# MAGIC BULLETS

"Epidemics like Covid-19 fundamentally change the order of time. The present moves faster, the past seems further removed, and the future appears completely unpredictable." (1)

## PFIZER COVID-19 VACCINE APPROVED FOR USE IN U.K.

This Wednesday, Britain became the first Western country to approve a vaccination against COVID-19, a disease originally identified in Wuhan, China in December 2019. Almost exactly a year since the virus first emerged and a new normality of lockdowns, masks and social distancing began to take shape, it seems that vaccines — multiple vaccines — are no longer a desperate hope but a concrete reality. Healthcare workers in Britain are expected to receive the first immunizations within weeks, and similar timelines are predicted in the United States, which is awaiting FDA approval of the Moderna vaccine. "Help is on the way," a UK official noted, echoing a widespread belief that these new vaccines, developed at an unprecedented speed, will help usher in a long-awaited return to normality (2).

## PAST ←

Since the beginning of the pandemic, the public has seen a vaccine as a sort of magical antidote to the life-altering restrictions that have been introduced to reduce transmission of the virus. Though scientists have been racing through research and testing at a speed never seen before to produce a COVID-19 vaccine, this is not the first time in history that the world has anxiously looked toward immunizations as a way to bring about the end of particularly brutal epidemics.

Polio was a once devastating outbreak that witnessed a near total elimination in the Western world when vaccines were developed. The first polio vaccine was developed by Jonas Salk in 1955, but it wasn't until American virologist Albert Sabin developed an oral version of the vaccine a few years later that polio cases started to plummet, due to the ease of administration with the oral version. No one has contracted polio in the United States since 1979 (3).

While the effect of the polio vaccine, in hindsight, seems like a magic bullet, other diseases, such as tuberculosis, did not see such drastic declines with the use of a vaccine. The bacille Calmette-Guerin (BCG) vaccine, which was introduced in 1921, is only effective against tuberculosis about fifty percent of the time. Other measures needed to be utilized alongside the vaccine in order to decrease the presence of the disease. Cocktails of antibiotics helped in addition to increased public-health protocols such as isolation and contact tracing (4).

Regardless of the vaccine success stories we hear, it is important to reflect on the fragility of these successes. While polio epidemics are now a thing of the past for most of the Western world, there have still been polio outbreaks in recent history. In Nigeria, a ban on polio vaccination in the early 2000s led to a national outbreak that spread to at least fifteen other African countries. The polio outbreak in Nigeria highlights the ways in which vaccines fail — more often than not — to "end" an epidemic. The WHO estimates that if people stopped getting vaccinated for polio, the virus could rebound and paralyze over 200,000 people per year (5). Vaccines are technologies of trust — their success depends on widespread belief in the vaccine and the science behind it (6).

# PRESENT

Unlike other epidemics, COVID-19 is unique in that the whole world is constantly watching its development in real-time. They are monitoring case counts, death counts, lockdown restrictions, and vaccine developments. As Lukas Engelmann notes for the *Somatosphere*, "COVID-19 history is written daily, if not hourly on social media," with "an infinite stream of opinion pieces, interpretations and reflections (just like this one)" (7). The COVID-19 pandemic is unique to this day and age in that there is an almost obsessive real-time surveillance of the data, which clouds our judgement about what is really happening, and what the future might look like.

While Engelmann was writing quite early on in the pandemic, the media still keeps a constant eye on COVID-19 developments. Vaccine developments are starting to dominate COVID-19 headlines, something that will surely intensify over the coming weeks. It is important to remember that real-time surveillance does not give the most accurate nor critical perspective on the current situation, which is why it is important to look back, reflect on the present, and plan for the future. The smooth curves and waves that we see on the news are essentially simulations of the pandemic, considering that they are based on "approximations, estimations and speculations" (8). Many media outlets and governments, as well as medical professionals, initially relied on models produced by the University of Washington's Institute for Health Metrics and Evaluation (IHME) (9). However, their predictions were wrong most of the time. The IHME projections, which were utilized by government officials and average citizens alike, rely on a model with no real basis in epidemiology, notes a journal article published by the *Annals of Internal Medicine* (10). The article acknowledges the seductiveness of the "appearance of certainty" projected by models like those of the IHME. But the constant stream of real-time data needs to be very cautiously interpreted.

