

The Lived Experiences of Epidemiologists in 2020

Sonja A. Swanson

Given the coronavirus disease 2019 (COVID-19) pandemic, pandemic response, social and cultural movements, and numerous other local and global events in 2020, many epidemiologists are probing the meaning of epidemiology as a discipline and practice, and what it means to be an epidemiologist. Epidemiologists' work has been profoundly impacted, regardless of whether we work on infectious disease or in other subdisciplines; whether we work in academia, government, industry, or other settings; whether we took on additional caregiver responsibilities or experienced personal hardships; whether we took on new roles to serve our communities in addition to our usual work...the list goes on. Further, many epidemiologists are making profound impacts. Our collective experiences in 2020 will shape the future of our field.

With this in mind, the editors of *EPIDEMIOLOGY* commissioned a series of commentaries with the theme of reflecting on this question: "What has it meant for me to be an epidemiologist in 2020?" Our goal was to obtain a wide range of voices regarding work setting, topic area, gender identity, race/ethnicity, career stage, and geography. To be clear, we did not expect any contributor to represent all of epidemiology or any subset of it. We were interested in personal and professional experiences, and the intersection thereof, of an epidemiologist in the year 2020. By combining these perspectives, we aimed to document and share these lived experiences while still amid them.

The editors initially invited 15 individuals who we believed provided a wide range of such voices. Each individual was also asked to nominate one more epidemiologist from their own professional circle to contribute a commentary to this series. Our instructions included that we especially appreciated nominations representing relatively unheard perspectives. This invitation process yielded the 20 commentaries featured in the January 2021 issue of *EPIDEMIOLOGY*.

That 2020 affected epidemiologists' work and lives is not surprising. It is both the homogeneity and heterogeneity of these accounts that resonates. Several themes emerge: the severity and blatancy of inequities witnessed or experienced; the recognition of privilege in the face of hardships; how the challenges faced were simultaneously enormous and yet often foreseen or foreseeable; that seemingly all aspects of health, health research, and life as a health researcher were affected. Even with these common themes, however, each story is different. Each brings a unique insight into what it has meant to be an epidemiologist in 2020.

To the epidemiologists reading these accounts, I want to acknowledge that neither this series nor any other syntheses will fully capture the varied experiences that epidemiologists faced in 2020. As a parent of young children, among my many other identities, I empathize with those who feel like aspects of their triumphs, struggles, work, capabilities, or stories went unheeded. I find solace and kinship in reading these essays. I hope that this solace is shared by any of our readers who also found their heads, hands, and hearts full of personal and professional commitments. Thank you all for your contributions to humanity and for your humanity.

From the Department of Epidemiology, Erasmus MC, Rotterdam, the Netherlands.

Correspondence: Sonja A. Swanson, Department of Epidemiology, Erasmus MC, P.O. Box 2040, 3000 CA Rotterdam, the Netherlands. E-mail: s.swanson@erasmusmc.nl.

Copyright © 2020 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 1044-3983/21/321-0000

DOI: 10.1097/EDE.0000000000001297

On My Lived Experience As an Epidemiologist in 2020

Richard Cooper

The disaster sweeping across the United States in the course of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic, to repeat the unavoidable mantra, is unprecedented, at least in modern history. Over the years, I have more than once shared the desperate journey of patients and their families as they pass from everyday life into the dark world of schizophrenia or dementia. It is, however, a unique experience to live through a period when an entire society descends into collective insanity. From another domain, in the last 6 months, I have been forced to relive the painful experiences of my earlier career as a cardiologist when I reached that difficult moment when it became undeniable that a patient under my care was going to “crash” in some interval measured in hours if I was not able to turn things around, make the right diagnosis, or be lucky enough to have an effective intervention at hand. That same mixture of despair, panic, and responsibility has been revived during my attempts to understand the evolution of this pandemic, first in Italy, and now more deeply in the United States. I could hardly repress the urge to call for a more senior physician, or more often, climb up on the roof and shout “the end is near!”. At point, I was forced to desist from daily briefings to give my psyche rest from the anxiety, panic, and pain at the loss of life and livelihood.

