people. It has devastated the economy and severely tested the limits of both medical professionals and the healthcare system. What follows is a general summary of the published data available on the SARS CoV-2 coronavirus as it relates to patients with renal disease.

This virus belongs to the RNA-B-coronavirus group that typically infects the human respiratory, gastrointestinal and central nervous systems. It includes pathogens such as SARS and MERS responsible for severe acute respiratory syndromes. Much like the SARS-CoV virus, SARS CoV-2 exploits its ability to interact with Angiotensin Converting Enzyme -2 (ACE-2) to infect cells. In areas of high ACE-2 expression, such as the oropharynx and gastrointestinal tract, the binding of the SARS CoV-2 viral envelope spike glycoprotein to ACE-2 on the cell surface initiates a clathrin-mediated endocytosis. This process ultimately internalizes the virus and gives it the opportunity to harness cellular transcription mechanisms to replicate itself (Luis D' Marco, Maria et al, Perico, Luca et al).

Patients admitted with a SARS CoV-2 infection can present with hematuria, proteinuria (Farouk, Samira et al) and varying degrees of acute kidney injury (AKI). In a diverse group of studies, AKI was observed in up to 15% of stable hospitalized patients and nearly 50% of those admitted to the ICU, the latter group demonstrating a mortality of almost 35% (Flythe, Jennifer et al). Most of the mechanically-ventilated patients (90%) developed AKI and of these nearly 26% required renal replacement therapy (Hirsch, Jamie et al). In patients who required dialysis the mortality increased to 55% and of those who survived, up to 38% remained dialysis-dependent (Hirsch, Jamie et al, Ng, Jia et al).

Patients with intrinsic renal disease tend to have multiple comorbidities such as diabetes, hypertension, and coronary and peripheral vascular disease that increase their implicit risk profile. Many are also frequently malnourished, sustain a chronically inflamed state and experience uremia-induced changes in Neutrophil, B and T cell function that compromise their innate immunity (Luis D' Marco, Maria et al, Staico, Maria et al). Similar concerns prevail in transplant patients who have to be chronically pharmacologically immunosuppressed. Perhaps related to this issue is the finding that the clinical symptoms of SARS CoV-2 disease in renal patients tend to be more atypical. They often present with less cough and fever and frequently more anorexia, GI distress, fatigue and mental status changes. (Ajaimy, Maria et al, Flythe, Jennifer et al). This situation can often confound the diagnosis as many of these symptoms, especially in end-stage kidney disease (ESKD) patients, can also be attributed to uremia and the sub-optimal delivery of dialysis.

Not surprisingly therefore, chronic kidney disease (Ckd) was found to be 9 times more prevalent in hospitalized patients with SARS CoV-2 related disease and 12 times more prevalent in those requiring ICU admission (Luis D' Marco, Maria et al). ESKD was also associated with a much higher risk of requiring mechanical ventilatory support and the need for ICU level care was associated with mortality rates of almost 50% in both Ckd and ESKD (Flythe, Jennifer et al). Pre-existing renal disease, therefore, appears to be an independent risk factor that confers a poor prognosis in severe SARS CoV-2 related disease.

Renal transplant patients require chronic immunosuppression which increases their inherent infection risk. This occurrence is primarily due to the fact that many of these immunosuppressive agents cause lymphopenia, and in addition, also attenuate the systemic immune response. Fever as a symptom is therefore less commonly seen and patients frequently present without respiratory symptoms or radiological features of a pneumonia (Bassam, G. Abu Jawdeh). In studies of solid organ transplant patients with SARS CoV-2 related disease, the majority of whom were recipients of renal transplants, nearly 80% required hospitalization. Approximately 40 % required ICU level care and of these, 30% required mechanical ventilation and experienced a mortality of 21% (Bassam, G. Abu Jawdeh). Managing immunosuppressive regimens in the face of this disease is therefore complex and also confounded by the prospect that some of these agents may well be capable of temporizing the potentially lethal SARS CoV-2 SIRS mediated cytokine storm. Agents such as Cyclosporine A (CSA) and FK 506 may also have some other unexpected

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Journal CME

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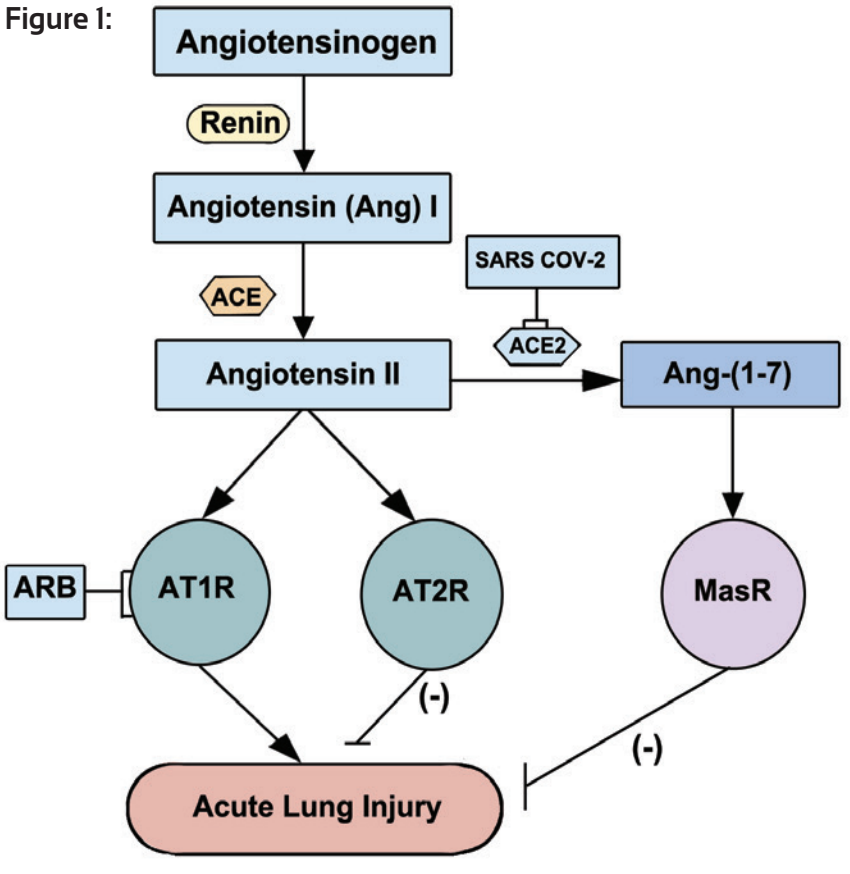
therapeutic benefits as some studies have shown them to be capable of inhibiting the replication of SARS CoV and other coronaviruses in vitro (Bassam, G. Abu Jawdeh) . Although there is as yet no consensus regarding an immunosuppressive regimen in these patients, most transplant programs appear to be systematically withdrawing antimetabolites (mycophenolate) and reducing calcineurin inhibitor (CSA) dosing. In addition, there is also the potential for drug interactions between the various immunosuppressive agents (e.g.: CSA) and experimental SARS CoV-2 therapies (e.g.: Remdesivir) which needs to be followed closely (Adapa, Sreedhar et al).

Some investigators have detected SARS CoV-2 in urine. Others have used indirect immunofluorescence, in-situ-hybridization and electron microscopy to demonstrate the presence of the virus in the post-mortem kidney and viral type particles in renal tubular epithelial cells (Farouk, Samira et al, Adapa, Sreedhar et al). These findings together with the hematuria and proteinuria seen with some regularity in this AKI setting (Adapa, Sreedhar et al), have led some to postulate a cytopathic role for the virus in a potential SARS CoV-2 type nephropathy. Interestingly, several case reports of SARS CoV-2 disease associated with collapsing glomerulopathy have now been reported (Batlle, Daniel et al, Santoriello, Dominick et al). However, a recent US post-mortem study of kidney biopsies from SARS CoV-2 patients with AKI, evaluated by similar means, showed no demonstrable presence of the virus in renal tissue (Golmai, Pouneh et al). The causality and significance of this dichotomy in findings is unclear and remains to be clarified. The predominant pathological findings noted in most of the studies correlate with varying degrees of acute tubular necrosis; a plausible finding and likely consequence of systemic infection, sepsis, cytokine upregulation and mitochondrial dysfunction related tubular injury (Golmai, Pouneh et al) .

While vaccine development is being pursued, several therapeutic approaches have been undertaken to treat SARS CoV-2 related disease. Tocilizumab, a monoclonal IL-6 receptor antagonist, has been used in an attempt to mitigate the frequently seen life-threatening cytokine storm. Remdesivir, a RNA dependent RNA-polymerase inhibitor, has been utilized for its potential to interfere with viral replication and, coupled with systemic steroids, to further down-regulate cytokine production, induce lymphopenia and control inflammation (Bassam, G. Abu Jawdeh). Membrane bound ACE-2 is processed by the ADAM 17 protease which liberates its soluble external domain. This moiety retains the capacity to bind SARS CoV-2 and potentially reduce the levels of free virus available to infect cells. Consequently, a clinical trial is underway to evaluate the therapeutic utility of a modified recombinant human ACE-2 administered to SARS CoV-2 patients (Perico, Luca et al). Studies are also ongoing with convalescent plasma, but to date, no definitive therapeutic regimen has been validated.

Figure 1:



Adapted from: Lumbers, Eugenie R. et al.

Drugs that block the Renin-Angiotensin system (e.g.: ARBs) are routinely and successfully used to manage many patients with hypertension, diabetes, cardiovascular and renal disease. These drugs also upregulate the production of ACE-2, the molecule which binds to SARS CoV-2 and facilitates its cellular entry. Continued use of these agents, in patients with SARS-CoV-2 disease, was therefore of some concern owing to their potential to increase the severity of the disease. But studies with other viruses, and particularly Ebola during the outbreak in Sierra Leone, have shown that treatment with ARBs confer a marked survival benefit. Moreover, certain animal models of lung injury and some studies of patients with pneumonia have shown attenuation of the injury in the setting of ARB use (Perico, Luca et al).

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Possible explanations for these findings include (see Fig. 1):

1. Binding of SARS CoV-2 to ACE-2 increases AngiotensinII (Ang II) levels and subsequent lung injury
2. Although binding of ARBs to the AT1 receptor also results in an increase in Ang II, the association of Ang II with ACE-2 induces a conformational change in ACE-2. This situation prevents it from binding the SARS CoV-2 virus and thereby reduces cellular infectivity
3. ARB induced increased Ang II levels result in greater amounts of Ang 1-7 which mitigate the pro-inflammatory effects of Ang II

Given the above data, many medical societies have endorsed the continued rational use of ARBs in SARS CoV-2 related disease as the clinical benefits generally outweigh the risks.

Patients on maintenance hemodialysis are at greater risk for infection owing to their multiple co-morbidities and frequent contact with staff and other patients at the dialysis facility. Their immunizations are therefore closely monitored and kept current and many protocols have been put in place to ensure their continued safety. Mask-wearing by all is strictly enforced and patients and staff are routinely screened for the presence of a fever or any symptoms of illness. All staff wear personal protective equipment per CDC guidelines and dialysis machines are thoroughly disinfected between treatments. Asymptomatic SARS CoV-2 positive patients and those who are recovering are cohorted on specific shifts. They only return to their regular shifts or units after their quarantine period is completed and they test negative for the virus on two separate occasions.