This "appearance of certainty" is especially apparent in the headlines that we have been seeing related to vaccines, which emphasize efficacy rates at questionably high percentages. As we live through the present, and look towards the future, it is important to remember the faults that come along with writing about and analyzing history in real time. There are many unknown questions about the prospect of a vaccine that cannot be answered simply by the fog of statistics that we find ourselves in.

# FUTURE

The yearning for a jab that protects you and your loved ones from a mysterious respiratory virus is connected to our yearn to return to pre-Covid life. As Arundhati Roy notes in her April 2020 piece "The pandemic is a portal" for *Financial Times*, we have been desperately "trying to stitch our future to our past" for the better part of a year (11). Roy's piece prods us to look back at the past (albeit near past) and see it for what it was, knowing what we know now. "Nothing could be worse than a return to normality," she concludes, echoing an increasingly common sentiment, one that involves imagining and creating a better world that could emerge from the wreckage of COVID-19.

We have been orienting our lives towards the future for a very long time — when the pandemic ends, when we can safely travel, when we can take off our masks. For the first time in the pandemic, it seems that that day is in the near future. Over the next few weeks, as we watch healthcare workers begin to receive the first doses of newly-approved COVID-19 vaccines, it is important to think of the ways in which our past world allowed for a pandemic of this scale with such brutal social and economic consequences to happen. As editor of *The Lancet* Richard Horton notes, the pandemic is a mirror that has been reflected against our society. No sector has escaped this pandemic without a new understanding of the specific problems and inequalities that plague them. This new view of our past provided to us by the pandemic demands us to use what's happening in the present to create a newer, brighter future.

# BIBLIOGRAPHY

1.   Helge Jordheim, Anne Kveim Lie, Erik Ljungberg and Einar Wignen, "Epidemic Times," Somatosphere, April 2nd, 2020, http://somatosphere.net/2020/epidemic-times.html/.

2.   Benjamin Mueller, "U.K. Approves Pfizer Coronavirus Vaccine, a First in the West," The New York Times, December 2nd, 2020, https://www.nytimes.com/2020/12/02/world/europe/pfizer-coronavirus-vaccine-approved-uk.html.

3.   Dhruv Khullar, "It Will Take More Than A Vaccine to Beat COVID-19," The New Yorker, September 8th, 2020, https://www.newyorker.com/science/medical-dispatch/the-state-of-the-fight-against-covid-19.

4.   *Ibid.*

5.   Jefcoate O'Donnell, "Nigeria Just Won a Complex Victory Over Polio," Foreign Policy, August 21st, 2019, https://foreignpolicy.com/2019/08/21/nigeria-just-won-a-complex-victory-over-polio/.

6.   Jeremy A. Greene and Dora Vargha, "How Epidemics End," The Boston Review, June 30th, 2020, http://bostonreview.net/science-nature/jeremy-greene-dora-vargha-how-epidemics-end.

7.   Lukas Engelmann, "#COVID19: The Spectacle of Real-Time Surveillance," Somatosphere, March 6th 2020, http://somatosphere.net/forumpost/covid19-spectacle-surveillance/.

8.   *Ibid.*

9.   Kelsey Piper, "This coronavirus model keeps being wrong. Why are we still listening to it?" Vox, May 2nd, 2020, https://www.vox.com/future-perfect/2020/5/2/21241261/coronavirus-modeling-us-deaths-ihme-pandemic.

10.  Nicholas P. Jewell et al., "Caution Warranted: Using the Institute for Health Metrics and Evaluation Model for Predicting the Course of the COVID-19 Pandemic," Annals of Internal Medicine 173, no. 3 (2020): 226, https://doi.org/10.7326/M20-1565.

11.  Arundhati Roy, "The pandemic is a portal," *Financial Times,* April 3rd, 2020, https://www.ft.com/content/10d8f5e8-74eb-11ea-95fe-fcd274e920ca.