My career in epidemiology and public health began coincidentally with the onset of the fall in cardiovascular disease (CVD) mortality—which began statistically in 1968 but was recognized in 1978.¹ Roughly 20 million deaths have been postponed or prevented CHD event entirely over the last 50 years as a result of the 75% fall in age-adjusted mortality.² Watching CVD prevention progress from strength to strength left me with a sense of optimism and trust in the potential of science to meet the challenge of improving population health. That confidence has been shattered by the utter collapse of the United States as a functioning society in the last 6 months. In addition to the fear and loathing that I share with the majority of the population, I have had to grapple with loss of my basic assumption about the capacity of my profession to serve as a guarantor that we can escape many of the threats to health that we inevitably encounter. One might say, it is as if I am a child who has lost a parent, or perhaps more like a true believer whose religion has been revealed as fraud.

Of course, I know perfectly well that the 140,000 deaths so far in the United States from coronavirus disease 2019 (COVID-19), and at least as many yet to come, have very little to do with the failure of epidemiologic science. An aphorism from Rudolf Virchow that my mentor Jerry Stamler loved to quote has taken on even greater meaning in the last 6 months: “Mass disease means society is out of joint.” The parallel to typhus among Silesian weavers is not precise—Virchow was prescribing a cure of better pay, improved housing, sanitation, and education—but the central message could not be more apt. The social murder perpetrated by the uncontrolled SARS-CoV-2 epidemic in the United States will doubtless serve as a case study used for courses in epidemiology for years to come. All the core concepts are in bold display. Public health is a social science, in the sense that

From the Department of Public Health Sciences, Loyola University Medical Center, Maywood, IL.

The author reports no conflicts of interest.

Correspondence: Richard Cooper, Department of Public Health Sciences, Loyola University Medical Center, Maywood, IL 60153. E-mail: rcooper@luc.edu.

Copyright © 2020 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 1044-3983/2020/321-0000

DOI: 10.1097/EDE.0000000000001278

it reflects the population's collective understanding and willingness to act to preserve the common good. Further, public health functions as a tightly interwoven, multicomponent process, embedded in the cultural life of society. The science of public health must establish the principles and technology; the political structure must fund and implement social policy in accordance with scientific advice; and the population must trust the science and the government and accept individual responsibility to abide by the scientific imperatives. All three of those elements are missing in the United States.

Only the first of those three precepts fall within our professional domain. And there have been valiant attempts by epidemiologists and schools of public health to offer guidance and technical support for a response to the pandemic. On the whole, however, the response has fallen far short of what might have been expected, or certainly what was required. I would not make this proposition with great certainty, but I feel epidemiology has suffered from the general malaise that has infected biomedical research in the last 2 decades—an infatuation with technology and a focus on individualized risk.³ Despite the success achieved with prevention in CVD and cancer in the last 50 years, by the millennium biomedical research as a whole has shifted overwhelmingly to a focus on individual

care, privatization, and a gene-centric view of causation. The ethos of technology and intrinsic susceptibility, in contrast to the role of environmental exposures, was grounded in a theoretical construct that equated modernity with our ability to understand and manipulate the molecular intricacies of the biological world. The most dramatic evidence of this shift lies in the priority given to genomics and “precision medicine.” At the same time, a major decline occurred in the investment in public health and prevention at all levels. The response to this challenge to public health as a social science from the epidemiology community has been at best anemic, at worst to become coconspirators as genetic epidemiologists, because “that is where the money is.” We could have done better. Perhaps we would have been better prepared to respond to the COVID-19 pandemic.

REFERENCES

1. Cooper R, Stamler J, Dyer A, Garside D. The decline in mortality from coronary heart disease, U.S.A., 1968-1975. *J Chron Dis*. 1978;31:709-720.
2. Mensah GA, Wei GS, Sorlie PD, et al. Decline in cardiovascular mortality: possible causes and implications. *Circ Res*. 2017;120:366-380.
3. Cooper RS, Paneth N. Will personalized medicine lead to a healthier population? *Issues Sci Technol*. Nat Academy Sci Engineering Med XXXVI Winter 2020.

