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## Continuing Education

### COVID-19 and Advanced Practice Registered Nurses: Frontline Update

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#### ABSTRACT

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Coronavirus disease 2019 (COVID-19) emerged in 2019 and rapidly became a global pandemic, infecting millions and killing hundreds of thousands. The disease altered the practices of hospitals, clinics, and patients. These changes have implications for advanced practice registered nurses (APRNs). APRNs must remain current on best practices for treatment and diagnosis of COVID-19 while being cognizant of changes to their scope of practice. As the pandemic continues, APRNs will remain on the front lines treating patients with COVID-19 while also caring for vulnerable populations within the community. To provide high-quality care, APRNs must use a multifaceted approach that heeds ongoing updates to evidence-based practice.

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This activity is designed to augment the knowledge, skills, and attitudes of nurse practitioners and other health care providers in following current guidelines in caring for patients with COVID-19 as measured by a score of 70% on the CE evaluation quiz.

At the conclusion of this activity, the participant will be able to:

- Describe changes in APRN practice due to the COVID-19 pandemic
- Explain common challenges encountered by APRNs during the COVID-19 pandemic
- List some special requirements for the APRN working with vulnerable populations

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This activity has been awarded 1 Contact Hour of which 0.25 credits are in the area of Pharmacology. The activity is valid for CE credit until October 01, 2022.

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registered nurses (APRNs), to provide care to patients in unprecedented ways. Several of the major challenges during the pandemic have been to avoid the saturation of intensive care units (ICUs), prevent new infections, and educate people on best practices in a rapidly changing environment.

Because of the highly contagious nature of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), APRNs must be prepared to alter their normal practice to take into account the reluctance of patients to seek care for fear of exposure, the added need for personal protective equipment (PPE) and any resulting alterations to patient assessment, new policies, testing guidelines, and more. In addition, as new information is learned, APRNs must educate themselves on current best practices, participate in effective patient teaching about viral symptoms and transmission, and help mitigate the psychologic impact that the pandemic may have on themselves, patients, and colleagues.

Although common signs of infection with SARS-CoV-2 include upper respiratory symptoms—cough, shortness of breath, and difficulty breathing, as well as fever—the Centers for Disease Control and Prevention (CDC) recently added the following symptoms associated with the disease: chills, repeated shakiness with chills, headache, sore throat, and loss of smell and taste.<sup>1</sup> In addition, some patients present with gastrointestinal symptoms, such as anorexia, vomiting, or abdominal pain,<sup>2</sup> or skin conditions.<sup>3</sup> The spectrum of severity for COVID-19 ranges from asymptomatic infection to severe pneumonia with acute respiratory distress syndrome and death.

Those most at risk for serious cases include adults 65 years and older and those with preexisting conditions, such as chronic lung disease or asthma, serious heart conditions, severe obesity,

#### Introduction

The ongoing coronavirus disease 2019 (COVID-19) pandemic has compelled all health care providers, including advanced practice

diabetes, chronic kidney disease, liver disease, and those who are immunocompromised.<sup>4</sup> Current practice for mild cases is to remain home, separate oneself from others, rest, stay hydrated, monitor symptoms, and wait for recovery, which usually occurs without medical intervention. If symptoms worsen significantly, including trouble breathing, pain or pressure in the chest, new confusion or inability to rouse, or bluish lips or face, immediate medical attention should be sought.<sup>5</sup>

### Changes in Practice

For APRNs, the COVID-19 pandemic has brought with it a broad range of changes to direct patient care and also to the scope of practice that governs this role. As frontline providers, many hospital-based APRNs have had to shift focus from their area of specialization to providing acute care for patients diagnosed with the virus, while at the same time, many primary care clinics have seen dramatic decreases in patients, if they are open at all. Current physician shortages have exacerbated the need for APRNs to fill vital patient care roles as hospitals across the United States are inundated with sick patients. To aid in the process, various states have enacted emergency legislation to accelerate licensing of nurses while also expanding the scope of practice for both APRNs and physician assistants.<sup>6</sup> To ensure that all nurses are able to keep abreast of regulatory and policy changes occurring at the state level, the American Association of Nurse Practitioners has established a webpage with links to individual state legislatures, highlighting what changes have been made to scope of practice.<sup>7</sup> APRNs currently working in practice should review these resources periodically to ensure that they are able to fully use policy change for improving patient care.

