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Strength in a Time of Fear: Brigham and Women's Confronts COVID-19

Kelly Jong

In the face of a crushing surge of cases that halted elective surgeries, strained resources, and threatened to overwhelm staff, Brigham and Women's Hospital in Boston acted quickly to transform its facility into one of the most efficient and successful COVID-19 programs in the country. Much has changed since the days when its staff had to carefully reuse PPE as it managed an ICU capacity of more than twice its usual number of patients. In early March 2021, Brigham and Women's achieved a 70% vaccination rate among staff and a growing campaign to help educate and vaccinate the community.

Riding the bumps

As COVID-19 gripped the nation in early 2020, the staff at Brigham and Women's began the tenuous work of developing its own strategy for containing the pandemic. The hospital experienced a surge that peaked in late April. According to James P. Rathmell, MD, Executive Editor of *Anesthesiology*, and Professor and Chair, Department of Anesthesiology,

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Lindsey Baden, MD, an attending physician in infectious disease, associate professor of medicine at Harvard Medical School, and lead investigator of the international clinical trial that enabled FDA Emergency Use Approval of the Moderna COVID-19 vaccine, receives his first vaccine dose in January 2021.

You're Vaccinated... Now What?

Richard Simoneaux Steven L. Shafer, MD
Editor-in-Chief

We've learned a vast amount about SARS-CoV-2 in the past year. We know it comes from bats, most likely from Yunnan, China (asamonitor.pub/3rVUMXJ). We know that variants are emerging that increase infectiousness and escape humoral immunity (*Science* 2020;370:1464-8; *Nature* March 2021). We can track coronavirus evolution in

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Guest Editor: Muhammad Rafique, MBBS, FASA

Rx/Museum: A Weekly Dose of Art and Healing

Gordon Glantz

So much – perhaps too much – is made of the struggle between those who are left-brained (linear thinkers) and those who are right-brained (holistic thinkers). On one side of the brain, the left, you will find those motivated by logic. On the other, the right, people are more motivated by emotive gut instinct.

But that doesn't mean that there cannot exist a literal meeting of the mind – or minds – by providing those in the science-based medical field with a respite founded in the arts. During this stressful pandemic, the need is clear.

Aaron Levy, PhD

Enter Rx/Museum, a pilot program of the Department of Anesthesiology and Critical Care at Penn Medicine in partnership with the Health Ecologies Lab at the University of Pennsylvania.

Aaron Levy, PhD (University of Pennsylvania), and Lyndsay Hoy, MD (Penn Medicine), are the faculty directors of the virtual program that delivers emailed artworks and reflections to its 1,100+ subscribers. These artworks – via partnerships with the Philadelphia Museum of Art, Barnes Foundation, and Slought Foundation (run by Dr. Levy on the Penn campus) — arrive every Monday for a year.

Lyndsay Hoy, MD

Since its launch in July 2020, Rx/Museum has received positive press

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In the Know: You're Vaccinated... Now What?

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infected individuals and know that this evolution is greatly enhanced in immunocompromised individuals (asamonitor.pub/3eN75lG; *N Engl J Med* 2020;383:2291-3; *Nature* February 2021). We also know that coronavirus reinfections occur, as has been documented for the four endemic coronaviruses, because of waning humoral immunity (*MMWR* 2021;70:273-7; *Nature Medicine* 2020;26:1691-3; *Nature Communications* 2021;12:63). We know that our vaccines work incredibly well, but that the vaccines are less effective against emerging variants (asamonitor.pub/3lv0ptF; *Nature* February 2021). Science has hit the ball out of the park with this explosion of knowledge and the unprecedented development of three FDA Emergency Use Authorization-approved vaccines in fewer than 12 months.

What now? Is it over? Will the vaccines protect us? Can we visit friends and family? Can we visit our aging parents and grandparents or take that trip to Greece? Or Brazil? Is it safe to take a cruise to Antarctica to see the solar eclipse on December 4, 2021?

Is it over?

No!