My Lived Experience As an Epidemiologist in 2020

Philip Greenland

I have been a preventive cardiologist and cardiovascular epidemiologist for 35 years. I have served as a preventive medicine department chair and as a Dean for Clinical Research. I have also served as an editor for several medical and epidemiology journals. With my background in clinical medicine and epidemiology, combined with my roles in various administrative positions, I considered myself well-prepared to read, evaluate, discuss, and advise on the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic as it emerged. But I was not prepared for many of the events that have actually happened, both positive and negative. This short essay describes a few of my thoughts.

The commitment and dedication of first-line healthcare workers has been tremendously positive. While we could not know exactly what needed to be done, how to do it, or what the risks would be, those on the frontlines have jumped in and did amazing work. The general public have largely supported these workers in their unselfish efforts to treat the sick. These workers have learned quickly from experience and improved their approaches in real-time. While some health systems have become overwhelmed, many others have risen to the occasion in remarkable ways. For example, a local community hospital in my area geared up in February 2020 to perform polymerase chain reaction testing on more than 1,000 samples per day and managed to give test results back to patients within 24 hours. There is no reason that we cannot do this more broadly today—other than resources and clear messages of the need. I hope we will soon have wider testing and faster test turnaround.

There have been some thoughtful and constructive societal and governmental responses, but many responses have been fragmented or poorly conceived or seemed entirely political. One very positive early example of leadership and wisdom came from Ohio, led by Governor DeWine and the state Director of Public Health, Dr. Amy Acton. They set an example that has been uncommon, unfortunately. They did their best to remain politically neutral, inform the public, offer the best available health advice, and caution the public that science is incremental, so messaging would change over time. Negative reactions to the Ohio efforts and to national advisers like Dr. Anthony Fauci were unexpected and disconcerting to me.

Medical researchers and medical journals have provided input that was both uplifting but, at times, destructive. On the positive side, journals have provided rapid response to evaluate a tsunami of manuscript submissions and keep the scientific and general communities informed. However, the widely publicized retraction of papers from two leading medical journals contributed to the misperception that medical science is flawed and misleads as often as it informs. That experience highlighted for me the importance of peer review and the need to balance rapid publication with sound judgment. We cannot afford to

From the Department of Preventive Medicine, Northwestern University Feinberg School of Medicine, Chicago, IL.

The author reports no conflicts of interest.

Correspondence: Philip Greenland, Department of Preventive Medicine, Northwestern University Feinberg School of Medicine, Chicago, IL 60611.

E-mail: p-greenland@northwestern.edu.

Keywords: COVID-19; Education; Epidemiology; Prevention

Copyright © 2020 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 1044-3983/2020/321-0000

DOI: 10.1097/EDE.0000000000001277

give the public reason to doubt the role of science in managing crises like this one.

There is widespread misunderstanding in the general public of how science works. Only when we reject a previous hypothesis, with evidence, does science advance. Einstein apparently said that science proceeds through a series of “mistakes.” However, many people seem to think that facts emerge with clarity immediately, and there is no room for doubt or uncertainty. We must do a better job of educating

people about how science works. Epidemiology can play a bigger role here.

Finally, it is clear that we know almost nothing about producing mass behavior change in democracies. We learned how to produce chaotic behavior change through confusing, inconsistent, or absent messaging. Before the next crisis, scientists, governmental leaders, and policymakers need to find ways to prevent another disaster and to deal more effectively if another occurs.

Facebook Epidemiology in Place of Textbook Epidemiology

Adrian Gerard Barnett

The year 2020 started terribly in Australia with multiple enormous bush fires across the country. There were even fires in our glorious rainforests, which rarely burn because of their moist microclimate. There were massive fires near urban areas including Sydney, which exposed millions of people to thick smoke. Officially, there were 34 deaths from the summer-long fires, but this only includes visible deaths, such as from burns, and does not count the likely many hundreds more killed by air pollution.¹

Many of our politicians hid behind the mantra of “Now is not the time to talk about climate change.” One politician even said people who raised climate change in relation to the fires were “disgusting.” Australian politicians have long dragged their heels on tackling climate change, now the country was ablaze and still many refused to acknowledge this enormous threat to our health and way of life.