The changes made by individual states are aligned with emergency action taken by the Centers for Medicare and Medicaid Services (CMS).<sup>8</sup> On March 30, 2020, CMS authorized an emergency declaration to increase practice flexibility for APRNs. This included relaxing physician supervision requirements for APRNs to provide patient care, order specific tests, and prescribe certain medications. These actions, as noted by CMS, are intended to allow APRNs to practice to the fullest extent of their licenses.<sup>8</sup> However, scope of practice laws are set by state boards of nursing, making it imperative for practitioners to review changes in practice as they relate to the state in which they reside.

While the regulatory and policy changes that have occurred as a result of the current pandemic provide a pathway forward for promoting full practice authority for APRNs, these changes are occurring at a time when most practitioners are facing daunting challenges in establishing and maintaining safe clinical care. Presently, media reports of shortages of critical PPE abound.<sup>9</sup> Without access to critical PPE, APRNs risk the health and safety of their patients as well as themselves.

In addition, there is emerging evidence from the front line that nurses and other health care workers are experiencing significant emotional distress as a result of providing direct patient care during this pandemic.<sup>10</sup> Past research on the mental health of frontline health care workers providing care during pandemics has shown significant mental health effects that lasted for up to 12 months after the end of the event.<sup>11</sup> Addressing this problem in the present is, therefore, critical to fortifying and sustaining the mental health and well-being of clinicians for years to come.

Further contributing to the challenges facing APRNs during the pandemic are patient factors that can make it difficult to provide effective care. Research indicates that many patients are waiting to seek needed and routine medical care over fear of contracting the virus.<sup>12</sup> For patients who have contracted the virus and who experience symptoms, anecdotal evidence suggests that some are

delaying seeking care over concerns about health care costs. These factors will result in a decline in patient health that will impact the population for years to come. At a time when APRNs are being given significant opportunities to expand their practice, practitioners will need to come together to determine how to solve these problems in an effort to help guide individuals, communities, and the population to optimal health.

### Testing for COVID-19

The CDC has continually updated its testing recommendations throughout the pandemic. Current recommendations indicate that there are 3 priority groups for testing. The high-priority group includes hospitalized patients, symptomatic health care providers, first responders, long-term care facility workers, and symptomatic residents of long-term care facilities or other congregate living settings.<sup>13</sup> Clinicians are first encouraged to test for other causes of respiratory illness.<sup>13</sup> The CDC directs clinicians to work with their state and local health departments to coordinate testing, or use clinical laboratories with Emergency Use Authorizations for COVID-19 viral testing.

For initial testing, an upper respiratory specimen is recommended, with preference for a nasopharyngeal swab.<sup>14</sup> If the patient produces sputum, the sputum can be tested for SARS-CoV-2, but induction of sputum is not recommended.<sup>13</sup> The gold standard for testing is based on reverse transcriptase–polymerase chain reaction (RT-PCR) where viral RNA is detected in swabs. Saliva or blood samples have lower sensitivity and are not recommended.<sup>15</sup> Chen et al<sup>16</sup> found that sputum samples remained positive for up to 39 days and fecal samples remained positive for up to 13 days after the negative follow-up pharyngeal samples. It is not known whether live virus, capable of reproduction or infection, was present in these patients, only that viral RNA was present. Until it is known whether recovered and discharged patients still harbor any live infectious virus, APRNs must continue to use appropriate PPE on all patients, even those suggested to no longer be contagious.

Limited personnel and resources make RT-PCR unviable for all the testing needed of nonsymptomatic individuals to prevent community spread. The US Food and Drug Administration (FDA) has authorized the use of more than 20 serologic tests under Emergency Use Authorizations,<sup>17</sup> and more than 380 test developers have indicated they will submit Emergency Use Authorization requests for tests.<sup>18</sup> Serologic tests detect immunoglobulin (Ig) G or IgM specific to viral epitopes. The presence of IgM suggests that the patient has an active or recent infection. The presence of IgG antibodies may indicate a past infection but does not exclude recently infected patients who could still be contagious, especially if IgM antibodies are simultaneously detected.

APRNs must be cautious interpreting results that are negative for antibodies. Patients with negative antibody tests may still have early-stage infections, because the presence of antibodies was < 40% among patients within 1 week since onset.<sup>19</sup> The sensitivity and specificity of the tests vary significantly,<sup>20</sup> and it is important for APRNs to be aware of the limitations of the various tests and appropriate uses. Tests with relatively poor positive or negative predictive values can lead to an incorrect diagnosis or a false sense of security.