At the time of this writing (March 16th), 9% of the U.S. population has been infected with the coronavirus and 20% has been vaccinated per the CDC. Based on the CDC guidelines that everyone should be vaccinated, we can calculate that 27% of the U.S. population is immune.*

Herd immunity is a concept introduced to describe how vaccinating most of a population helps protect everyone. When most individuals are vaccinated, often defined as >75% of the population, then the unlucky person who becomes infected typically doesn't pass the infection to someone else, because nearly everyone else is immune. The actual threshold for herd immunity varies with the contagion and behavioral response and may be as low as 40%-60% in some settings (*Science* 2020;369:846-9).

Israel has launched the most aggressive vaccination campaign in the world. As of this writing, 11% of Israelis have had COVID-19, 71% have been vaccinated, and thus 75% are immune.* The results are dramatic. Daily case rates in Israel have decelerated 32% since January, and daily death rates have decelerated 34% since January.† Even with that dramatic progress, Israel still ranks #9 globally for the most cases per capita last week (early March) and #27 globally for the most deaths per capita last week (early March).†

We know from Israel that we will not reach herd immunity in the U.S. until we have at least tripled the number of individuals vaccinated. We also know that even after reaching 75% immunity, there will still be unacceptably high levels of illness and death from COVID-19, just as Israel is still experiencing.

"Science has hit the ball out of the park with this explosion of knowledge and the unprecedented development of three FDA Emergency Use Authorization-approved vaccines in fewer than 12 months."

President Biden has announced that we should have enough doses to vaccinate every American by the end of May 2021. If we allow another two months to inject all available doses, then we may have nearly the entire population vaccinated by the end of July. If everything works as hoped, by then we will reach herd immunity by the end of summer. Within our borders, and within communities that have embraced vaccination, it will be "over."

Outside our borders, and within communities that have resisted vaccination, the pandemic will continue to rage.

There are two main challenges between here (mid-March) and there (late July). First, the more infectious B.1.1.7 variant is now circulating in the U.S. This variant drove the January surge in Israel and is currently driving the surge in Europe (asamonitor.pub/38ONy0b). It has been reported in all 50 states and is now growing exponentially in the U.S., even as daily cases have gradually declined (asamonitor.pub/3vtlHN3). Second, in the mistaken belief that the worst is behind us, many states and local jurisdictions are rolling back non-pharmaceutical interventions such as mask wearing, social distancing, and avoiding indoor crowds. As Dr. Anthony Fauci stated on "Meet the Press" two days ago, "When I hear pulling back completely on public health measures, saying no more masks, no nothing like that, that is risky business…. Don't spike the ball on the five-yard line. Wait until you get into the end zone. We are not in the end zone yet (asamonitor.pub/3bRyOzx)."

Will the vaccines protect us?

Yes!

The Pfizer-BioNTech mRNA vaccine demonstrated a startling 95% efficacy without any serious safety concerns in the phase 2/3 study (*N Engl J Med* 2020;383:2603-15). Similarly, the Moderna vaccine demonstrated 94% efficacy in the phase 2/3 study without serious safety concerns (*N Engl J Med* 2021:384:403-16).

Interim results from the phase 3 ENSEMBLE study (NCT04505722) evaluating the safety and efficacy of the Janssen vaccine looked at efficacy across three distinct geographic regions: the U.S., South Africa, and South America (Argentina, Brazil, Chile, Colombia, Mexico, and Peru). Brazil and South Africa were notable for the widespread distribution of coronavirus infections with the E484K "escape" mutation. In the U.S., the vaccine was 72% effective, while vaccine efficacy in South America and South Africa were 66% and 57%, respectively.

Israel's largest health care organization recently published its outcome data with the Pfizer-BioNTech mRNA vaccine (*New Engl J Med* February 2021). Approximately 600,000 vaccinated individuals were matched in a 1:1 ratio with appropriate clinical and demographic criteria. In the 14-20 days following the first vaccination, new infections were reduced 46%, hospitalizations were reduced 74%, and severe disease was reduced 62%. In the seven days following the second dose, new infections were reduced 92%, hospitalizations were reduced 87%, and severe disease was reduced 92%. Toward the end of the study period (12/20/2020 to 2/1/2021), up to 80% of the COVID-19 cases were of the B.1.1.7 variant. The documented efficacy against the B.1.1.7 variant is encouraging.