This SARS CoV-2 pandemic has placed an inordinate social, psychological and economic burden on many renal patients. Until a vaccine is forthcoming, it is incumbent upon those of us who care for them to make this difficult transition as safe and tolerable as possible

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CME Post-Test

The SARS CoV-2 Coronavirus-19 Pandemic: A Renal Perspective

CME Questions (circle one answer)

1. SARS CoV-2 exploits its ability to infect cells by interacting with:
A. COX-1 inhibitors
B. Alpha 2 agonists
C. Angiotensin Converting Enzyme - 2
D. Beta Blockers

2. In a diverse group of studies, Acute Kidney Injury (AKI) was observed in up to 15% of stable hospitalized patients and nearly:
A. 20% of those admitted to the ICU
B. 40% of those admitted to the ICU
C. 50% of those admitted to the ICU
D. 60% of those admitted to the ICU

3. Renal patients with SARS CoV-2 disease present with:
A. Less cough and fever
B. More anorexia and GI distress
C. More fatigue and mental status changes
D. All of the above

4. Respiratory symptoms are less frequently seen in renal transplant patients because immunosuppressive agents:
A. Cause Lymphopenia
B. Attenuate the systemic immune response
C. Contribute to antibody production
D. A and B
E. B and C

5. The SARS CoV-2 pandemic has placed an inordinate social, psychological and economic burden on many renal patients.
A. True.
B. False.

6. CKD or ESKD patients with SARS CoV-2 related disease requiring ICU level care experience a mortality of approximately:
A. 30%
B. 40%
C. 50%
D. None of the above

7. While vaccine development is being pursued, several therapeutic approaches have been undertaken to treat SARS CoV-2 related disease including:
A. Tocilizumab.
B. Remdesivir.
C. Systemic steroids.
D. A, B and C

8. Drugs that block the Renin-Angiotensin system are routinely used to manage many patients with:
A. Hypertension.
B. Diabetes.
C. Cardiovascular Disease
D. Renal Disease
E. All of the above.

9. Many medical societies have endorsed the continued rational use of ARBs in SARS CoV-2 related disease as the clinical benefits generally outweigh the risks.
A. True.
B. False

10. In studies of solid organ transplant patients with SARS CoV-2 related disease, the majority of whom were recipients of renal transplants:
A. Nearly 80% required hospitalization.
B. Nearly 50% required hospitalization.
C. Nearly 40% required hospitalization.
D. Did not require hospitalization.

CME Credit Information -

Post Test Link:
https://www.proprofs.com/quiz-school/ugc/story.php?title=copy-of-1439-2179-the-sars-cov2-coronavirus19-pandemic-a-renal-perspective-alachua-county-medical-societyro

To take the Post-test, click on the link above to access the UF CME ProProfs program. Please complete the evaluation form after receiving a passing grade. Your test will be graded upon submittal with a Certificate emailed automatically upon completion.

Journal CME

SARS CoV-2 Illness: Focus on Pulmonary Disease

By: Joseph A. Tonner, MD

Date of Release; December 15, 2020 **Expiration Date:** December 14, 2021 **Estimated Completion Time:** 30 minutes

How to Earn this CME Credit:

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CME Credit Eligibility:

A minimum passing grade of 80% must be achieved. Certificates of credit/completion will be emailed automatically after completion of post-test with a passing grade, and a course evaluation.

Learning Objectives: Upon completion of this activity, participants should be able to:

1. Identify the common symptoms of COVID-19 disease
2. Know how COVID-19 is primarily transmitted
3. List current inpatient treatments for COVID-19

Target Audience: This educational activity is intended for physicians.

Accreditation: The University of Florida College of Medicine is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

Credit: The University of Florida College of Medicine designates this enduring material for a maximum of 0.5 *AMA PRA Category 1 Credit™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Disclosures: Dr. Tonner disclosed that he has no relevant financial relationships. No one else in a position to control content has any financial relationship(s) to disclose.

CME Advisory Committee Disclosure: Conflict of interest information for the CME Advisory Committee members can be found on the following website: https://cme.ufl.edu/disclosure/.

Contact Information: For questions, please contact Jackie Owens at evp@acms.net.

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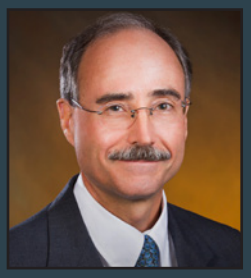
SARS CoV-2 Illness: Focus on Pulmonary Disease



Joseph A. Tonner, MD, SIMEDHealth Pulmonology

Introduction:

Severe acute respiratory syndrome coronavirus 2 ("SARS-CoV-2"), or COVID-19 was first identified as a cluster of pneumonia cases in Wuhan, China at the end of 2019. SARS-CoV-2 was declared a pandemic by the World Health Organization (WHO) in February 2020. The virus is a beta coronavirus in the same subgenus as the severe acute respiratory syndrome (SARS) virus. The COVID-19 RNA sequence is similar to bat coronavirus and experts feel bats are the likely primary source. Globally, as of early November over 50 million COVID-19 cases have been confirmed and the virus has claimed the lives of approximately 1.3 million individuals worldwide. There were over 240,000 deaths in the US, over 17,000 in Florida, and 78 in Alachua County. COVID-19 death rates per 100,000 reported COVID-19 cases in Florida were 79, compared to a US high of 184 in New Jersey, and a low of 9 in Vermont (286 in New York City).

Epidemiology:

Historically, annual death rates from pneumonia and influenza in the US vary between 5-8% of all reported deaths. In the 15th week of 2020 the deaths from COVID-19 accounted for approximately 26% of all US deaths. The percentage of deaths due to pneumonia/influenza/COVID-19 have steadily declined since late July, leveling off in mid-September, and by November are now increasing again statewide and nationally.

As of early November approximately 3.7% of Alachua County residents have tested positive for COVID-19 since the onset of testing, with a hospitalization rate of 5% and a death rate of 0.7%. (The Alachua County death rate is well below the state and national rates primarily due to the significantly lower average age of COVID-19 patients in the county, and in a biased opinion, due to the high quality of medical care provided in the Alachua community.) Unfortunately, age-adjusted hospitalization rates for Hispanic/Latino, Native American, and Black persons are 4.5, 4.4, and 4.3 times the Caucasian hospitalization rates respectively. It is believed this disparity is multifactorial and related to health care access and prevalence of comorbid conditions.

We now know transmission of COVID-19 is largely through respiratory droplets, which may extend beyond 6 feet from the person spreading the droplets. Long-range airborne transmission does not seem to be a primary mode of transmission. COVID-19 has been detected in stool, blood, ocular secretions and semen, but these are not likely sources of transmission. For example, transfusion-transmission has not been reported, and COVID-19 has not been reported to be transmitted through non-mucous membranes such as abrasions/cuts.

Infected individuals are thought to transmit the virus two days before the onset of symptoms. Transmission after 7 to 10 days of illness is unlikely, hence the 14-day quarantine recommended by many experts upon exposure to a known COVID-19 positive person, and the ten day period of isolation after diagnosis of COVID-19. It is possible to have prolonged COVID-19 viral RNA detected on testing, but importantly, the continued detection does not indicate prolonged infectiousness. Transmission of COVID-19 in asymptomatic patients has been documented, but it is unclear how much this contributes to the current pandemic. Transmission rates amongst household contacts have been reported variously between 15% and 37%. Transmission from pets is not a major source of human infection, although pets may become infected with COVID-19, cats more so than dogs.

Protective immunity after COVID-19 infection may be humoral or cell-mediated. Authorities feel the magnitude of antibody response may be associated with the severity of disease in the patient. A durable CD4 and CD8 T cell response has been detected in COVID-19 patients and also in individuals who have received investigational vaccines. Reinfection risks in the same individual previously infected with COVID-19 appears low but there have been case reports. We do not yet know whether having a positive COVID-19 antibody test after infection provides immunity.

Clinical features of COVID-19:

Asymptomatic infections may be as high as 30 to 40% based on population-based testing, however longitudinal follow-up was absent in most of these reports. Asymptomatic individuals may go on to develop symptoms which occur at a median of 4 days after the

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initial positive RT-PCR (reverse-transcription polymerase chain reaction) test, with a range of 3-7 days.

The CDC reports the prevalence of the following symptoms among 370,000 confirmed COVID-19 individuals:

- Cough – 50%.
- Fever (greater than 100.4°F) – 43%.
- Myalgias – 36%.
- Headache – 34%.
- Dyspnea – 29%.
- Sore throat – 20%.
- Diarrhea – 19%.
- Nausea/vomiting – 12%.
- Abdominal pain – < 10%.
- Loss of smell or taste – < 10%.
- Rhinorrhea – < 10%.
- Conjunctivitis – < 10%.
- Abdominal pain – < 10%
- Falls, general health decline, delirium: Mainly reported in individuals greater than 80 years old.

Laboratory findings: lymphopenia is frequent with 90% having lymphocyte counts less than 1,500. Both leukocytosis and leukopenia were reported in approximately 15%. The following are often elevated: CRP, D-dimer, ferritin, LDH, troponin, platelets, liver enzymes, pro time, and CPK. Prolactin is initially usually normal, but often is elevated in ICU patients. Acute kidney injury is also reported (please see Dr. George's article in this issue of House Calls).

Imaging characteristics: a small retrospective study from Hong Kong suggested 20% of COVID-19-positive patients had a normal initial chest x-ray. Commonly though, chest x-rays show consolidation and "ground-glass opacities" bilaterally, and with a predominance in the peripheral lower lung zones. Transporting the patient to the CT scanner is problematic and frequently not performed for infection control reasons. When done, chest CT scans may show "ground-glass opacifications," with or without mixed consolidations, peri-infiltrate pleural thickening, intra-lobular septal thickening, and air bronchograms. Less common features include "crazy paving," bronchiectasis, pleural effusion, pericardial effusion and lymphadenopathy.

Unfortunately, hypercoagulability is quite common with COVID-19 infections, and is poorly understood. One study reported a 30% incidence of venous thromboembolic disease in COVID-19 ICU patients. The risk of pulmonary venous thromboembolism in non-ICU patients was found to be 8.3% by chest CT angiogram in 1,240 hospitalized patients. Endothelial injury, stasis, and a general hypercoagulable state all play a role. Prothrombogenic factors have been reported: elevated factor VIII, elevated fibrinogen, circulating prothrombic microparticles, neutrophil extracellular traps, and hyperviscosity. Risk factors for hypercoagulability include older age, male sex, Hispanic ethnicity, CAD, prior MI and D-dimer greater than 500 at the time of presentation.

Treatment

Outpatient Management:

Guidelines for treatment of COVID-19 are still developing and the Food and Drug Administration (FDA) has only recently approved two agents for treatment in hospital settings, and one for those at risk for progressing to severe disease. As of this writing there are no FDA-approved medicines to be used for those with mild disease. Mild disease is defined as those who maintain oxygen saturation of 95% or higher, or those with only mild dyspnea. We do now know from double-blinded randomized trials published in the New England Journal of Medicine that hydroxychloroquine has no COVID-19 prophylactic or treatment advantage.

Outpatient management is recommended for patients who are less than 65 years of age with little or no comorbid conditions, with no or only mild dyspnea, and an oxygen saturation of 95% or greater. Initial telephone triage and subsequent telemedicine services are highly recommended for evaluation and ongoing care of these patients. Risk factors for progression to more severe disease include: age 65 years or older, resident of long-term care facility, chronic lung disease (COPD, moderate-severe asthma, cystic fibrosis, pulmonary fibrosis), cardiovascular disease, cancer, hypertension, BMI greater than 30, diabetes mellitus, chronic kidney disease, chronic liver disease, cerebrovascular disease, neurologic disorders including dementia, tobacco smoking, hematologic disorders (sickle cell disease, thalassemia), and pregnancy.