Our government’s poor record of listening to scientists meant I was pessimistic about how Australia would cope with coronavirus disease 2019 (COVID-19) when the infection numbers began rising in March. But happily and unexpectedly, there were epidemiologists and other scientists being listened to at the highest levels of government. The epidemiologists’ models showed rising deaths and a public health system that would be overwhelmed if COVID-19 was allowed to blaze through the population. These projections persuaded state and federal governments to take decisive action, including border closures, quarantining, and social distancing. Thanks to this decisive action, Australia has done relatively well with around 27,000 cases and 886 deaths (as of 1 October), although there would have been fewer deaths had there been better infection control plans for aged care homes and quarantine hotels. However, the epidemiologists involved did their jobs brilliantly and should be lauded.

One surprising consequence of COVID-19 is that epidemiologic models have become the topic of everyday conversation. There has also been a maddening number of Facebook “epidemiologists” whose work gets as much media attention as formally trained epidemiologists. In Australia, there was even a spatial metadata specialist whose opaque models on infection numbers published on social media were featured on the front page of a national newspaper.²

The waves of poor-quality COVID models were not restricted to social media, and journals have published shoddy COVID-19 papers, sometimes followed by retractions.³ Journals have also published simplistic epidemiologic models, arguing that we could not wait months or years for more sophisticated models,⁴ even though good models were quickly available.⁵

From the School of Public Health and Social Work, Queensland University of Technology, Brisbane, QLD, Australia.

A.G.B. is supported by a fellowship from the National Health and Medical Research Council of Australia (APP1117784).

The author reports no conflicts of interest.

Correspondence: Adrian Gerard Barnett, School of Public Health and Social Work, Queensland University of Technology, 60 Musk Avenue, Kelvin Grove, Brisbane, QLD 4059, Australia. E-mail: a.barnett@qut.edu.au.

Keywords: Epidemiology; Climate crisis; COVID-19; Modeling; Policy

Copyright © 2020 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 1044-3983/2020/321-0000

DOI: 10.1097/EDE.0000000000001283

Some scientists hastily pivoted to epidemiologic modeling, including many with no qualifications or experience. This effort was likely from a desire to help, but it gummed up the scientific machinery with hundreds of new modeling papers needing expert peer review, while the real experts were busy on the models that mattered.

In the future, for such nationally important models, I would like to have two independent groups of official modelers who would transparently report their results to the government and the public. There are lots of uncertainties and scientific decisions that go into these models, and two expert groups coming to the same conclusion would greatly increase confidence for the decision makers in government and the public who have to abide by the decisions. This might also put the Facebook epidemiologists in their place. When the two expert groups disagreed, that would likely mean there was substantial uncertainty, and it is hoped that we could have an informed debate about uncertainty and risk. Such a

debate, however, might be a naive hope given the level of debate in Australia around the uncertainties and risks of climate change.

REFERENCES

1. Morgan G, Sheppeard V, Khalaj B, et al. Effects of bushfire smoke on daily mortality and hospital admissions in Sydney, Australia. *Epidemiology*. 2010;21:47–55.
2. Davey M. Victorian Officials Dismiss Claim of ‘Secret Modelling’ Showing Daily COVID Cases of 1,100 Next Week. 2020. Available at: <https://www.theguardian.com/australia-news/2020/aug/06/victorian-officials-dismiss-claim-of-secret-modelling-showing-daily-covid-cases-of-1100-next-week>. Accessed 23 August 2020.
3. Abritis A, Marcus A, Oransky I. An ‘alarming’ and ‘exceptionally high’ rate of COVID-19 retractions? *Account Res*. 2020. doi: 10.1080/08989621.2020.1793675. Online ahead of print.
4. Talley NJ. SARS -CoV-2, the medical profession, ventilator beds, and mortality predictions: personal reflections of an Australian clinician. *Med J Aust*. 2020;212:302–303.
5. Hill A. Modeling COVID-19 Spread vs Healthcare Capacity. 2020. Available at: <https://alhill.shinyapps.io/COVID19seir/>. Accessed 24 August 2020.