Although humoral immunity wanes, T cell response to infection and vaccination apparently remain robust for many months, or even years, even against the known variants (*Nature Immunology* March 2021; asamonitor.pub/3bRJRJe). The vaccines work. Get vaccinated.

Can we visit friends and family?

Maybe

The CDC has issued guidelines for fully vaccinated individuals (asamonitor.pub/30PzNdh). Quoting from the guidelines:

"Fully vaccinated people can:

- *Visit with other fully vaccinated people indoors without wearing masks or physical distancing*
- *Visit with unvaccinated people from a single household who are at low risk for severe COVID-19 disease indoors without wearing masks or physical distancing*
- *Refrain from quarantine and testing following a known exposure if asymptomatic"*

Thus, if your friends and family are all vaccinated, you can visit indoors without issue. If some are not vaccinated, then visit with members of a single household (e.g., a "pod") to avoid the risk of cross-pod transmission.

Can we visit our aging parents and grandparents?

Maybe

One major concern about visiting elderly family members is the possibility that even though you are vaccinated, it is possible that you might still be a carrier and transmit the coronavirus. There is now good evidence that vaccination not only prevents symptomatic infection, but also prevents asymptomatic infection (*Authorea* February 2021). Asymptomatic infection is the same thing as a silent carrier. Thus, once vaccinated, it is very unlikely that you will be a carrier and can transmit the disease to anyone.

Can we visit Greece?

Be Careful

Starting in May, Greece will welcome vaccinated tourists (asamonitor.pub/38Kj1Re). This could be your chance to visit Greece without hordes of Europeans crowding your views and driving up the cost of your Mediterranean resort. Sounds great, yes?

Things could go very wrong. Currently only 8% of Greeks are vaccinated, and just 10% of the population appears to be immune. Cases and deaths are rising in Greece, just as they are throughout continental Europe. You might arrive and be caught in a new surge of cases. The European Union is lagging well behind the U.S and the U.K. in vaccination.

More generally, the anticipated success of vaccination in the U.S. will create a grim scenario over the next few years as life returns to normal here while the pandemic rages elsewhere. Much of the world may not see herd immunity through vaccination until late next year or 2023. This will affect international travel, introducing unique risks to local infrastructure and health care.

Perhaps your next vacation should be to Yellowstone National Park, not Athens.

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Richard Simoneaux is a freelance writer with an MS in organic chemistry from Indiana University and more than 15 years of experience covering the pharmaceutical industry and an additional seven years as a laboratory-based medicinal chemist.

1-(1-fraction vaccinated)(1-fraction infected)

†SLS: Daily COVID-19 Update. Data from JHU and OurWorldInData.org. Subscribe at https://groups.google.com/u/1/a/slshafer.com/g/steves-covid-19-updates.

Fostering Resilience During COVID-19 Epidemic Through Reflection and Writing

Codruta Soneru, MD, et al.*

Hospital employees are not immune to the health threats and emotional strain COVID-19 has brought upon the world, but we are expected to leave our emotions and fears at the door as we care for others.

The 55-word story creative writing method can be a tool for professional growth (*Fam Med* 2010;42:400-2). It uses poetry and prose elements to encapsulate key health care experiences (Table) and stimulates personal reflection. Writers and readers of the stories gain insight into intense emotional or professional moments; the brevity of the pieces add impact.

Amid the challenges posed by COVID-19, we asked coworkers and families to share the pandemic's impact on their lives in self-healing 55-word stories. The stories reveal their fears, concerns, hopes, and strengths.

This exercise allowed our participants to gain introspection about how the pandemic has affected them. Writing helped deal with the stress. They report that it gave them a voice and an opportunity to explore and express feelings of trepidation, anxiousness, worry, and fear. It was helpful acknowledging that the things that matter to us give us hope and positivity, provide value in our existence, and ensure the ability to persevere.

The following is a sampling of the 55-word stories. Go online for more stories and participants' comments on the writing experience.