Consideration should occur for referring patients to designated outpatient clinics with capabilities to evaluate patients with COVID-19 or persons under investigation if they have mild dyspnea and oxygen saturation in the range of 91-94% or have risk factors as listed above for severe disease. Any patients with moderate dyspnea or any other concerning symptoms such as orthostasis should also be referred to designated outpatient clinic settings.

Referral to an emergency department should be

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SARS CoV-2 Illness: Focus on Pulmonary Disease

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considered only for patients with shortness of breath at rest - including inability to speak in complete sentences, - those with oxygen saturations less than 91%, or experiencing altered mentation.

Inpatient Management:

A detailed description of COVID-19 inpatient management is beyond the scope of this article, but a few comments are appropriate.

There has been speculation that ACE inhibitors and ARBs might adversely affect COVID-19 patients, but observational studies have not supported this theory.

Statin use has not been associated with increased risk of COVID-19-induced liver injury, and a retrospective study suggested ICU patients on statins may have a lower death rate.

Dexamethasone has some benefit and is recommended for severely ill patients (those requiring high flow oxygen, or mechanical ventilation). The recommended dose is 6 mg daily for 10 days or until discharge, whichever is shorter. Equivalent doses of other steroids can be substituted if dexamethasone is not available, but some studies suggest minimal statistical difference. The CDC and several highly respected authors did not recommend dexamethasone for prevention of COVID-19 illness, or mild to moderate illness where the patient is not requiring supplemental oxygen. Overall, when dexamethasone was used in severely ill patients the 28-day mortality was reduced by approximately 17%. There was a 36% relative reduction in mortality in mechanically ventilated patients or patients on ECMO, and the mortality reduction was approximately 18% in patients on high flow oxygen or BiPAP.

Remdesivir has received FDA approval for emergency use in hospitalized COVID-19 patients with severe illness. Remdesivir is a novel nucleotide analog inhibitor RNA-dependent RNA polymerases and has been seen to have antiviral activity against COVID-19 in vitro. The multinational, randomized, placebo-controlled ACTT-1 study showed remdesivir resulted in a faster recovery, defined as cessation of oxygen therapy or faster time to discharge. It is not yet clear whether remdesivir reduces mortality, as there was a 29-day trend towards reduced mortality but it was not clinically significant. The suggested dose of remdesivir is 200 mg intravenously on day one followed by 100 mg daily for 5 days, with extension to 10 days in mechanically ventilated patients who have no initial response. Remdesivir is not recommended for patients with a GFR less than 30, and remdesivir did not appear to reduce the time to recovery in 119 patients followed who did not experience hypoxia or tachypnea.

Clinical trials are ongoing for convalescent plasma/ neutralizing antibodies (CP/NA). The FDA has granted emergency authorization for the use of CP/ NA in hospitalized patients. High levels of neutralizing antibody could be beneficial, but randomized double blinded clinical trials are lacking.

Preliminary results suggest a combination of two human monoclonal antibodies, one derived from a convalescent patient, and one derived from recombinant antibody, reduced the rate of emergency department visits and hospitalizations and lowered viral levels. The monoclonal antibodies work by neutralizing a COVID-19 spike protein, preventing viral entry into the cell. Bamlanivimab is a monoclonal antibody product recently approved under the FDA's emergency use authorization for those who are positive for COVID-19 and are at high-risk for progressing to severe illness.
Other treatments under investigation include Favipiravir (RNA polymerase inhibitor), interferons (especially interferon-beta), interleukin-6 receptor blockers such as Tocilizumab which could potentially block the cytokine storm associated with COVID-19, IL-1 RB (anakinra), mesenchymal stem cells, other cytokine inhibitors, complement inhibitors, bradykinin pathway inhibitors, recombinant hematopoietic colony-stimulating factors, and anti-protozoal/anti-parasite therapy (nitazoxanide and ivermectin).

To date there is no clinical data to support the use of famotidine, colchicine, vitamin D, or zinc.

Essentially, it is recommended that patients with non-severe disease receive supportive care only.

Long-term COVID-19 symptoms and complications:

According to WHO, the time to recovery for patients who had mild COVID-19 symptoms is approximately 2 weeks, but up to 6 weeks for those who had severe disease. Fortunately, most patients recover completely and few with mild symptoms will develop long-term complications. The risk factors for developing long-term complications include older age and existence of comorbid conditions. The common persistent symptoms include: fatigue (53%), dyspnea (43%), joint pain (27%), chest pain (22%), and headache. Fever does not appear to be a persistent symptom.

More serious complications of COVID-19 appear to include cardiomyopathy, arrhythmias, post-inflammatory pulmonary fibrosis, stroke, seizure, Guillain-Barré syndrome, thrombosis of arteries or veins for up to 1-2 months after the illness, chronic fatigue

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syndrome, posttraumatic stress disorder (especially in recovered ICU patients), vertigo, and hair loss. And there may be an increased risk of Parkinson's disease and Alzheimer's.

Approximately 25% of hospitalized patients with COVID-19 develop myocardial injury and/or risk of arrhythmia. The risk factors identified for these cardiac complications include hypertension, obesity, hyperlipidemia, and diabetes mellitus. Pathogenesis includes viral infiltration, inflammation, micro-thrombi and down-regulation of the ACE-2 receptors. Presumably, endothelial cells in patients with cardiac risk factors respond adversely by releasing pro-inflammatory cytokines.

Pulmonary fibrosis is a devastating complication of COVID-19. The incidence is evolving as the period of recovery time expands, and more people are recovering. Patients with underlying fibrotic lung disease are at the highest risk of developing increased pulmonary fibrosis, including those patients with pre-existing idiopathic pulmonary fibrosis (IPF). Other risk factors include age, illness severity, ICU length of stay, mechanical ventilation, smoking, and chronic alcoholism. Extrapolation from SARS or Middle East Respiratory Syndrome (MERS) data suggest up to 30% of COVID-19 patients may have some persistent pulmonary abnormality or complaint. Follow-up of healthcare workers from Hong Kong and Beijing with MERS (2 years and 15 years respectively) showed most had only mild abnormalities such as a mild reduction in the diffusion capacity (70-80% of predicted). However, 38% of the 71 patients in the Beijing study had persisting ground-glass opacities and cord-like consolidations on CT scan, but after 12 months these generally occupy less than 10% of the lung.

Pathologically, the lungs show acute and organizing diffuse alveolar damage and fibrosis with honeycomb-like remodeling and bronchial metaplasia. In addition to the changes commonly found in diffuse alveolar damage (DAD), there are also changes commonly found in interstitial lung disease such as fibrotic areas with honeycomb-like remodeling and bronchial metaplasia.

Currently we have no proven, effective, targeted therapy against COVID-19-induced pulmonary fibrosis. Therefore risk reduction measures and protecting the lung from other incidental injuries are paramount. Limiting the factors perpetuating the cycle of lung injury, inflammatory response, and fibroproliferation will be key as we learn more about COVID-19 pulmonary disease. All COVID-19 patients should be counseled to achieve 100% abstinence from cigarette smoking. Also avoidance of indoor and outdoor particulate matter is highly recommended.

Vaccines:

Numerous vaccine trials are underway - sponsored by many large pharmaceutical companies and heavily funded by governments, including the United States with Operation Warp Speed, a $10 billion initiative. There are reportedly around 200 potential vaccines under investigation, 45 of them in clinical trials. Some vaccines will require 2 doses, usually 14-21 days apart and some as long as 56 days apart.

Reportedly, phase 3 trials will have to demonstrate at least 50% effectiveness for the US Food and Drug Administration (FDA) to contract with these vaccine-producing companies. Experts suggest herd immunity needs to approach 60%, to make a dent in the COVID-19 pandemic (this includes individuals recovered from COVID-19 infection with neutralizing antibodies/cell-mediated immunity, and those who mount an effective immunologic response to a vaccine).

Types of vaccines under investigation include nucleic acid-based (mRNA and DNA), viral-vector vaccines, and inactivated or recombinant protein vaccines.

The vaccine issues are complex. Some express caution and advise to wait for a very effective vaccine. Their theory is that a less effective vaccine may mitigate future neutralizing antibody formation, thereby resulting in less antibody response when what could be a more effective vaccine is later administered.

Summary:

The COVID-19 pandemic has triggered an unprecedented explosion of research, high-quality journal articles and vaccine development. Unfortunately, there has also been a plethora of mindless chitchat on mainstream and social media promoting unsubstantiated remedies. We as clinicians should advise our patients to rely on evidence-based medicine, and we have a responsibility to be suppliers of evidence-based advice. The dissection of the data will continue on for years to help us learn more about early and accurate diagnosis, and acute and long-term treatments. Multiple COVID-19-related clinical trials are open for patient enrollment in our region through SIMEDHealth, the Gainesville VA, and the University of Florida.

Social distance! Wear a mask! Don't smoke! Wash your hands! And, when available, get an effective vaccine. Stay safe!

CME Post-Test

SARS CoV-2 Illness: Focus on Pulmonary Disease

CME Questions (circle one answer)

1. Age-adjusted hospitalization rates in which the following groups of Covid-19 patients are higher than in caucasians:
A. Hispanics / Latinos
B. Native Americans
C. African Americans
D. All of the above

2. Transmission of Covid-19 occurs largely through which one of the following:
A. Abrasions / Cuts
B. Transfusions
C. Respiratory droplets
D. Contact with surfaces

3. Which of the following are the most prevalent symptoms among Covid-19 patients:
A. Loss of smell and taste
B. Abdominal pain and diarrhea
C. Rhinorrhea and sore throat
D. Cough and fever

4. The following drugs have shown some benefit in Covid-19 inpatients:
A. Hydroxychloroquine alone
B. Hydroxychloroquine and Dexamethasone
C. Hydroxychloroquine and Remdesivir
D. Dexamethasone and Remdesivir

5. Serious complications of Covid-19 include which of the following:
A. Cardiomyopathy
B. Cardiac arrhythmias
C. Pulmonary fibrosis
D. All of the above

6. Herd immunity needs to approach what percent to make a dent in the Covid-19 pandemic:
A. 10%
B. 30%
C. 60%
D. 90%

7. Hypercoagulability is quite common with Covid-19 infections:
A. True
B. False

8. Risk factors for progression to more severe Covid-19 disease include:
A. Age 65-years or older
B. Resident of long-term care facility
C. Chronic lung disease
D. Cardiovascular disease
E. All of the above.

9. To date there is clinical data in Covid-19 patients to support the use of:
A. Famotidine
B. Colchicine
C. Vitamin D
D. Zinc
E. None of the above

10. Pulmonary fibrosis is a devastating complication of Covid-19-risk factors include:
A. Underlying fibrotic lung disease
B. Older age
C. Illness severity
D. Smoking and alcoholism
E. All of the above

CME Credit Information -

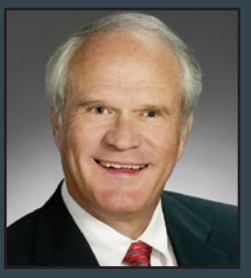
Post Test Link:
https://www.proprofs.com/quiz-school/ugc/story.php?title=1438-2178-sars-cov2-illness-focus-on-pulmonary-disease-alachua-county-medical-societyjj

To take the Post-test, click on the link above to access the UF CME ProProfs program. Please complete the evaluation form after receiving a passing grade. Your test will be graded upon submittal with a Certificate emailed automatically upon completion..