Life in the Fast Lane

Reflections from a Tuberculosis Epidemiologist Adapting to Coronavirus Disease 2019

Kathryn J. Snow

I thought the flu epidemiologists would handle it, if it ever happened. It sounds very foolish when I say it now. Every so often, I'd read an article about pandemic preparedness and feel thankful that I hadn't chosen it as a content area. It was so clear that the world wasn't actually "preparing." I wondered how the preparedness people got any sleep.

I usually work on slow diseases—tuberculosis and hepatitis C. Incubation periods of at least months, often decades. The pace of coronavirus disease (COVID) has been dizzying: the fire-hose of international research, the relentless news cycle.

In March, I often did several media interviews a day. Prior to that, I had done one every year or two. "Why does soap work, what about masks, is it mutating, will we all catch it, what about herd immunity, how long can it live on surfaces, can't we just quarantine the old people, could we have a second wave?" You need an answer for everything. I tried to explain negative predictive value to a sports journalist, and I almost succeeded.

Throughout this year, I've been so thankful for my teaching experience. I'm primarily a researcher, but my teaching experience has been so valuable. I've described lipid bilayers, counseled harm reduction, explained latent periods and false negatives, and relayed the ever-changing evidence on children.

As the scale of the need became evident, I've been deeply frustrated by how few infectious disease epidemiologists there are in Australia. I've heard for years that infectious diseases are over-funded and over-researched, a problem of the past, and that we should all be focusing on noncommunicable diseases now. I don't know why I thought the flu epidemiologists would handle it, when I can count the flu epidemiologists I've met on one hand.

And so we've all been pulled into COVID, or most of us have. So many non-COVID research projects are impossible now. Clinical collaborators have had to stop all their research, travel is impossible, people were locked out of laboratories for months. Universities in Australia are responding to heavy financial losses after the disappearance of international students. Redundancies are being announced, and many universities have implemented a hiring freeze. Tenure was already almost unheard of here. A lot of the post-docs I know are having trouble sleeping.

Having worked in academia for 8 years, I've found working in government to be an interesting experience. Working as part of a team where tasks are shared has been a revelation: when I'm rostered off, the work goes on, rather than piling up on my

From the Centre for International Child Health, Department of Paediatrics, University of Melbourne, Parkville, VIC, Australia.

K.J.S. is supported by a Postdoctoral Fellowship in Maternal, Child and Adolescent Tuberculosis from the Centre of Research Excellence in Tuberculosis (TB-CRE).

K.J.S. is employed by the Department of Health and Human Services, Victorian Government.

The article reflects the author's personal views, not the views of the Department of Health and Human Services.

Correspondence: Kathryn J. Snow, Centre for International Child Health, Department of Paediatrics, University of Melbourne, Level 2 East, Royal Children's Hospital, 50 Flemington Rd, Parkville, VIC 3052, Australia. E-mail: kathryn.snow@unimelb.edu.au.

Keywords: COVID-19; Early career researcher; Epidemiology; Tuberculosis

Copyright © 2020 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 1044-3983/21/321-0000

DOI: 10.1097/EDE.0000000000001295

desk until I return. Academic work is so atomized, by contrast. At the same time, in academia, it seems that everybody is expected to do everything: write grants, review papers, design projects, organize budgets, prepare ethics applications, collect data, conduct analysis, write papers, teach classes, mark assignments, and supervise students. In government, I was hired to figure out how to answer questions with data and do the analysis—the things I’m best at. Having my technical skills recognized as valuable in themselves—rather than as a stepping stone to something else—has been encouraging.

This was not a career move that I would have foreseen before the pandemic. It’s no longer clear to me what I will be doing in 5 years’ time. I still have a foot in both worlds, and everything around us is in flux. As Arundhati Roy¹ said, “The pandemic is a portal.” We all have to walk through it, one way or another.

