

VIEWPOINT

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Internal Medicine and COVID-19

Although the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is novel, many clinicians would consider coronavirus disease 2019 (COVID-19) an internal medicine disease, with striking similarities to the early days of the HIV/AIDS pandemic nearly 40 years ago. Evaluating the protean manifestations of COVID-19 and determining the optimal approach to treating patients are basic elements of internal medicine. Hypoxia that can progress to acute respiratory distress syndrome, renal failure, myocarditis, and thrombosis are conditions that internists have always treated.

The most pressing clinical issues have included determining whether the traditional treatment modalities are the right ones for each manifestation of COVID-19, dealing with the huge volume of patients that has challenged staffing and resources, and having enough personal protective equipment to keep everyone safe.

Several surprising aspects of COVID-19 have increased the challenges of treatment and prevention of new infections. SARS-CoV-2 has a remarkable range in that the infection can be entirely benign and asymptomatic in one person, yet rapidly lethal in another person. Moreover, individuals infected with SARS-CoV-2 are most infectious to others before they have symptoms and soon after they develop symptoms. If only those who were symptomatic could transmit the virus, controlling the pandemic would be considerably easier and less worrisome.

The clinical care of patients has been complicated by the lack of evidence from randomized clinical trials to guide treatment. Observational data about patient care can be obtained quickly. Observational studies, however, are inherently subject to confounding and lack randomized controls. Thus, even when data are rigorously analyzed, observational studies can be helpful but cannot substitute for data from randomized clinical trials. Consider the use of corticosteroids in the treatment of COVID-19, which has been one of the most challenging issues. Early in the course of the pandemic, an observational study from Wuhan, China (where many of the first cases of were reported), described an association between methylprednisolone and reduced mortality.¹ In 201 patients with COVID-19 pneumonia, 42% developed acute respiratory distress syndrome and treatment with methylprednisolone was associated with a significantly decreased risk of death (hazard ratio, 0.38; 95% CI, 0.20-0.72). Although this intriguing study suggested a benefit from the use of a widely available inexpensive medication, the findings could have been wrong, particularly because numerous clinical trials have not found corticosteroids to be effective in individuals with acute respiratory illness.

The study by Wu et al¹ was followed by a larger open-label randomized clinical trial of 6400 patients with suspected or confirmed SARS-CoV-2 infection.²

The Randomized Evaluation of Covid-19 Therapy trial² confirmed that steroids have a protective effect in patients with severe respiratory disease requiring invasive mechanical ventilation or oxygen support without ventilation, but not in patients who did not require respiratory support at baseline.

Additional data suggested higher mortality rates among patients with COVID-19 requiring invasive mechanical ventilation, leading to a movement to avoid invasive mechanical ventilation whenever possible. In addition, concerns about or limited supplies of ventilators also spurred interest in noninvasive respiratory support. One approach is prone positioning, an adjunctive therapy used for many years for intubated patients with severe acute respiratory distress syndrome. Early in the pandemic, clinicians began using prone positioning for patients who were not yet intubated. In a case series, investigators in New York City studied 29 patients with COVID-19 and acute hypoxemic respiratory failure requiring either up to 15 L/min of oxygen by facemask or 6 L/min of oxygen by nasal cannula. All patients who were able to lie on their stomachs (25 of 29) had increases in oxygen saturation as measured by pulse oximetry (SpO₂), although the magnitude of improvement varied widely (range, 1%-34%). A total of 19 patients (66%) had SpO₂ levels of 95% or greater after 1 hour of prone positioning and were less likely to require intubation than patients whose SpO₂ levels remained less than 95% after 1 hour of prone positioning (37% vs 83%).³

The pandemic also has illustrated the need for sufficient numbers of intensivists, and many hospital systems have been devising innovative strategies and re-deployment of personnel to meet the challenges of a sudden increased demand for intensive care. A great public spirit was shown by the medical profession (with many retired or nonpracticing physicians who refreshed their intensive care unit skills) to provide care for critically ill patients when the demand exceeded the supply of intensivists.

Despite the best efforts of physicians and public health experts, morbidity and mortality from COVID-19 have continued to increase, and it is likely that the reported rates of infection and the numbers of deaths underestimate the actual increased death toll associated with the pandemic in many states.⁴ Similarly, in a seroprevalence data analysis of SARS-CoV-2 infection, including 10 regions across the US with serum samples from 16 025 persons, Havers et al⁵ estimated that the estimated total number of infections (extrapolated from the measured proportion of individuals with positive SARS-CoV-2 serological samples) was between 6- and 24-fold higher than the number of confirmed COVID-19 cases reported in each location prior to the study. This study highlights the importance

of expanding active surveillance strategies, primarily with polymerase chain reaction testing, to identify asymptomatic or minimally symptomatic persons infected with SARS-CoV-2 before they are able to infect others.

The pandemic also has shined a spotlight on many of the inequities and deficiencies in the patchwork health care system in the US. Soon after the start of the pandemic, it became clear that lower-income persons were much more vulnerable to contracting SARS-CoV-2 infection, at least in part because they live in more crowded residences and have jobs where working remotely is not possible. For example, Sterling et al⁶ interviewed 33 home health care workers who were caring for patients with SARS-CoV-2 infection in New York City. The overwhelming majority were women (97%), 64% were Black individuals, and 18% were Hispanic individuals. In these conversations, the authors⁶ identified the major themes that emerged, which were centered around the feelings of vulnerability and invisibility of these frontline workers, the variability in their training as well as in the information and supplies provided by their employment agencies, and their feelings of being forced to make difficult trade-offs in their work and personal lives.

The extent of mortality, primarily among older individuals, but sparing no age group, also has brought to the fore the important issues of palliative care and advance care planning. The inadequacies of institutional care for older patients who require short-term or long-term care also has become more apparent.⁷ Nursing homes have struggled to keep their older residents and their employees safe with adequate personal protective equipment. Many have banned all or most visitors,

which is wrenching for families who cannot visit their parents and grandparents who sorely miss their grandchildren.

There has been some encouraging news in regard to the efficacy of personal protective equipment. At a tertiary care hospital in Long Island, New York, investigators⁸ found that the prevalence of COVID-19 antibodies among hospital employees was lower than what had been reported for the surrounding general community that is consistent with personal protective equipment being effective at preventing exposure of hospital workers. In addition, researchers found via laboratory testing that N95 masks with intact elastic straps or if sterilized maintained their effectiveness even if they had passed their expiration point, offering alternatives to the scarcity of N95 masks.⁹

The pandemic has led to a major decrease in the use of health services unrelated to COVID-19.¹⁰ Even though *JAMA Internal Medicine* maintains that sometimes less health care can be better, a positive aftermath of the COVID-19 pandemic would be if it became clearer what medical care is necessary and what is not. Although it is critical that essential services and care remain readily available, there is tremendous waste in US health care that is approaching \$1 trillion each year. A closer look at the data and the outcomes following the substantial reduction in health services during the pandemic could help inform a more judicious use of health care resources and procedures going forward. The COVID-19 pandemic has presented many challenges in internal medicine and beyond. As more is learned about treatments, more has been learned about the importance of public health and the wise use of health care.

ARTICLE INFORMATION

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