* Tara Maple, RN, Daniel Soneru, 4th-grade student, Huynh (Wendy) Nguyen, MS, Ricardo Falcon, MD, Timothy R. Petersen, PhD, Lia Hoffner, MD, Champagne Saavedra, Anesthesia Technician, John Sanders, MD, Trine Vik, CAA, Brandon S. Trujillo, Anesthesia Technician, BS Biochemistry, Rebecca D. Baker, RN, Caleb Stalls, MD, Victoria Bradford, MD, Anna Reviere, MS, Deborah Crandall, RN, Craig Rumbaugh, MD, Cindy Crittenden, BSN, Tony Yen, MD, Lydia Jorge, MD, Ivette Perez, MD, Kate Novinc, CAA, EdS, Tatiana Radu, MD, and Richard Lock, MD

How to Write a 55-Word Story

1. Think of a compelling story based on your experience.
2. Write down everything you can think of.
3. Don't edit, just write (phrases, words, key chunks of memory).
4. Put it away.
5. Read over your writing and begin to clarify the idea or story line that you want to convey.
6. Begin editing, sometimes ruthlessly.
7. Share your work with others for reactions and feedback.
8. Keep editing until you get to 55 words.
   a. Title doesn't contribute to word count but shouldn't be more than seven words.
   b. Contractions count as single words.
   c. Eliminating articles (the, a, an) can help with word count.
9. If you cannot cut enough words, you probably have material that either would lend itself to a longer essay or become multiple 55-word stories.
10. Given the brevity, formatting can make a big difference. Experiment with line length, indentations, hanging indents, and other use of white space.

Codruta Soneru, MD
Pediatric Anesthesiologist, and Associate Professor, Department of Anesthesiology and Critical Care, University of New Mexico, Albuquerque.

A 10-Year-Old's Perspective
by Daniel Soneru, 4th-grade student

You might be feeling stressed about COVID-19. Don't be scared everything will be ok if you just stay home and don't come in contact with sick people. Everything has an end. For the people working at hospitals thank you for helping everyone that is sick and everybody thanks you for always being here for us.

Class of 2020
by Huynh (Wendy) Nguyen, MS

As an immigrant Asian-American fourth year medical student, 2020 was supposed to bring me joy but instead brought fluctuations of fear and disappointment. Fear of exposing my family. Once clinical rotations, Match day and graduation were canceled, the disappointment consumed me. As I read of hate crimes on Asian Americans the fear settled back in.

From Anxiety to Intention
by Tara Maple, RN

Mom of three boys, PACU Nurse, Educator, Wife. Pandemic brings waves of anxiety, new challenges, now I am all those things and a teacher. Choosing to ride my anxiety, channeling a life of intention. Restoring happiness, creating connection, facilitating growth. Deeper relationships, living a life of intention. Making the space for living, not just life.

Don't miss 21 more 55-word stories. Read online at: asamonitor.pub/3cKrc14.

In the Know: You're Vaccinated... Now What?

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How about Brazil?

Bad Idea!

Brazil is one of the countries whose government has actively spread false information about COVID-19. The results have been horrific, and viral evolution is taking very unwelcome turns in Brazil. After apparently reaching herd immunity through infection alone in Manaus, Brazil (at a terrible cost in lives lost), cases surged again in December and January (*Science* 2021;371:288-92; *Lancet* 2021;397:452-5). As noted by Sabino et al., there are four explanations: 1) the earlier estimate of 76% infection could be an overestimate, 2) immunity may have begun to wane by December, 3) the B.1.1.7 and P.1 variants may be causing re-infection, and 4) the B.1.1.7 variants and the P.1 variant may have raised the herd immunity threshold because of increased infectiousness.

Brazil does not report vaccination data, but the Bolsonaro government has been openly hostile to vaccination (asamonitor.pub/3llSXRF). Brazil seems to be running its own experiment in coronavirus evolution, along with promoting disproven and discredited therapies, and generally mismanaging the pandemic. I don't recommend signing up for this experiment.

Is it safe to take a cruise to Antarctica to see the solar eclipse on December 4, 2021?

Probably

My wife, Pamela, and I (SS) have signed up for a cruise to visit Antarctica at the end of this year to see a total solar eclipse (asamonitor.pub/3vwHjba). I had never imagined visiting Antarctica or even the possibility of seeing a total solar eclipse there. However, after learning of this eclipse, it immediately bubbled to the top of my bucket list. If you haven't seen a total eclipse, it is truly one of nature's wonders.

Full vaccination is a requirement for both the travelers and the ship's crew. If you are vaccinated, then we invite you to join us! ■