The coronavirus disease 2019 (COVID-19) pandemic has affected nearly every aspect of medicine and raised numerous complex ethical dilemmas for clinicians. This public health crisis has changed how neurologists provide care for individuals while honoring our obligation to maintain the health of the general population.\(^1,2\) In the setting of a public health crisis, such as the current pandemic, the goals of ensuring public welfare often come into conflict with the advocacy for an individual patient.\(^2\) This is an unsettling notion for clinicians who are accustomed to tailoring care to the individual. As we navigate the peaks and valleys of the COVID-19 pandemic, it is our ethical duty to provide equitable patient care, minimize harm, respect autonomy, and maintain trust.\(^3\)

As neurologists, we are faced with multiple moral dilemmas, including allocating scarce resources, assessing the risk of delaying valuable workup and procedures, and addressing sensitive goals-of-care discussions remotely. In this review, we discuss ethical issues clinicians face in delivering neurologic care during the COVID-19 pandemic with a focus on ethical principles guiding patient treatment, as well as our ethical responsibility to patients’ families, health care workers, and trainees.

**Resource Allocation**

As COVID-19 continues to have regional and episodic surges throughout the US, there is an extraordinary demand on critical care resources potentiating scenarios where the demand for these limited resources may exceed the supply. This leads to the dilemma of deciding how medical resources such as personal protective equipment (PPE), ventilators, hospital beds, medications, and health care providers can be distributed fairly.\(^4,5\) Each health care system has been tasked with developing a contingency plan for the allocation and triage of scarce resources under the utilitarian goal of maximizing the number of lives saved.\(^6\) Although there is no universally agreed-upon framework for allocation of resources in pandemics, contingency plans tend to converge on 4 fundamental values: 1) maximizing the benefits produced by scarce resources; 2) treating people equally; 3) promoting and rewarding vital contributions to public health; and 4) giving priority to the worst off.\(^5\) A widely used triage protocol developed at the University of Pittsburgh Medical Center (UPMC) incorporates these fundamental values and assigns priority on the basis of illness severity scores and comorbidities, with younger patients favored in the case of a tie.\(^7,8\)

Maximizing benefit is often interpreted as saving as many lives as possible. Within the triaging framework, however, this may involve an evaluation of premorbid or expected functional status and quality of life or expected life-years. This issue is particularly relevant to neurologists because external quality-of-life assessments can discriminate against people with neurologic disabilities. Quality of life is a subjective concept based on personal perception and adaptation to disability and should be addressed by clinicians in conversations with patients and surrogate decision makers to determine individual preferences for care and advance directives.\(^2,7\) As such, most agree that cognition, physical limitations, and perceived quality of life should not be a basis to exclude individuals from the allocation of scarce resources. Experts recommend against the categoric exclusion of a group of patients and instead support allowing all patients to be eligible and giving priority to those who are most likely to benefit.\(^1,2,6\)
Additional key factors necessary for scarce resource allocation planning include soliciting multidisciplinary input, basing decisions on best medical evidence, maintaining consistency and transparency, and ensuring public awareness and trust in the process.\textsuperscript{1,2,5,6,8} Neurologists provide an important perspective in creating resource-allocation plans and serve to counteract any potential nihilism or negative bias toward patients.\textsuperscript{3} Utilizing a triage team is recommended to consistently implement the agreed-upon plan and spare bedside providers from the moral distress of making these difficult decisions that might otherwise compromise the clinician-patient relationship.\textsuperscript{1,2,5,6,8}

\textbf{Disease Management and Access to Care}

Individual autonomy remains important during the COVID-19 pandemic, particularly because of the inherent vulnerability of those with neurologic disabilities.\textsuperscript{2,6} Neurologists should make their patients and surrogate decision makers aware of the effects of the pandemic on both outpatient and inpatient care and encourage them to make informed decisions based on a risk-benefit assessment. For example, those who take chronic immunosuppressant medications often have an increased risk of infection and may need to take additional precautions during the pandemic.\textsuperscript{2} Another issue to consider is that patients with an underlying neurologic condition may not readily recover if they become infected with COVID-19. When it comes to patient care, our goal as neurologists should be to maximize the benefit to the individual while considering the community at large and concomitantly minimize potential harms.

Neurologists have a professional duty to continue ensuring high-quality specialty care for acute and chronic neurologic issues during the pandemic. Outpatient care has been significantly affected by reduced availability of in-person clinic visits and significant delays in nonurgent diagnostic testing, clinician-administered treatments (eg, botulinum toxin, intravenous immunotherapies, and surgical procedures). Important aspects of continuing care include access to medication refills, interim plans for management of symptoms, and open channels of communication.\textsuperscript{2,10}

The delivery of inpatient neurologic care during the pandemic has been affected by multiple process changes to provide necessary care, promote safety, and conserve available resources. For the benefit of the surrounding communities and smaller hospitals, tertiary care centers have a responsibility to accept referrals for acute neurologic issues while being mindful of local pandemic influences in determining bed availability. If intensive care unit (ICU) beds are limited, triage plans may incorporate the use of non-ICU beds for lower acuity patients.\textsuperscript{9}