Leading the Way on COVID-19

An Interview By Scott Medley, MD, with
Michael Lauzardo, MD, MSc, Director of the UF Health 'Screen, Test, and Protect Covid Program at the Emerging Pathogens Institute

Michael Lauzardo, MD, MSc



Scott Medley, MD

[Editor's Note: I have known Dr. Mike Lauzardo for some 26 years, since 1994. This was the year my son, Evan, and I watched the University of Florida Men's Basketball team play in the NCAA Final Four Tournament in Charlotte, North Carolina. Mike and his wonderful wife, Dr. Eileen Lauzardo, were just completing their Residencies in Charlotte – Mike in Internal Medicine and Eileen in Family Medicine. So part of the reason for our trip was to recruit Eileen to our Gainesville Family Physicians group. The trip was successful – not for the Gators, but for our recruiting – and Eileen spent many great years as a phenomenal addition to our group. Mike completed a Pulmonary Fellowship at UF, then earned a Master's Degree in Epidemiology. He then built an exemplary career in Infectious Diseases, and became the regional expert in all things related to Tuberculosis. Now Mike has become the UF Health expert and spokesperson for "all things COVID-19." Mike and Eileen also established the very successful Keira Grace Foundation as a memorial to their beautiful daughter who passed away in infancy. Despite his incredibly busy schedule, Mike was so gracious as to sit down with us for this interview:]

Editor (Dr. Scott Medley): Well, when we recruited you to Gainesville 26 years ago, I'll bet you never guessed you'd become the local spokesperson about one of the worst global pandemics in history. What has it been like for you?

Dr. Lauzardo: I am exhilarated, excited, and extremely tired all at the same time. Like many of my colleagues, I've been averaging fourteen-hour days since March. I also feel a great sense of responsibility to the University community and to the Public.

Editor: You've been referred to as "the Dr. Anthony Fauci" of this area. How do you feel about that?

Dr. Lauzardo: I'm extremely flattered in any way to be compared to Dr. Fauci, especially since he probably accomplishes more in a weekend off than I have in my career! I believe he has earned a high level of trust. He seems to look for the good in things and to try to find more that unites us rather than divides us.

Editor: Hopefully, after dealing with "THE MEDIA" as the main UF Health spokesperson about COVID- 19, fielding questions from me will be fairly easy for you?

Dr. Lauzardo: I have mostly enjoyed dealing with "THE MEDIA", but it is fantastic, Scott, to just sit down with you and relax, catch up, and discuss something I am so passionate about. Seems that sometimes "THE MEDIA" would rather consult "Dr. Google" and his degree from Facebook University than me, and, of course, they can spin things any way they want.

Editor: You've dealt with a lot of pathogens in your career. What is scientifically different about this COVID-19 virus?

Dr. Lauzardo: So many things are different and the science is evolving so quickly. The long incubation period brings a challenge - someone who is infected could possibly test negative very early, but still have the disease. Of course, getting exposed or infected people to quarantine for 14 days is a challenge also. Seems like we learn something new about this virus almost every day.

Editor: We are now sitting about 6' apart and both wearing masks. Is that good enough?

Dr. Lauzardo: Yes, as long as we actually keep our masks on and maintain our distance. These are some of the simple rules people must follow.

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Editor: Are most types of masks effective – or does one really need an N-95 type mask? I see where UF has ordered some 50,000 N-95 masks for their faculty and staff.

Dr. Lauzardo: I tell people that the most effective mask is the one they'll actually wear. The N-95 and KN-95 masks are most effective and what we wear for patient care. Most average people wear a (blue) "surgical mask" or a cloth mask – most of which are adequate for general use.

Editor: I understand that Head Gator Football Coach, Dan Mullen, recently made a "public health statement" about "packing the Swamp" with 90,000 fans and that you responded "only if you, Mike, could call some football plays!" I think I can predict your answer to this, but are we safe in football stadiums?

Dr. Lauzardo: I think we are generally safe in stadiums if we follow the rules – masks, distancing, and handwashing. It's the tail-gating and parties where the risk occurs.

Editor: Do you have much interaction with the Gator athletic teams?

Dr. Lauzardo: Almost daily. There are a lot of challenges but it has been great working with them. By the way, I have had the pleasure of getting to know (UF Director of Athletics) Scott Stricklin, and he is a great guy with everyone's well-being at heart.

Editor: Do you think that UF will resume in-person classes in the Spring semester?

Dr. Lauzardo: I hope we can resume more in-person classes this spring. We'll make it as safe as possible again with masks and distancing required.

Editor: Are we safe from the virus yet in bars and restaurants?

Dr. Lauzardo: In a word, No. Bars are probably the biggest issue causing surges and has a lot to do with not wearing masks. Data points to one's risk as much as doubling if they have eaten at an indoor restaurant within the last two weeks. The risk seems to be substantially less being outdoors.

Editor: I carry in my pocket a small bottle of hand sanitizer, which I use frequently if I'm in public places. Am I kidding myself?

Drs. Lauzardo and Medley with Lee Padgett, Director of Microbiology Lab at the UF Emerging Pathogens Institute.

Dr. Lauzardo: Actually, that's probably a good idea. We know that more transmission occurs via the aerosol route, but hand sanitizer may reduce possible transmission from contact surfaces.

Editor: Should we be "going to the gym" if we're so inclined?

Dr. Lauzardo: I believe most "gyms" are safe and, in fact, are good for you. Pandemics kill in many ways. Of all the excess deaths occurring now, not all are directly related to COVID-19. The suicide rate is up. Patients let their health maintenance lapse. People need to do something healthy. Not much transmission occurs in gyms, again as long as one follows the rules but not all gyms are as good about following the rules.

Editor: I'm still riding my old man's bicycle outside around my neighborhood most mornings without a mask, but staying away from people. Is that OK?

Dr. Lauzardo: I think most outdoor activities like that are not only okay, but should be encouraged. Gentle outside activities like walking and biking are good for one mentally as well as physically. Just use common sense.

Editor: About the only places I visit these days are grocery stores and drug stores. Am I safe there?

Dr. Lauzardo: You're perfectly safe as long as you follow the rules. We find that most cases arise from a breach in protocol – from not following the CDC guidelines.

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Editor: Unfortunately, we're experiencing the expected Fall surge in cases. I believe most of these cases have occurred in social settings instead of academic settings. Where do we go from here?

Dr. Lauzardo: Indeed, more cases are occurring in social rather than academic settings. Where do we go from here? We must be patient while we don't give up on the rules. I'm optimistic. This pandemic will end, we'll get to the other side.

Editor: You mentioned the "epi-curve" and that the curve tells the story of the epidemic. Tell me about that.

Dr. Lauzardo: The Epidemic curve tells the story of the epidemic and by looking at the curve you can see when cases went up and the rate that the cases went up. When you combine this with what you knew what was going on at the time, you can see the impact of various interventions and events in graphic form.

Figure 1 is the graphic of the epidemic curve of COVID-19 on campus. You can see we got our first few cases in March and the numbers went up in April and in May very slightly if at all. This was during the lockdown and high levels of concern. In early June in Gainesville - as well as the rest of Florida and the Sunbelt states for that matter - rates went up after the Memorial Day weekend. Through aggressive contact tracing and disease investigation we got the rates down and "flattened the curve". The beginning of September was a different beast altogether with the start of the Fall semester and we had a dramatic increase in cases similar to other college towns across America. Here once again, our team of Disease Investigators and our scaled-up testing resulted in a just as rapid decrease in cases. Two weeks later we see rates rise again, less abruptly but more prolonged and this coincided with bars opening up, a fact confirmed by our disease investigation interviews of cases. So you see, the epidemic curve is a vital tool to understand how cases increase and decrease based on various interventions and events.

Editor: The news about vaccines over the last couple of

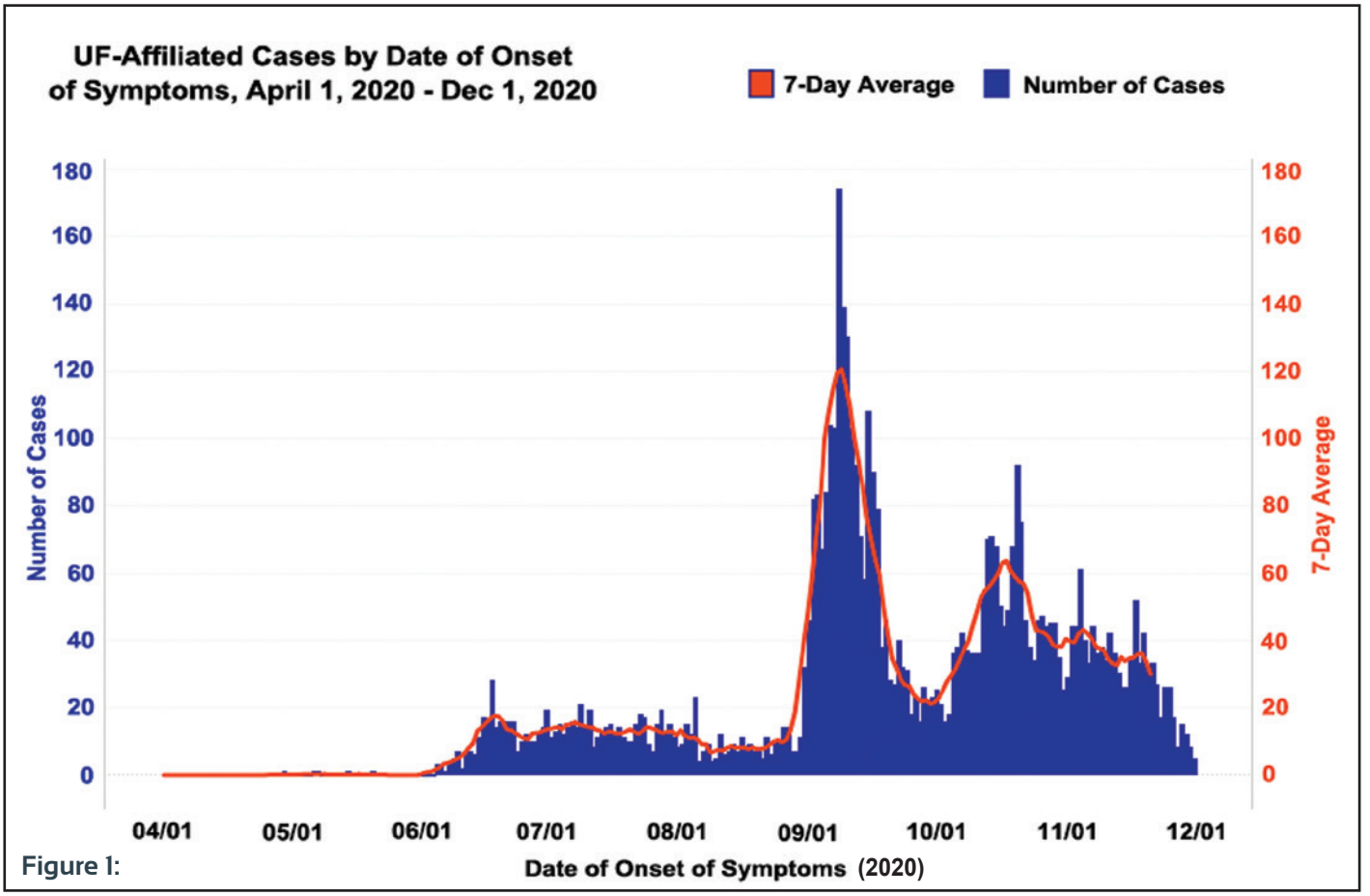

Figure 1:

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weeks seems to be encouraging. Do we really have a reason to be optimistic?

