

COMMENTARY

Continuing to Challenge the Paradigm of What Is Possible in Pharmacy Education and Practice Post-COVID-19

Frank Romanelli, PharmD, MPH^{a,b}

^a University of Kentucky, College of Pharmacy, Lexington, Kentucky

^b Executive Associate Editor, *American Journal of Pharmaceutical Education*, Arlington, Virginia

Submitted January 7, 2021; accepted January 27, 2021; published June 2021.

The COVID-19 pandemic has caused boundless disruptions to every element of life. It has also brought with it lessons from the past that will likely extend into the future as humans continue to interface with the ever-increasing threats of zoonotic diseases. The pandemic has challenged the profession and the Academy to adjust, modify, and adapt. It has also stretched the bounds of what had previously been thought possible within the realms of medicine. As the Academy begins to reach and crest the apex of the epidemic it should be reminded of the many lessons associated with the pandemic and of the constant need to challenge the paradigm of what is possible.

Keywords: education, academia

The COVID-19 pandemic has taught us many things. In a way we are learning and relearning the things we probably should have already known. By all accounts COVID-19 appears to be a zoonotic disease, that is, a malady caused by a pathogen previously sequestered to nonhuman animal hosts.¹ In 1981, reports of serious opportunistic infections among otherwise healthy gay males began to surface across the United States.² Four years later human immunodeficiency virus (HIV) was identified as the causative organism. Shortly thereafter, the likely source of HIV was pinned on Simian immunodeficiency virus (SIV), a microbe previously known only to infect certain African primates. The story of increasing zoonotic diseases has been told and will continue to be told as we learn and relearn what we should already know. While history repeats itself, the pandemic has also forced us to reimagine. Our workplaces, our classrooms, our scholarship, and our practice settings have all been displaced and, in many ways, re-envisioned. As we move into 2021, questions remain surrounding what the new normal will be or even if the concept of normalcy is ever possible again. Going forward, we should be cautious about framing our lives and even our work as normal vs abnormal or as possible vs impossible.

One of the many lessons of the pandemic may be that we must constantly challenge the paradigm of what is achievable. The Mumps virus was first isolated in 1963

when Merck biomedical scientist Maurice Hilleman realized his feverish child was likely developing the disease and promptly swabbed her throat and froze the sample.³ He would attenuate the virus over the course of four years and eventually market the first public vaccine for Mumps in 1967. At that time, and even now, a four-year turnaround from culture to vaccine is remarkable. The mumps vaccine has been long recognized as the fastest vaccine ever produced in the history of medicine. Since then, the average time period for vaccine development has increased and typically ranges from 10-15 years. Bringing a product to market involves a complicated path requiring extensive resources and significant bureaucratic checks and balances. Considering the high watermark, the fact that at the time of this writing two COVID-19 vaccines are approved for use in the United States and three more are in the advanced phases of trials is truly remarkable. Making these vaccines even more extraordinary is the fact that they take advantage of years of research into genetic technology and represent the first ever mRNA-based products.⁴ Prior vaccines have all relied on the administration of microbes which were either killed or live attenuated or involved the direct injection of antigenic material linked to specific microbes. Both the rapidity of approval and the very modalities of these new vaccine products have challenged the paradigm of what is possible.

As we begin to examine life on the other side of COVID-19 vaccines, we should do so with cautious optimism. Vaccines are surely part of the solution to the pandemic, but they should not be expected to be a panacea. As well, this pandemic is not likely to be the last and may very well not be the worst. We must not allow our hubris