The delivery of stroke care during the pandemic has raised several ethical issues. Although COVID-19 status should not disqualify a person from receiving standard stroke care, changes have been made to stroke protocols to minimize risk to health care providers. Among these changes is earlier intubation of individuals at high risk of clinical deterioration before receiving interventional procedures. Although this approach poses the risk of intubation itself, it reduces subsequent potential harm to the patient and reduces exposure risk for the care team.\textsuperscript{9,11} Frequency of neurologic examination checks should be based on acuity and risk for clinical decline while simultaneously minimizing staff exposure, but critical examination changes may be missed owing to limitations in the availability of staff, infection prevention strategies, and lack of family presence at bedside. Contact and infection risk can be reduced by combining examinations with medication administration.\textsuperscript{4} Additional threats to the delivery of high-quality inpatient care include limited staffing, disruption of usual care teams due to reassignment, delays in testing and imaging, and postponed or delayed interventions because of COVID-19 testing status, and limited discharge options for neurorehabilitation.\textsuperscript{9}

\textbf{Responsibility to Families}

Ethical principles remain constant in times of public health crises. Respect for persons and in particular respecting patient’s wishes for their medical treatment and goals of care remain paramount during the COVID-19 pandemic.\textsuperscript{6} With the risk of limited health care resources because of the pandemic, it has become increasingly important for patients to document their wishes and discuss their values and priorities with surrogate decision makers. As a result of public health measures to slow the spread of the virus, face-to-face interactions between clinicians and patients have been limited, making goals-of-care discussions difficult for those with severe neurologic illness who require the presence of a surrogate decision maker to act as their voice.\textsuperscript{10} Honest and transparent communication between the provider and surrogate decision maker is vital for the maintenance of trust during this trying time.

End-of-life discussions have been particularly challenging in the hospital setting with visitor restrictions limiting family presence at bedside, which may carry the downstream effect of causing complicated grief.\textsuperscript{12} With hospitals instituting visitor restrictions, surrogate decision makers are less accessible to provide additional details on patient history and presenting symptoms and are often asked to make major care decisions remotely.\textsuperscript{13} Surrogate decision makers may elect to continue aggressive care because of poor understanding of the severity of illness or guilt resulting from the inability to visit. Alternatively,
surrogate decision makers may also transition more quickly to comfort care or hospice to be able to visit at the bedside.\(^{10}\) This presents a challenging ethical dilemma considering that maximizing lives saved drives the need to limit visitation, thereby leading to unintentional harm to patients and families.

**Responsibility and Impact on Health Care Providers and Trainees**

The COVID-19 pandemic has placed an extraordinary level of stress on health care providers. The extensive workload, dearth of knowledge, and rapidly changing landscape of the pandemic have left health care workers feeling a sense of powerlessness and moral distress putting them at high risk for developing psychologic disorders and burnout.\(^ {12} \) At the top of the list of clinicians’ stressors is the lack of adequate PPE and the fear of contracting severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) and transmitting the infection to their loved ones.\(^ {14} \) Another concern among clinicians is being asked to care for patients beyond their usual scope of practice and comfort level. This is particularly relevant to neurologists who may be accustomed to outpatient subspecialty practice and are now being asked to work on inpatient service lines when colleagues become ill or hospitals become inundated.\(^ {2} \)

The COVID-19 pandemic has also created new ethical challenges for involving medical students and resident trainees in the care of infectious patients, particularly in the initial surge of the pandemic when little was known about the virus and supplies of PPE were limited. Many medical students and trainees have expressed feelings of anxiety and vulnerability mixed with a duty to serve the sick.\(^ {15} \) Trainees who choose to participate in these high-risk settings should be provided with the knowledge, skills, and equipment to safely care for patients.\(^ {2} \) Conversely, trainees who do not feel comfortable putting themselves at risk should not be made to do so or be criticized or made to feel guilty about their decision. Medical education has largely shifted to remote-access learning, and patient care and procedural experience have become more varied, with some neurology trainees needed to provide care for individuals with COVID-19. These changes in neurology resident education raise concerns regarding residents potentially not achieving the necessary educational milestones in neurology training. Nevertheless, training during a pandemic has provided rich educational opportunities in bioethical principles (eg, autonomy and justice), as well as valuable skills in advance care planning, professionalism, and altruism in neurology.\(^ {2,15} \)

**Conclusion**

We are living in unprecedented times. The COVID-19 pandemic has permeated every aspect of our lives, from how we perform our jobs, care for our patients, and educate our trainees, to how we go to the grocery store and interact with family and friends. Core ethical principles remain the same during the time of crises. As neurologists, we must adapt our clinical practice to the many ethical challenges the COVID-19 pandemic creates to optimize care for both our neurology patients and the general community.

---


---

**Disclosures**

DES and KLT report no disclosures

**Dionne E. Swor, DO**  
Assistant Professor  
Department of Neurology - Section on Neurocritical Care  
Wake Forest Baptist Health  
Winston-Salem, NC

**Kristi L. Tucker, MD**  
Clinical Associate Professor  
Department of Neurology - Section on Neurocritical Care  
Wake Forest Baptist Health  
Winston-Salem, NC

**JANUARY 2021 PRACTICAL NEUROLOGY 55**