Dr. Lauzardo: The short answer is yes, we certainly have reason to be optimistic. Like everything else during the pandemic, however, it is a cautious optimism. The vaccines are definitely good news with at least three American or American-supported vaccines reporting very promising results and effectiveness rates in the 90-95% range. But remember, vaccines by themselves never helped anyone. It is vaccination, actually administering the vaccine, that matters and we in the medical community will have a key role to play in ensuring that the general population, especially those at greatest risk, get vaccinated provided the safety data is acceptable. Our patients trust us and look to us in times of uncertainty to be a source of reliable information. As physicians, we need to be informed and wisely, clearly, advise our patients and our communities about the risks and benefits of vaccination and the first step is to be informed ourselves from reliable sources. We fumbled the communications surrounding the benefits of masks. We cannot afford to make the same mistakes regarding vaccines. Hundreds of thousands and perhaps millions won't have the opportunity to make the same mistake twice.

Editor: As far as you know, did anyone early-on identify COVID-19 as an emerging pathogen?

Dr. Lauzardo: Actually, some of our predictions in 2019 at the Institute projected an influenza virus as most likely to cause the next pandemic, with a Corona Virus as a close second possibility.

Editor: I see that you are the Director of the UF Health Screen, Test and Protect (STP) Program. Can you tell us more about that?

Dr. Lauzardo: UF Health Screen, Test, & Protect is the result of a collaboration between UF and the Alachua County Health Department that has allowed us to in essence create a public health surveillance unit on campus to develop policy, provide education, testing, contact tracing, and other activities that help us make campus as safe as possible as we carry out our three-part mission of education, research, and service. None of this would have been possible without the support and guidance from Paul Myers, the Director of the Alachua County Health Department.

Editor: We're meeting today in the offices of the Emerging Pathogens Institute where you are the Deputy Director. Anything you'd like to add about the virus or the work being done here?

Dr. Lauzardo: There is a lot of unique, impressive work being done by the team here. For instance, we were able to prove that COVID – 19 is spread mostly by aerosol. We have done several studies in schools. We have looked at wastewater epidemiology. We are performing a lot of translation research – research that has a direct impact on important issues.

Editor: Anything else you'd like to add?

Dr. Lauzardo: I'd like to add that we're dealing with a lot of very difficult public health issues, including the quarantine situation. We are doing public health surveillance in cooperation with state and local Health Departments. Some would say that we are "pathologically optimistic". We work very long hours. We say that, "We don't sleep at night so you can". We want you to use this crisis as an opportunity to think and care about others and choose community over self. This year has been the biggest challenge of my career ,but so worth it.

Editor: Finally, I'd like to put in a shameless plug for the wonderful work you and Eileen are doing in the Keira Grace Foundation. As you know, my wife, Faye, and I are regular contributors. Can you tell us a little about this Foundation and how one might contribute?

Dr. Lauzardo: Eileen and I started the Foundation in the Dominican Republic after our beautiful infant daughter, Keira Grace, died of leukemia. We saw the opportunity to bring life-saving cures to children in underdeveloped countries. Over the last 15 years, we have raised just shy of $1 million and have helped hundreds of children get access to the cures available to us here in the U.S.

We have been able to quadruple the survival rate in some areas. We are starting work in Colombia and Brazil that has been side-tracked due to COVID-19, but expect to get those efforts moving soon. One can learn more about the Foundation and contribute to the 501 (C) (3) charity at our website at keiragracefoundation.org

Editor: Thank you SO MUCH for your time!

Dr. Lauzardo: Thank you.

The Early COVID-19 Experience:
Interventional Cardiology Fellowship in New Jersey During the Pandemic

Nasir Nawaz, MD, The Cardiac & Vascular Institute

The initial cases of novel Coronavirus (COVID-19) infection occurred in Wuhan, Hubei Province, China in December 2019. Since then, COVID-19 has evolved from an isolated disease in a region of China to a global pandemic that has pushed hospital systems to the brink, brought the world to a standstill and dragged the global economy into a recession. It was originally thought that the novel Coronavirus was primarily a respiratory disorder, but soon it became clear that its impact goes well beyond the lungs, impacting the cardiovascular system, kidneys, brain and other organs, and resulting in severe complications including acute respiratory distress syndrome, cardiogenic shock, systemic thromboembolism and death.

In New York and New Jersey, the early hot spots of the U.S. coronavirus pandemic, hospitals and health systems stepped up in heroic and unprecedented ways to meet the early challenges of the COVID-19 outbreak. As the pandemic started, I was in the middle of my Interventional Cardiology Fellowship training in New Jersey. At our center, many cardiology fellows served on the frontlines of the pandemic. At any given time, a quarter of the fellows were deployed on COVID services, working 12-h shifts as junior attendings on COVID units or as critical care fellows in ICU. This presented the opportunity for fellows to work in a unique multidisciplinary setting that included critical care physicians, pulmonologists, respiratory therapists, neurologists and palliativists, etc. Supportive measures, intubation, ventilator management, proning, resuscitative efforts for cardiopulmonary arrest patients and end-of-life conversations became routine on COVID units. Dire shortages of PPE across the country made acquiring proper PPE difficult and we were instructed to extend the use of our existing PPE and preserve reusable PPE.

Beginning in March 2020, hospital systems nationwide saw a sudden and inexplicable 60-percent reduction in admissions for acute coronary syndromes (ACS). The fear of catching COVID greatly impacted patient behavior with many not seeking medical care despite symptoms of ACS. This has been a universal experience, with similar findings being reported from multiple countries around the world. The volumes in cardiac catheterization labs went down significantly in March and April, and we were wondering, "Where did all the STEMIs go?" As the admission rates for myocardial infarction started to increase again in May and June 2020, we encountered post-MI complications rarely seen in the pre-pandemic period. These complications are typically due to late presentations of myocardial infarctions, and include ventricular septal rupture, papillary muscle rupture and cardiogenic shock due to pump failure.

The patients being admitted with COVID-19 infection at our center were primarily in their 50s and 60s. The most common symptoms at presentation included fever, malaise and shortness of breath. Laboratory abnormalities at presentation included transaminitis, elevated neutrophils, lymphopenia, and elevated levels of CRP, D-dimer, LDH and ferritin. Imaging abnormalities ranged from ground glass opacities to multifocal pneumonia and/ or dense consolidations. (Figure-1)

Many of the worst case of COVID-19 were directly related to cytokine storm, or cytokine release syndrome, an intense inflammatory and immune reaction in which the body releases too many cytokines too quickly into the bloodstream. This rapid release of cytokines in COVID-19 patients was typically catastrophic leading to tachycardia, tachypnea, and a surge in inflammatory markers including D-dimer, CRP, LDH and troponin. At our center, persistent elevations of inflammatory markers correlated directly with a patient's clinical status. Patients with persistently elevated LDH, Ferritin and CRP had worsening infiltrates, worsening hypoxia, increased work of breathing and high-grade fevers. Measurement of inflammatory markers served as surrogate indicators of improvement or worsening in clinical status.

The association between elevated D-dimer levels and hypercoagulability has been demonstrated in COVID patients with resultant arterial and venous thrombosis. This situation sets the stage for some of the most severe thrombotic complications, including acute coronary syndromes, spontaneous occlusions of distal extremities, pulmonary emboli leading to pulmonary hypertension and acute ischemic strokes. Substantial amount of isolated right ventricular involvement and RV failure is seen in COVID patients and is likely attributed to the pulmonary emboli causing right ventricular strain. Left ventricular systolic function remains largely preserved in the absence of biochemical evidence of

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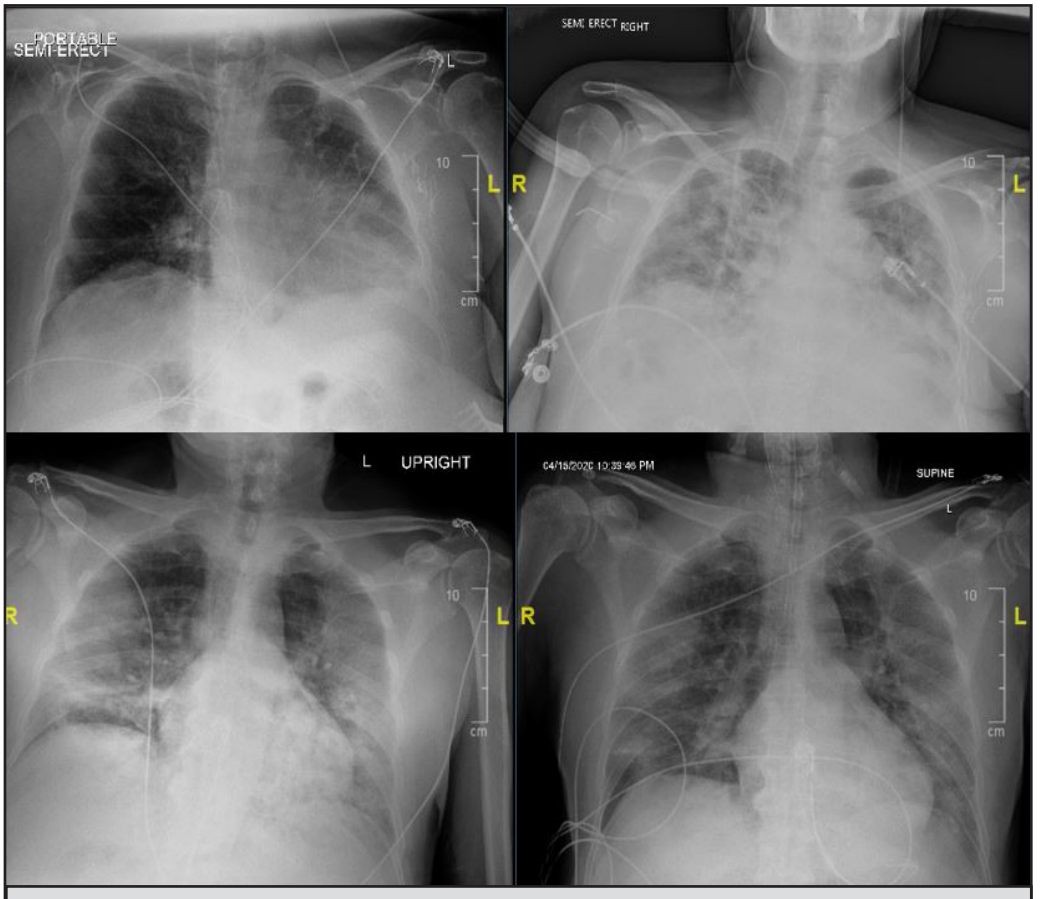

Figure 1: Chest X-ray abnormalities in COVID-19 patients at our center included ground glass opacities, multifocal pneumonia and dense consolidations.

myocardial injury. One of our patients was a 50-year-old female who presented to the ED with a 2-day history of fever and non-productive cough. She was found to have significantly increased work of breathing with severe hypoxia (O2 saturation in 70s) refractory to high flow oxygen therapy, and was intubated shortly thereafter for profound hypoxemia. She was slowly weaned off of oxygen requirements, and successfully extubated on hospital day 6. On hospital day 7, upon rising to go to the bathroom, she became acutely hypoxic and was started on high-flow oxygen and with systemic heparin for presumed thromboembolism. Chest CT showed extensive bilateral pulmonary emboli with right heart strain and extensive parenchymal infiltrates (Figure-2). Within hours of heparin initiation, heart rate decreased and she was able to be weaned off of high flow oxygen. Another 62-year-old male patient with COVID infection and respiratory distress requiring intubation was admitted to the ICU. On hospital day 2, he became acutely hypotensive requiring vasopressor support. 2D echocardiogram demonstrated hyperdynamic LV function with interventricular septal flattening throughout cardiac cycle, and dilated hypokinetic RV with positive McConnell's sign. CT chest showed extensive bilateral pulmonary emboli. Due to unstable hemodynamics, he was given systemic tPA with immediate improvement in HR and BP. His oxygenation and respiratory status improved over the next 24 hours and he was extubated successfully on hospital day 3. He was downgraded out of the ICU to telemetry floor on day 5 and eventually discharged to home on an oral anticoagulant in stable condition.