Corresponding Author: Frank Romanelli, University of Kentucky, College of Pharmacy, 789 S. Limestone Rd., Lexington, KY 40536. Tel: 859-338-3911. Email: froma2@uky.edu

to prevent us from seeing the trees for the forest. The implications for the Academy are numerous. First and foremost, we must be advocates for logic, truth, and science against a rising tide of counter-intellectualism. Efforts to impress upon our students the lessons of history (eg, the 1918 Influenza Pandemic, the HIV pandemic) blended with the science of pharmacotherapy must be emphasized. We must continue to advocate for patients, and we should model behaviors, including being vaccinated in order to demonstrate our trust in the validity of good science. As an Academy, we should be poised for the next crisis. That may take the form of being better prepared for the next pandemic and it may mean reimagining certain aspects of our work in the new normal. Within our colleges and schools, we might reexamine the ways in which we operate. Discussions around the need for every employee (faculty or staff) to be physically present when pharmacy schools are “open” should occur. The burdens of childcare and managing these responsibilities should be examined. The potentially disproportionate burdens in this regard often placed on female faculty and staff members should also be considered. The subject of how we teach our learners moving forward has been discussed elsewhere by multiple authors.^{5,6} The pivotal and critical roles of pharmacists of all types within a pandemic have now been clearly demonstrated, and we should not let this go unnoticed or forgotten as we continue to advocate for deeper and more robust roles for pharmacists as providers of essential health care.

The Academy should also look back at the challenges it overcame. Despite the most significant pandemic in over 100 years, the education of our students has continued uninterrupted. Community-based pharmacists have played critical roles in providing care during this crisis, whether that be in the way of providing testing or ensuring that patients have access to medications and related medical and health information. Pharmacists also served as key members of care teams within intensive care units, clinics, and other triage settings where COVID-19 infected patients were and are being treated. As the pandemic evolves, the roles for pharmacists will likely continue to develop, particularly as they relate to mass vaccination efforts.

Colleges continue to face declining enrollment numbers while tuition rates at most institutions continue to increase.⁷ This dilemma will likely be compounded by the effects of the pandemic. The profession continues to struggle to transition from an emphasis on products to a focus on patients. Some graduates feel overtrained for practice, while others struggle to secure competitive and often scarce opportunities to complete postgraduate training in PGY1 and PGY2 programs. Lastly, this evolving health care system has affected work environments and compensation levels for many pharmacists.

In both big and small ways, we have challenged the paradigm of what is possible. There are examples of this all around us, and in most cases the pandemic left us no choice. One is left to wonder whether we can continue to make strides and push envelopes when we are not faced with the duress of dire circumstances. We individually and collectively can accomplish more than we think we can, and many of the problems before us are surmountable if we continue to challenge the paradigm of what is possible.

REFERENCES

1. Dhama K, Khan S, Tiwari R, et al. Coronavirus disease 2019-COVID-19. *Clin Microbiol Rev.* 2020;33(4):e00028-20. doi: 10.1128/CMR.00028-20.
2. CDC. Pneumocystis pneumonia – Los Angeles. *MMWR.* 1981;30:250-252.
3. Hussein IH, Chams N, Chams S, et al. Vaccines through the centuries: major cornerstones of global health. *Front Public Health.* 2015; 26(3):269. doi: 10.3389/fpubh.2015.00269.
4. Amawi H, Abu Deiab GI, Aljabali AA, et al. COVID-19 pandemic: an overview of epidemiology, pathogenesis, diagnostics and potential vaccines and therapeutics. *Ther Deliv.* 2020;11(4):245-268. doi: 10.4155/tde-2020-0035.
5. Brazeau GA. Lessons learned and brighter opportunities for pharmacy education amid COVID-19. *Am J Pharm Educ.* 2020;84(6):8230. doi: <https://doi.org/10.5688/ajpe8230>.
6. Romanelli F, Rhoney DH, Black EP, et al. Pharmacy education crosses the rubicon. *Am J Pharm Educ.* 2020;84(6):8131. doi: <https://doi.org/10.5688/ajpe8131>.
7. Brown DL. Years of rampant expansion have imposed Darwinian survival-of-the-fittest conditions on US pharmacy schools. *Am J Pharm Educ.* 2020;84(10):8136. doi: <https://doi.org/10.5688/ajpe8136>