The Response of the *Anesthesia & Analgesia* Community to Coronavirus Disease 2019

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GLOSSARY

COVID-19 = coronavirus disease 2019; **SARS-CoV-2** = severe acute respiratory syndrome coronavirus 2; **WHO** = World Health Organization

Long may they kiss each other, for this cure!
O, never let their crimson liveries wear!
And as they last, their verdure still endure,
To drive infection from the dangerous year!
That the star-gazers, having writ on death,
May say, the plague is banish'd by thy breath.

—Venus and Adonis, William Shakespeare (1593)

The novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) first appeared in late 2019, most likely in Wuhan, the capital city of the landlocked Hubei province in the People's Republic of China. In January 2020, SARS-CoV-2 was identified in an initial cohort of patients in Wuhan who were acutely ill with viral pneumonia.

In February 2020, SARS-CoV-2 was subsequently defined by the World Health Organization (WHO) as the causative agent of the emerging zoonotic coronavirus disease 2019 (COVID-19). Given not only the efficient human-to-human, droplet transmission of SARS-CoV-2 but also extensive domestic and international travel in and out of Central China, COVID-19 spreads rapidly. Disease containment efforts largely failed, and the WHO in March 2020 declared a global pandemic status for this insidious virus and viral disease.

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At the time of writing this editorial in mid-April 2020, according to the very reputable COVID-19 Dashboard by the Center for Systems Science and Engineering at Johns Hopkins University (https://coronavirus.jhu.edu/map.html), there have been worldwide 2,367,758 confirmed, documented cases of COVID-19 and 163,134 reported disease-related deaths—equating to a 6.9% case fatality rate. There have hopefully been an equal or much greater number of mildly symptomatic or asymptomatic, undocumented cases of COVID-19—thus promoting herd immunity as we intently await the development, large-scale production, and widespread availability of a safe and effective antiviral agent and/or vaccine.

Herd immunity (see Appendix) occurs when enough of the population becomes immune to a disease like COVID-19 for its sustained transmission to be disrupted. As more individuals become immune, newly infected ones are less able to transmit the disease, and the spread of the disease steadily decreases. This phenomenon provides an indirect form of protection for those who are not immune to the infectious disease.[1]

COVID-19 remains a rapidly evolving and thus very fluid disease—about which much is still unknown. However, what is clear is the tremendous adverse impact COVID-19 is having on the health and well-being of the world's population. The current global pandemic is concomitantly putting enormous stress on health care systems and health care providers. In the absence of timely, valid, and pertinent information, many clinicians are inadequately informed and insufficiently prepared or equipped to manage this new disease.

Anesthesia & Analgesia is committed to assisting our diverse audience in addressing the current COVID-19 pandemic. We, thus, on March 18, 2020, issued a general call for related articles. We also solicited specific

topical articles from various thought leaders and content experts.

We greatly appreciate the outstanding efforts made by these authors—many of whom are working directly and tirelessly on their own health care frontlines—to promptly write these articles. We acknowledge the tremendous and vital contribution and team work of our Journal editors, editorial support staff, and publisher. This COVID-19 response has brought even greater awareness of the importance of the symbiotic relationship between *Anesthesia & Analgesia* and its affiliated specialty societies.

To facilitate rapid publication, submitted articles focusing on COVID-19 have undergone fast-track review, and if accepted, they were published online, with immediate free access, as soon as possible. We have assembled a number of these salient articles in the current themed issue of *Anesthesia & Analgesia*. Other articles will be published in the coming months as more knowledge is gained about COVID-19, including its longer-term effects on patients, their health care providers, and health ecosystems writ large.

As presciently described in 3 articles in the July/August 2005 issue of the journal *Foreign Affairs*, the recent emergence of a novel viral strain like SARS-CoV-2 and the ensuing COVID-19 global pandemic were by all accounts biologically, historically, culturally, and politically inevitable.[2–4] COVID-19 is only the most recent of a litany of so-called "emerging infectious diseases" that have opportunistically infected humans for centuries and likely for millennia.[5,6]

Yet as Rebecca Solnit poignantly observed in her 2010 book titled, *A Paradise Built in Hell*, "Disaster doesn't sort us out by preferences; it drags us into emergencies that require we act, and act altruistically, bravely, and with initiative in order to survive or save the neighbors, no matter how we vote or what we do for a living."[7]

Each human generation has faced and effectively risen to meet its own unique, often defining, and seemingly existential challenge. And so we humbly and optimistically believe will likewise be our eventual and ultimate successful trajectory with COVID-19.

APPENDIX

The contagiousness of a disease can be measured by its reproduction number (R_0), which is defined as the mean number of susceptible individuals who are expected to contract the disease (secondary cases) from exposure to a single infected person. For coronavirus disease 2019 (COVID-19), R_0 is currently estimated to be 2–3. By comparison, seasonal influenza has an R_0 of 1.3; the 1918 influenza has an R_0 of 1.8; whereas rubeola has an R_0 of 12–18 (the highest of any infectious, communicable disease). The proportion of the population needed to become immune to achieve herd immunity (the herd immunity threshold) is calculated as $1 - (1/R_0)$. For severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), applying an R_0 value of 2.5, this equates to a herd immunity threshold of 60%.[8–10]

DISCLOSURES

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