COVID-19 causes both direct and indirect myocardial injury manifested by elevated levels of circulating troponins, CK-MB and myoglobin. Evidence of myocardial injury in hospitalized COVID patients portends a poor prognosis. Such biomarker elevation is not found to be due to angiographic obstructive epicardial coronary disease in the majority of cases, but rather results from a combination of hypoxia, microvascular thrombosis and vascular inflammation. Increased myocardial oxygen demands in the settings of hypoxia leads to development of supply-demand mismatch and type-II myocardial infarction. Among patients with stable coronary artery disease, acute systemic inflammation in the setting of viral infection can destabilize the previously stable plaque and precipitate acute coronary syndromes. Myocarditis is a relatively rare sequela of COVID infection. It can lead to substantial cardiac damage and severe acute heart failure. It can also evolve into the progressive syndrome of chronic heart failure. Electrocardiograms are usually abnormal in patients with myocarditis. Trans-thoracic echocardiography is an important first line non-invasive test. Cardiac magnetic resonance (CMR) imaging has an integral role in the diagnosis of myocarditis, especially if endomyocardial biopsy is not obtained or cannot be performed.

Shock and multi-organ systems failure are a hallmark of severe COVID-19 infection. Distributive or septic (vasodilatory) shock typically pre-dominates, but many patients are at risk for mixed shock given the propensity for cardiac dysfunction in severe disease. Those with

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underlying heart failure may progress to cardiogenic shock either in isolation or in combination with vasodilatory shock. COVID patients develop severe diffuse pulmonary infiltrates with rapid deterioration to acute respiratory failure. It is usually unknown whether cardiac dysfunction co-exists and to what extent this finding contributes to worsening pulmonary infiltrates and resultant hypoxia. Pulmonary artery catheterization is extremely valuable in such cases for an accurate diagnosis and is usually performed at the bedside. In the setting of refractory hypoxemia and mixed shock, extracorporeal membrane oxygenation (ECMO) should be considered. Dominant configuration in patients with COVID at our center was V-V (veno-venous) ECMO. V-A (veno-arterial) or V-A-V (veno-arterial-venous) ECMO configuration may be considered in selected patients with refractory shock and hypoxemia. Other options for acute mechanical circulatory support for isolated LV failure and shock include Impella and Tandem heart. For patients with isolated right-sided shock and RV failure, early placement of Impella RP is potentially lifesaving.

Patients recovering from COVID illness need careful, close follow-up and vigilance for any unusual symptoms. Some recent studies suggest many COVID-19 survivors experience some type of 'heart damage', even if they didn't have underlying heart disease or were not sick enough to be hospitalized. A study from Germany found that in a cohort of 100 patients recently recovered from COVID-19, cardiac magnetic resonance (CMR) imaging revealed cardiac involvement in 78% of patients and ongoing cardiac inflammation in 60% of patients, which was independent of pre-existing clinical conditions, severity and overall course of acute illness, and the time from the original diagnosis. The most common abnormality was myocardial inflammation (abnormal native T1 and T2 measures) followed by regional scarring and pericardial involvement. At the time of CMR acquisition, these patients were free of symptoms and had negative results on a swab test at the end of their isolation period.

Myocarditis can lead to an increase in ventricular dysfunction and/ or heart failure down the road. There have been some recent reports of young college athletes who have been identified as having 'myocardial injury' following COVID infection. This is a potentially serious issue as asymptomatic (subclinical) or mildly symptomatic myocarditis can lead to similar severe complications as clinically manifest myocarditis does. Cardiac magnetic resonance (CMR) imaging has the potential to identify high-risk patients for adverse outcomes as the CMR evidence of myocardial inflammation has been associated with myocardial dysfunction and death. Evidence based recommendations for return-to-play guidelines are currently limited and subject to change as further data are obtained. Recommendations regarding resumption of intense exercise training requires careful consideration of the severity of prior infection and the likelihood of cardiovascular involvement. The American College of Cardiology (ACC) has urged the research community to perform rigorous well-designed clinical trials to provide a better insight into this subject.

Our understanding of this disease is changing every day and will likely change again in the weeks and months to come. As the second wave of COVID-19 roils the U.S., we need to make sure that patients heed the warning signs of heart attacks and strokes, and act promptly to get to the hospital to seek timely care. Delaying care results in more serious heart damage and even death. The multi-organ and potentially fatal cardiovascular manifestations of novel coronavirus further underscore how important it is for all patients, and particularly those patients with cardiac disease, to take every measure to mitigate the spread of the virus and to protect people at increased risk of severe illness, including social distancing, sanitizing hands and wearing a mask.

References available upon request.

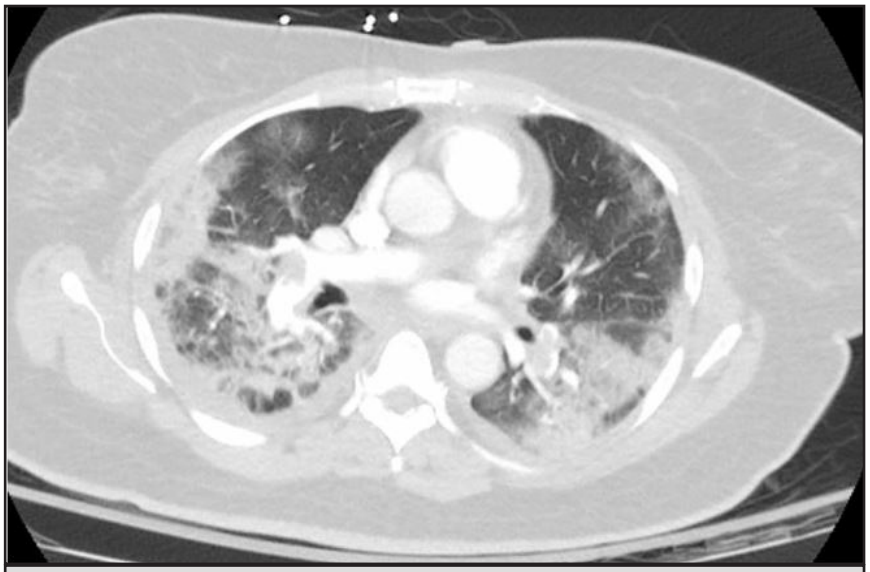

Figure 2: Chest CT scan showing bilateral large pulmonary emboli and extensive pulmonary infiltrates.

Mental Health in the Age of COVID-19

Markus Dietrich, LMHC, CEAP, CAP,
SIMEDHealth Psychology

As I am writing this, it has been 10 months since the corona virus pandemic was recognized on US soil; first appearing in a Washington state nursing home. Since then, the death toll stateside has exceeded 250,000, and more than 56 million people have been infected worldwide. Attempts to adapt to the threat of the pandemic and to curb the spread of the disease have led to profound changes in our lives, including our social lives, work lives, and overall wellbeing. Not surprisingly, this pandemic not only causes a threat to physical health, but also to the emotional wellbeing of individuals, families and whole communities.

The most pervasive challenge to mental health is the increased level of stress over an extended period. This stress can be attributed to several sources. Among them are the prospect of contracting a potentially fatal disease, transmitting the virus to family members or friends, as well as measures to contain the virus spread, including social distancing and wearing masks. Working from home, the closing of schools or loss of job and other required lifestyle changes have added additional stressors for many. Economic impact, due to job loss, furloughs or reduced hours create a very real threat for some. Lastly, the open-ended nature of the crisis is a stressor in and of itself. We know that most individuals tend to show greater resilience when confronted with a stressful situation that has a predictable course and ending, like the cleanup after a natural disaster from a hurricane for example.

Adding to the challenge is the fact some of the necessary changes to adapt to the pandemic not only cause stress, but also reduce the availability of some of the common coping skills people tend to employ to deal with stress. Socializing with friends, going out to restaurants, going to the gym, enjoying movies, concerts or plays have been curtailed, completely eliminated or changed so dramatically they are less likely to lower stress levels.

While increased stress has an impact on mental and physical wellbeing, for most of us the resulting symptoms are at a sub-clinical level. When there is significant impact, we are most likely seeing an increase in anxiety and depression.

The mental health impact of COVID-19 is not as easily quantifiable as the numbers of positive tests or hospitalizations, but we are now seeing the first published studies regarding this subject. In a study out of China during the initial outbreak, 53.8% of respondents rated the psychological impact as moderate to severe. They cited mostly heightened anxiety and depression. In March of 2020, the Kaiser Family Foundation Tracking Poll for the U.S. reported 32% of respondents endorsed a negative impact of the COVID-19 spread on their mental health. This number had increased to 52% by June. Some of the reported symptoms included changes in sleep, and appetite, worry, and increased alcohol use.

Most stressors associated with the pandemic and the resulting adaptations apply universally. However, it is worthwhile to examine the impact on special populations and cohorts.

Healthcare workers, First Responders and Frontline Employees

Physicians, nurses, paramedics and other frontline healthcare personnel experience increased exposure, especially when working in emergency hospital settings, intensive care units and special COVID-19 units. A 2020 study has demonstrated increased levels of depression and anxiety among this group. The report states the factors contributing to this include the fear of contracting the disease and transmitting it to loved ones, frustration over lack of personal protective equipment (PPE) and other resources (especially early in the pandemic), and exhaustion from being overworked due to the volume of patients, as well as staffing shortages related to illnesses and quarantines. These professionals are at a heightened risk of psychological breakdown, burnout, and in some cases even suicide. Even in less intense medical settings, it is prudent to be aware the mental and emotional health of the caregivers may be affected by the pandemic.

To support these caregivers, it is important to provide resources to the best of our ability. This includes the tools to do their work (PPE, test kits, etc.), structural changes in the physical environment to allow for distancing by reconfiguring work space, facility screening before entry, leveraging telehealth, but also emotional support. Large and mid-size organization often have an employee assistance program (EAP), which provides free and

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confidential access for employees and their families for psychological support. Within clinics or smaller practices, maybe a regular debriefing might be a practical way to "check in" with the team and to assess needs. In any case, it is important to acknowledge the challenge for our peers and co-workers, and to provide an easily accessible mechanism to reach out when needed.

Individuals with pre-existing conditions

Individuals with a history of psychiatric conditions are also at higher risk for a mental health crisis, or an exacerbation of an existing mental health condition. This situation is particularly true for patients with depression, anxiety, obsessive compulsive disorder, and thought disorders which include paranoid ideations. Fear of an out-of-control virus and increased isolation due to quarantine measures may trigger symptoms that were previously under control. The pandemic has again put a spotlight on the fact many individuals with mental health conditions are undiagnosed, or even when diagnosed, have difficulty to access treatment. As a society and as a profession, we will have to continue to develop methods to meet this challenge.