### Treatment Challenges

As of May 1, 2020, more than 683 interventional clinical trials for COVID-19 were listed on ClinicalTrials.gov.<sup>21</sup> The US National Institutes of Health publishes recommended treatments for COVID-19, but the recommendations change frequently, so APRNs should regularly check the webpage to be up to date regarding treatment

guidelines.<sup>22</sup> The following is a summary of investigational drugs and therapies as of May 1, 2020:

- **Antivirals or immunomodulatory therapy:** There are insufficient data to recommend for or against any antiviral or immunomodulatory therapy in patients with severe COVID-19.<sup>23</sup>
- **Systemic corticosteroids:** The use of systemic corticosteroids for mechanically ventilated patients without acute respiratory distress syndrome is not recommended.<sup>23</sup>
- **Hydroxychloroquine or chloroquine:** Although preclinical results are promising, there remains little evidence supporting their use for COVID-19.<sup>24–26</sup> However, in cases when they are used, the patient should be monitored for prolonged QTc intervals.
- **Convalescent plasma:** Convalescent plasma has been used successfully for other viral infections; however, there are still no data to recommend for or against its use. The FDA allows use of convalescent plasma as an investigational product, which can be obtained from FDA-registered blood establishments.<sup>27</sup>
- **Remdesivir:** The National Institutes of Health released interim results on remdesivir showing a significant decrease in time to recovery (15 vs 11 days) and a potential decrease in mortality,<sup>28</sup> and just 2 days later issued an Emergency Use Authorization for remdesivir to treat severe COVID-19. Adverse effects of remdesivir included respiratory failure or acute severe respiratory distress, cardiopulmonary failure, hypokalemia, hypoalbuminemia, anemia, and thrombocytopenia, among others.<sup>29</sup>

## Patient Education

Education plays a very important role helping to prevent the spread of disease between family members and friends, and APRNs must be prepared to teach their patients. The CDC recommends: wash hands often with soap and water for at least 20 seconds, avoid touching eyes/nose/mouth with unwashed hands, avoid close contacts, cover your mouth and nose with a cloth face cover when around others, cover coughs and sneezes, clean and disinfect high touch surfaces often.<sup>30</sup>

Recent reports have surfaced about patients on angiotensin-converting enzyme inhibitors and angiotensin II receptor blockers being at higher risk for COVID-19 infection due to these drugs' upregulation of angiotensin-converting enzyme 2 expression. However, the American Heart Association, Heart Failure Society of America, and the American College of Cardiology recommend that patients continue to take these medications.<sup>31</sup> Patients on immunosuppressive medications should consult with their health care practitioners individually to determine whether modification or discontinuation is appropriate, because there are currently no recommendations to arbitrarily discontinue these medications.

An unhealthy diet, high in fat, contributes to impaired T- and B-cell function, can lead to B-cell apoptosis, and contribute to B-cell immunodepression, which has implications for host defense against viruses.<sup>32</sup> Notably, T- and B-cell counts in patients with severe COVID-19 have been reported to be depressed.<sup>33</sup> Vitamins and supplements may also be also beneficial. Vitamin D has been suggested to affect the severity and spread of COVID-19<sup>34</sup> and is reported to protect against respiratory tract infections.<sup>35</sup>

## Meeting the Needs of Vulnerable Populations

The pandemic has highlighted the fragility of certain vulnerable groups in the larger population.<sup>36</sup> Health care workers rapidly identified the elderly as being most at risk for severe symptoms and death from the virus.<sup>37</sup> Beyond direct effects of infection, experts

have noted that the elderly are more likely to develop mental and behavioral health issues, including anxiety, agitation, and sleep difficulties.<sup>38</sup> Loneliness and isolation due to stay-at-home orders can increase the elderly person's risk of developing depression and are associated with an increase in cardiovascular risk factors as well.<sup>39</sup> The marked vulnerability of older adults during the pandemic has prompted the CDC to issue specific recommendations for long-term care facilities and nursing homes.<sup>40</sup>

APRNs are in position to offer support for improving the older adult's mental health and quality of life. Providing older adults with videoconferencing technologies to stay connected to family and friends can be useful.<sup>39</sup> APRNs can also provide patients and family members with a critical lifeline for communication. This can be vital if the patient must be intubated or becomes unable to communicate directly with family and friends.

Journalists studying pandemics have noted that with imposition of stay-at-home orders, a surge in interpersonal violence (IPV) against women and children is common, a trend that is consistent worldwide.<sup>41</sup> APRNs must remain aware of this problem, include IPV assessment of all patients seeking care,<sup>41</sup> and provide referrals and supportive care when warranted.

Immigrants have also been identified as a vulnerable population facing unique challenges as a result of the pandemic. APRNs should be aware that to address the hesitation of immigrants to seek health care, the US Citizen and Immigration Services has released guidelines indicating that seeking health services will not adversely affect an individual's immigration status.<sup>42</sup> APRNs working with immigrant populations should, therefore, work to educate immigrants about the policy, symptoms of the disease, and the importance of seeking care should the need arise.