Vulnerable communities

There are many communities in our society who, due to their economic pressures, poor healthcare access, high unemployment, or exposure to crime are at high risk for mental health problems. This includes communities of all different demographics, as well as homeless people. Living conditions may not allow for adequate distancing when a large family lives in a small apartment or house. For a homeless person, regular handwashing and new masks may not always be available. Individuals in these communities already experience higher than average stress levels as a result of the above mentioned conditions. The threat of COVID-19 exacerbates these issues, as does the fear that comes with this additional challenge and the changes it creates.

Families who have lost loved ones.

The loss of a loved one is difficult under any circumstances. Even when the death is not due to COVID-19, the customary rituals and traditions which normally get us started on a path to healing are now severely diminished. There may not be funerals or services to attend. Relatives who would normally gather for these rituals and for family support may be unable to travel or even hug each other. In-person support for the ones left behind may now be replaced by virtual contact via a smartphone or other device. If the loved one died in a hospital as a result of the virus, grief may be further complicated, as the family was unable to be at the hospital and to be with a loved one during their final hours. The family likely already felt very stressed prior to the death because of not having had access to their family member. We have seen increased depression and anger in family members over being confronted with these realities. There also may be feelings of guilt for family members who were COVID-19 carriers who may have inadvertently contributed to this course of events.

What does it mean for us as healthcare providers?

As we see our patients in our respective settings, it is more important than ever to assess the whole person's health, including their mental health. This can be accomplished by simply inquiring during a visit whether the patient is getting adequate sleep, has changes in appetite, or feels more stressed or depressed. When appropriate, a quick screening tool like the Beck Depression Inventory (BDI-II) may be helpful. It can be completed by the patient in 5 minutes or less, and scored very quickly. When necessary, a referral to community resources or professional counseling may be an instrumental step in improving the patient's overall health.

Many patients will not show evidence of decreased mental health during our encounters. Even then, we can provide valuable preventive care by educating our patients regarding some of the evidence-based characteristics of resilience. This includes stressing self-care, maintaining social connections (creatively respecting recommended protective measures), staying optimistic and being aware of and grateful for, the many things that are still okay, as well as connecting with spiritual beliefs individuals may hold.

Vaccines are on the way, and in time this particular crisis will subside. Some of the changes we went through will likely be here to stay, like the increase in telehealth as a means of providing patient care. It is hopeful if something good should come out of this pandemic, the increased focus on mental health as a necessary condition of overall wellbeing will prove to have longevity.

What Life has been Like as a COVID-19 Contact Tracer

By Emily Klann *This column was originally published in The Independent Florida Alligator*

In mid-March, the early stages of the COVID-19 pandemic, I was contracted by the Florida Department of Health (FDOH) to begin working as an epidemiologist and contact tracer for one of the county health departments. I was excited for this opportunity to utilize the knowledge and skills that I had accumulated throughout my studies in public health and epidemiology to help others.

The beginning of the pandemic was a challenge as the other contact tracers and I worked to adapt to rapid changes in guidelines and protocols brought about by newfound knowledge of this novel virus. It was also a unique time in that the concepts of widespread lockdowns, quarantine, contact tracing and even COVID-19 itself, were new to many folks in the community.

Following my temporary deployment at the health department, I returned to UF and joined the newly developed UF Health Screen, Test, & Protect program. Since then, the program has grown immensely and the team has acquired some of the most diligent and compassionate individuals from both within and outside of the university.

Most of our team works in one or two large rooms within the UF Emerging Pathogens Institute. We each have our own desks, usually equipped with two monitors and a FDOH laptop, that are spaced at least six feet apart to adhere to social distancing guidelines. The area is reminiscent of a call center in that we wear headsets, are on the phones the majority of the day and are connected through a main phone system to easily track incoming calls and transfer calls between one another when needed.

New cases of COVID-19 are reported to us every day. After receiving these cases, we reach out to them as soon as possible to conduct a thorough interview – taking anywhere from 30 minutes to one hour per case.

At the beginning, many folks were skeptical and not necessarily eager to divulge important personal information, such as date of birth and address (these are usually the first questions we ask to ensure we are talking to the correct person and that the person lives in the county we are working for). During the interview, we attempt to identify any close contacts that the case may have had during the time in which they were potentially infectious.

The next step is to reach out to every single contact to alert them of this potential exposure. Our other responsibilities include answering phone calls from community members and providing public health education on how to prevent spread to others, inputting interview data to the FDOH surveillance system (which is ultimately sent to the CDC) and calling to release cases and contacts from isolation and quarantine, respectively.

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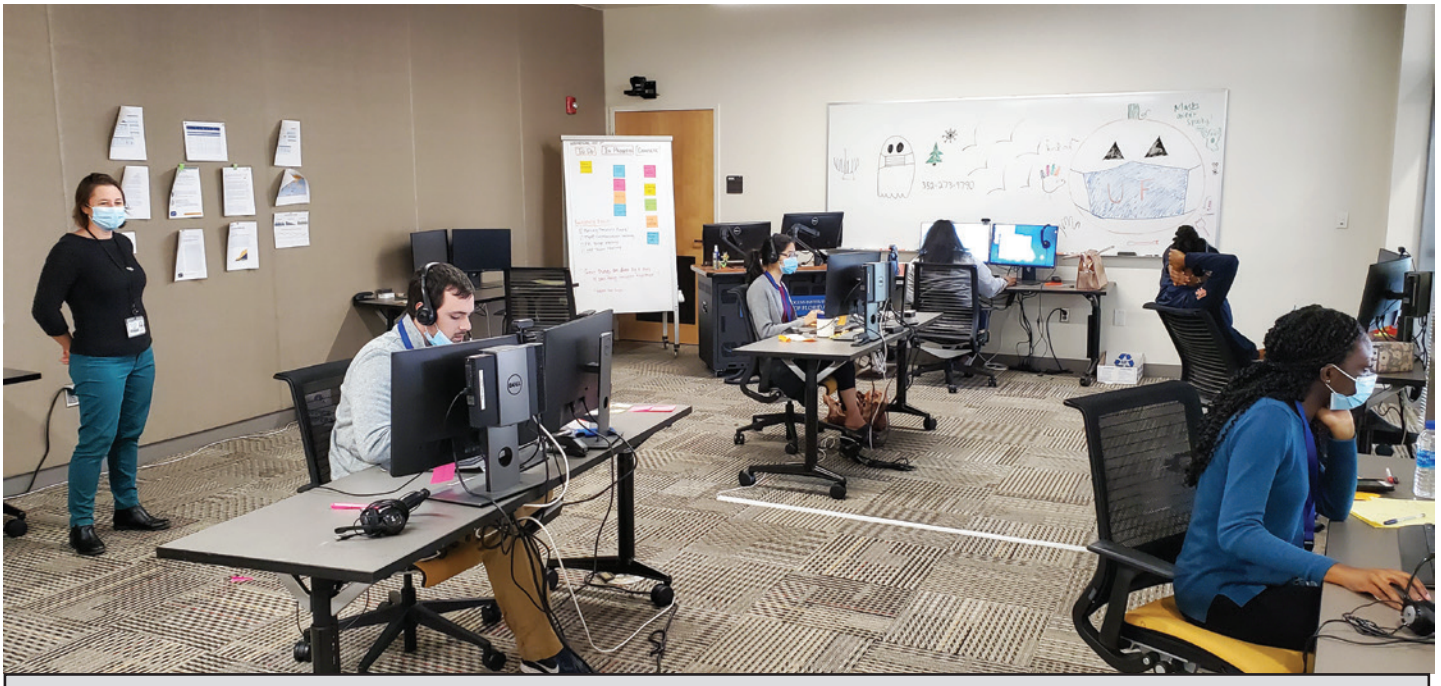

COVID-19 Disease Investigators at the UF Health Screen, Test & Protect program, Emerging Pathogens Institute.

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Personally, I find the investigative aspect of case interviews to be fascinating and the opportunity to work with and help our community members extremely rewarding.

At the end of the day, I think that, apart from the necessary knowledge, the most important quality of a successful contact tracer is empathy. We work in this field every day, and it can be easy to forget that other people in the community may not have the same knowledge or experience with this pandemic as we do. Therefore, it is important to build trust, not only to acquire information, but also to ensure that members of the community feel acknowledged and supported during this time.

First-hand experience working as an epidemiologist and contact tracer during this pandemic has provided me with a unique perspective in that, while I fully appreciate and adhere to guidelines, I am also able to acknowledge and address the hesitancy and skepticism of others. Working at UF Health Screen, Test, & Protect is a constant reminder of the importance of these guidelines.

Prior to the pandemic, I had plans for international travel and family vacations over the holidays. Instead, I had a small dinner with only my immediate family for Thanksgiving and will do the same for Christmas. Although this may seem disappointing, I am thankful for their health and remind myself of the potential implications of large gatherings and travel.

While it is not always easy to make decisions for the collective benefit of others as opposed to personal interests, I believe it is essential in order to prevent further spread, especially to high risk populations such as those over 65, during the approaching holiday season.

Emily Klann has a Master's degree in public health and is a third-year doctoral student in the Department of Epidemiology. She is currently working part-time as an epidemiologists for the UF Screen, Test & Protect program. The original article can be found at: https://www.alligator.org/article/2020/11/what-life-has-been-like-as-a-covid-19-contact-tracer

ACMS Board Highlights

Alachua County Medical Society - Board of Directors Meeting Minutes, May 5, 2020

Pursuant to notice, the Board of Directors of the Alachua County Medical Society met on Tuesday, May 5, 2020, virtually on Zoom.com.

Treasurer's Report: Ms. Owens presented the Fiscal Year End Balance Sheet and Profit & Loss statement (9 months) for the ACMS and the ACMS Foundation. Membership Dues are steady while Publication and Sponsorship Income has declined from the previous year. The cancellation of the Spring Vendor Show and dinner meetings has resulted in a decline in income which has carried to the bottom line. The SBA Payroll Protection Loan has been approved ($17K) and should help recoup some of the losses incurred by the covid-19 pandemic. The Treasurer's Report was motioned for approval by Dr. Levy, seconded by Dr. Balamucki and approved by the Board.

President's Report: Dr. Ryan discussed the impact the pandemic is having on the medical industry as a whole and what the ACMS may anticipate in the fall. As the ACMS provides ongoing services that are vital to the renewal of a medical license, Dr. Ryan requested that we set up appointments in the summer with UF and NFRMC to discuss ongoing membership options. It was decided by the Board to hold the September Dinner Meeting online with a speaker to be determined. Dr. Ryan presented a request by Ashley Barash, DO for the NFRMC Resident position open on the ACMS Board. The request was approved by Dr. Andreoni, seconded by Dr. Gillette and carried.

EVP Report: Ms. Owens presented a matrix of the existing services provided by the ACMS and how we plan to deliver those services in the near future. CME credits will become available online and in House Calls magazine in journal format. Social events not including a CME will be postponed until further notice. The We Care Dental Clinics have ceased operation while the Medical Clinic remains open for business. The Residency Program sponsorship was approved on a trial basis to allow the Board to meet and interact with the St. Johns Asset Management team prior to finalizing a sponsorship contract. There would be no sponsorship fee during the trial period, at the end of which, the decision to proceed further and enter into a sponsorship contract would be determined.

ACMS Board Highlights

Alachua County Medical Society - Board of Directors Meeting Minutes, July 14, 2020

Pursuant to notice, the Board of Directors of the Alachua County Medical Society met on Tuesday, July 14, 2020, virtually on Zoom.com.

President's Report: Dr. Ryan discussed our participation in the ongoing discussions in the State and local community regarding mass gatherings during the pandemic and proposed the we establish a Public Health Committee to directly interact with the public on medical issues going forward. He further recommended writing a letter to the School Board of Alachua County prior to their July 15th meeting to address our recommendations on the safety measures required prior to the opening of public schools and delaying the re-opening until August 24, when such measures can be implemented. Drs. Gillette, Bruggeman, Parra, Ryan and Barash volunteered to be on the committee, with Dr. Gillette agreeing to write the draft for the letter. Dr. Lipnick made a motion to write a letter to the Republican National Convention and the Gainesville Sun discouraging mass gatherings in the State of Florida whether for educational, recreational or political reasons due to the risk of further spreading the COVID virus. The motion was seconded by Dr. Levy and Dr. Bruggeman agreed to draft the letter for Board approval. The EVP Agreed to draft the letter to the RNC. Dr. Ryan asked the EVP to reach out to Duval County Medical Society to see if they would be interested in supporting us in the letter to the RNC regarding the upcoming convention scheduled to be held in Jacksonville, Florida.

EVP Report: Ms. Owens discussed the upcoming FMA Elections and who would be on the ballot. All of the ACMS FMA Delegates were invited to join this meeting to review pre-conference issues and plans. Ms. Owens stated that since the convention was moved to an online format, participation this year would be limited to voting online from Wednesday, July 29th (9am) until Thursday, July 30th (11:59pm) for contested elections. Dr. Riggs discussed the candidates for office and received feedback from the Board regarding the same.

Alachua County Medical Society - Board of Directors Meeting Minutes, September 8, 2020

Pursuant to notice, the Board of Directors of the Alachua County Medical Society met on Tuesday, September 8, 2020, virtually on Zoom.com.

Special Presentation: Karissa Raskin and Jacqueline Stetson of the City of Gainesville presented a request to the Board to incorporate ACMS and We Care medical data/criteria into the MyGVN program to help people find medical services in the City of Gainesville that they may qualify for. The Board discussed the presentation and requested that the EVP obtain additional information before finalizing their decision.

Treasurer's Report: Ms. Owens presented the Income Statement and Balance Sheet for both the ACMS and the ACMS Foundation for the 12 month period ending 7/31/20. The Covid pandemic adversely affected the income statement for the ACMS in terms of Membership Dues, Publication Income and Event Income. These declines resulted in a net loss of $21.5K, which was partially offset by the SBA Payroll Protection Plan loan of $17K. The SBA loan is scheduled to be forgiven as part of the original program agreement. Expense reductions in Event Expense, Marketing Expense, Publication Expense and Payroll are planned to offset the anticipated declines in income. The ACMS Foundation received grant income of $98K with total Grant Disbursements of $85K, for the purchase of medical and dental supplies for the We Care Clinic, and required clerical services. Dr. Riggs motioned approval of the report, seconded by Dr. Balamucki, and the motion carried by the Board.

President's Report: Dr. Ryan discussed the upcoming ACMS agenda and projects for the year and asked that all Board members submit any additional items they would like considered. David Tyson submitted an FMA Resolution to be considered for submittal to the 2021 Annual Conference addressing Racism as a Public Health Issue. The Board reviewed the resolution and agreed to work with Mr. Tyson and the Medical Student Delegates to revise the text as needed for submittal. Dr. Gillette discussed the status of the Public Health Committee and the letter they submitted regarding the reopening of the Alachua County School Board public schools. The letter was the basis for discussions regarding the eventual date selected for the safe opening of the schools this fall.

The Eighth Judicial Circuit Bar Association has asked the ACMS to participate in a panel discussion at a future ACMS meeting covering General Legal Insights for Practicing Physicians. The Board agreed to consider the February 16th meeting and will recommend a physician to be included on the panel. Dr. Dragstedt has agreed to moderate the event.

EVP Report: Dr. Riggs discussed the results of the FMA Elections. Ms. Owens asked if the ACMS Poster Symposium would continue this year. The Board voted unanimously to continue the Poster Symposium and suggested late April as the possible event date.

Breaking News from the Current Epidemic!

By Scott Medley, MD

*** We are warned that "if the time came when a highly communicable disease...did come into contact with a more densely populated area... circumstances could reach crisis proportions."*

*** " (A Doctor) discovered a single case...and the town council...established a strict quarantine." "At first," (one journalist) assured the readers that although there were "many exaggerated reports being circulated in the streets" concerning the number of cases, these reports are "absolutely false", and it is "almost certain" that it "will not spread beyond the quarantine."*

*** The school Superintendent has revealed that "a definite boundary (is being) established to guide the school in deciding which pupils to exclude from attendance."*

*** (A Doctor) from the Board of Health "advised the town to close the schools and ban all miscellaneous assemblage." Some accused (this Doctor) of a "gross misrepresentation of the facts." (Some Doctors and politicians) continue to assure (the public) "that the situation is not as serious as it is made out to be."*

***Other actions taken (this) week "included stopping all public meetings, closing of the public and University schools, ...and a voluntary agreement was made with the town's (bar) operators to close up for 30 days."*

*** "Responses to the quarantine (are) not overly vociferous;" it was pointed out that the "best authorities" advised that (the quarantine) was unlawful in the county and that the towns "should be extremely careful not to become too arbitrary in its enforcement." When (a visitor) "developed the disease the authorities indicated they intended to send him back to his (home state)." To this the health officer of (the visitor's home state) reacted by stationing guards at the state line to stop the visitor's return" because "we don't want to undertake to take care of (the visitor) who got the disease (down there) and will not, if there is any virtue in a Winchester" (rifle)!*

*** "Experts that were summoned (to help) were veterans of ...epidemics that had ravaged such ("hot spot") cities as Memphis, Mobile, Birmingham, and Atlanta." "In response to the apparent chaos that was prevalent the Congressional representatives of two states appealed to the Federal Government to send aid." (When a vaccine becomes available) "the town (is) advised to vaccinate all its citizens and to secure this (goal) a compulsory vaccination ordinance was passed." (Subsequently), "a great many were found who had never been vaccinated"... "there was one instance in which at least 20 persons in a 'saloon district' had to be handcuffed and vaccinated at gunpoint."*

*** "Despite repeated protests that the epidemic was abating, and the quarantine would be lifted soon, the situation (has) continued to stay the same or get worse." "Other indications of the worsening situation and the resulting loss of confidence can be seen in the reports of the schools being reopened only to be closed again."*

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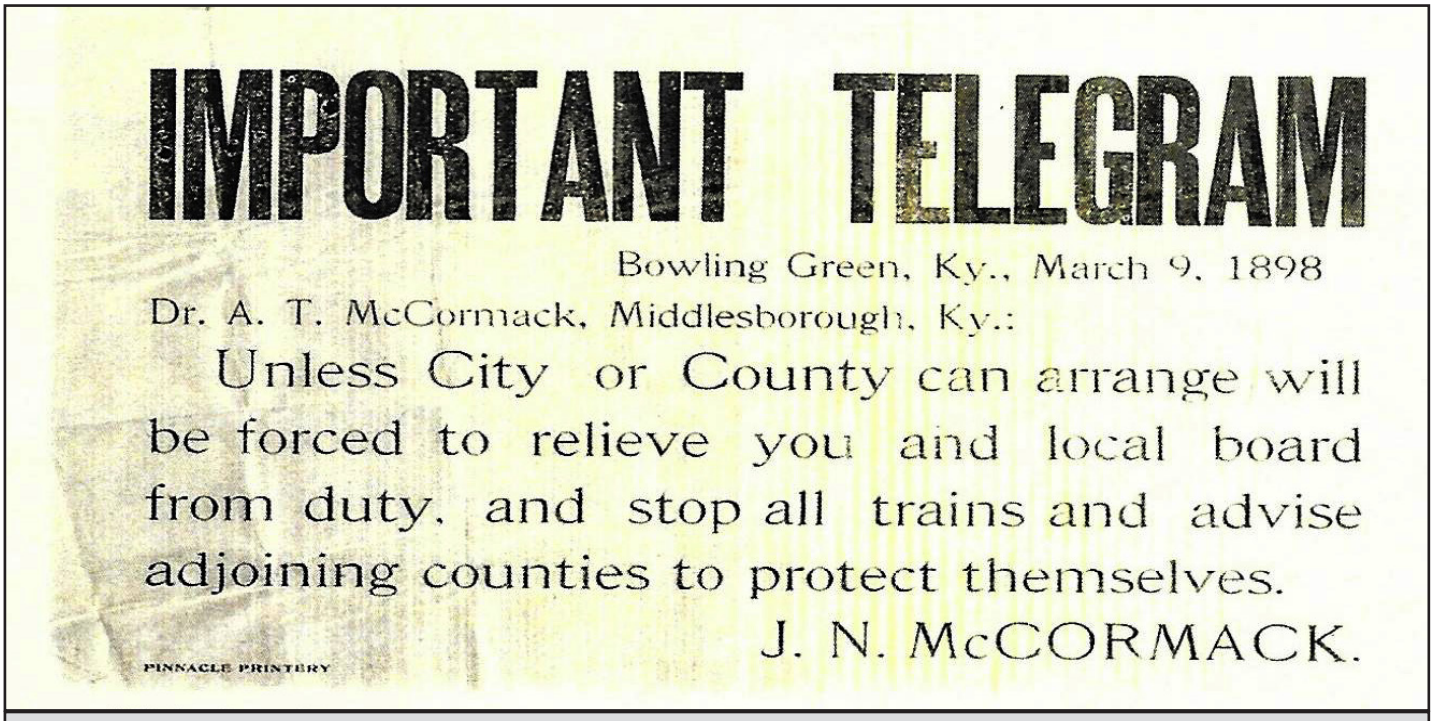

IMPORTANT TELEGRAM

Bowling Green, Ky., March 9, 1898

Dr. A. T. McCormack, Middlesborough, Ky.:

Unless City or County can arrange will be forced to relieve you and local board from duty, and stop all trains and advise adjoining counties to protect themselves.

J. N. McCORMACK.

PINNACLE PRINTERY

This is a handbill that was posted throughout Bell County, Kentucky during the epidemic in 1898.

You probably have surmised by now, my alert reader, that although the scenario presented above is very currently familiar, it actually refers to the Smallpox Epidemic of over 120 years ago-1897-1898-which struck my tiny Appalachian Southeastern Kentucky hometown of Middlesboro, population 3,185 at the time of the Epidemic. All of the items in quotations above appeared in news reports of that time, and were reported literally and accurately by Joseph S. Marcum in his excellent factual article in GATEWAY-The Journal of the Bell County Historical Society-Spring, 2020.

I was struck by the obvious similarities between this Smallpox Epidemic and the policies, politics, and controversies surrounding the current COVID-19 Pandemic. These similarities include: arguments over the seriousness of the disease; controversies about opening, closing, and reopening the schools; advice pro and con about "miscellaneous assemblage"; whether or not to close "saloons"; conflicting news items; warnings for towns "to not become too arbitrary in the enforcement" of the rules; pleading for aid from Congress; and recommendations regarding a vaccine. I guess that one could say that "the more things change, the more they stay the same".

The GATEWAY article did end on a positive note, however. The Epidemic was not as bad as feared, and "after the Epidemic was over and the quarantine lifted on April 16, 1898, there was a great urge to get on with business as usual, to place the recent adversity behind the community, and to continue pursuing the town's dream of prosperity."

May we be so fortunate some 120 years later here in 2020!

Thanks to all the Health Care Profesionals and First Resonders who have served so selflessly during this Covid Global Pandemic.

Alachua County Medical Society

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