Although a comprehensive understanding of how COVID-19 affects pregnant women is lacking, research regarding respiratory infections in pregnant women has demonstrated that they are more susceptible to these infections.<sup>43</sup> Further, when respiratory infections occur in this group, they are often more severe, suggesting that COVID-19 could have a unique impact on pregnant women.<sup>43</sup> Maternal mental well-being can have a systemic effect on fetal development and health.<sup>44</sup> APRNs treating pregnant women are encouraged to screen patients for mental health issues, including sleeping patterns and suicidal ideation, and a perinatal psychiatrist should be contacted, if warranted.<sup>44</sup>

Current data suggest that racial and ethnic minority groups, especially blacks and Hispanics, are disproportionately affected by COVID-19.<sup>45</sup> Suboptimal socioeconomic conditions, underlying health conditions, such as diabetes and hypertension, and access to care barriers may contribute to the substantially higher rates of illness and death now evident in these vulnerable racial and ethnic minority groups. Efforts are underway to fully understand and mitigate risks through research, education, and community action.<sup>45</sup>

Because APRNs are committed to providing care for the whole patient, an effort must be made to assess the complete health needs of vulnerable groups. Additional patient assessment for key issues, including IPV and mental/psychosocial health, will play a significant role in improving the quality of care delivered to patients during the pandemic.

## Promoting Mental Health and Well-Being During the Pandemic

The ongoing pandemic has contributed to an increase in concerning mental health conditions. Psychologic symptoms related to the pandemic have already been noted, including fear, anxiety, paranoia of going to public places, and even panic attacks due to the lack of essential personal hygiene items or PPE. Social distancing



rules may exacerbate feeling of isolation, loneliness, and depression as normal support systems have been disturbed due to the pandemic. Frontline health care workers might develop psychiatric symptoms of mental exhaustion, work stress, fear of contamination, insomnia, burn-out, and even posttraumatic stress disorder).<sup>10,11</sup> Reducing feelings of loneliness and promoting social connection and communication serves as a protective factor against depression, anxiety, and self-harm.<sup>46</sup>

Telepsychiatry and teletherapy have become a lifeline for therapeutic interventions and treatment of affected individuals with mental and substance use disorders and individuals who are under the stress and in crisis from COVID-19.<sup>47</sup> Psychiatric APRNs have the ability to link individuals with community resources and services, determine the best way of delivering mental health services to vulnerable populations, and deliver interventions to promote individual well-being. They can guide patients about developing the strategies of prevention of overexposure to anxiety-inducing media and follow only trusted and reliable sources. Psychiatric APRNs should also be prepared to initiate alternative therapy such as on-line support groups, debriefing, mindfulness, and meditation exercises for mental health promotion of frontline health care workers who are exposed to trauma and stress.

### Other APRN Considerations

Throughout the world, people older than 60 years are instructed to stay home and practice social distancing to prevent the spread or contacting the infection. Retired APRNs, clinicians, or APRNs and other clinicians close to the retirement age may benefit from determining whether their roles can be reassigned to areas with less risk of exposure to COVID-19 such as telehealth, consulting, clinical and organizational problem solving, public speaking, or serving as liaisons in public and community organizations.<sup>48</sup>

During the COVID-19 pandemic, time is critical in saving the lives of infected patients. The evidence-based practice suggests that the multifaceted integrative team must include clinicians with great expertise of knowledge, practice, and clinical decision-making skills on how to operate ventilators, and even multiple ventilators, in a rapid-paced environment related to COVID-19 treatment of the patients in the ICU.<sup>49</sup> APRNs should be prepared to work in quick-acting teams and be current in best practices of ventilator use.

Health care professionals are learning a great deal of strategies related to the pandemic. Early testing, surveillance, and targeting and quarantining of infected individuals will help in containing the spread of disease. The goals are clear: save as many lives as possible and prevent future pandemics by mobilization of resources, training, and building health care teams. How can we accomplish this? APRNs must use their abilities to educate populations on how to prevent the spread of infectious diseases, enhance our expertise based on evidence-based practice guidelines, restructure public health, establish new health care policies and procedures, and engage stakeholders in prevention of further pandemics.

### Summary

In light of the impact this pandemic has had globally, APRNs on the front line are best advised to remain current with evidence-based practice protocols, testing indications and procedures, current treatments and treatment challenges, updates to patient education guidelines to promote prevention, protecting vulnerable populations, and promoting mental health. Our world and APRN practice has forever changed. Adapting to this “new normal” will continue to present challenges we must continue to overcome together.

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