REFERENCES

1. Roy A. The Pandemic Is a Portal. *Financial Times*. 4 April 2020. Available at: <https://www.ft.com/content/10d8f5e8-74eb-11ea-95fe-fcd274e920ca>. Accessed 16 October 2020.

What It Has Meant to Be an Epidemiologist During Coronavirus Disease 2019 Pandemic

Udodirim N. Onwubiko

If anyone had asked me about my plans for the first 6 months of 2020, I would have promptly rattled off completing work on two tuberculosis manuscripts I had been working on, overseeing my children's progress in school, implementing some changes to a hepatitis C screening program I oversaw at the local health department, and generally growing 6 months older with my spouse. Like everyone, I had heard the reports of the novel flu-like illness in Wuhan, China, but it had all felt too far away to be of immediate concern to me. All that changed as February rolled around and reports of this new infection, now called coronavirus disease 2019 (COVID-19), raging in Seattle dominated the news cycle. Barely a month later, Georgia reported its first case, and I knew that this had finally reached my doorstep and could no longer be ignored.

As a mid-level Epidemiologist primarily engaged in human immunodeficiency virus (HIV) prevention and sexual health promotion, I was not immediately involved in the response to COVID-19. The first impact was on the home front. With the closure of schools in mid-March, my job took a backseat as I scrambled with other parents to pick up school materials and follow the deluge of instructions from my children's school to get them set up to finish out the school year in front of computer screens at home. For 2 weeks I stayed home, learning how hard K-12 teachers work while trying to maintain some semblance of working from home. Like many parents, I also felt the fear as panic buying took hold all over the country, and I silently wondered how long the food and household supplies I had would last before we were out.

Returning to the office in early April to assist with COVID case investigations, I was taken aback the first day I drove through downtown Atlanta streets that previously bustled with energy and traffic as they lay silent and devoid of other travelers. As I started conducting case investigations, I quickly realized that I could support the local COVID response better by filling a gap in surveillance data analysis and reporting to city and district leaders, providing data to support their public health actions in their own jurisdictions. In collaboration with Epidemiologists from Emory University and the Spatial Data Analyst at the County Government office, I took on the task of creating a thrice-weekly surveillance report that provided an overview of COVID-19 diagnoses, hospitalizations, and deaths at the city and ZIP-code level. These reports, disseminated through the county websites, quickly became a source of COVID-19 data in the county widely accessed by local residents, community leaders, school boards, mainstream media, city officials, and the Mayor's office.

By the end of the first 6 months in 2020, COVID-19 was the one major thing that had happened, not just to me, but to the whole world. I saw it divide the world as blame was thrown around by world leaders and politically motivated decisions stranded travelers

Dr. Onwubiko works for the Fulton County Board of Health, Atlanta, GA.

The author reports no conflicts of interest.

Correspondence: Udodirim N. Onwubiko, Medical and Preventive Services, Fulton County Board of Health, 10 Park Place South SE, Atlanta, GA 30303. E-mail: Udodirim.onwubiko@emory.edu.

Keywords: Case interview; Coronavirus disease 2019; Epidemiology; Pandemic Response; Work-life balance

Copyright © 2020 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 1044-3983/2020/321-0000

DOI: 10.1097/EDE.0000000000001288

on distant shores, separating loved ones from their families across borders. I saw it also bring the world together as individuals, industries, and governments stood up to serve people affected by the pandemic. I saw it stoke my fears as I grappled with online learning, panic buying, and daily concerns over

bringing COVID-19 home to my family. Most importantly, I saw it push me to take on my most visible role yet, supporting local leaders by providing real-time accessible reports. I look forward to the end of the pandemic, but I know that this has been an experience that will shape the rest of my life.

In the Midst of Two Realities

L. Paloma Rojas-Saunero

To me, the global circumstances of 2020 rebuilt my perception of what being an epidemiologist means. It required me to understand my privileges and, as a result, decipher how to make myself accountable for them.

Seven years ago, I could not even dream of where I am today. When I finished medical school in my hometown of La Paz, Bolivia (a low-middle income country in South America), I decided to emigrate to Argentina to seek further training in scientific research. There, I was able to deepen my experience and knowledge of epidemiology, up to the point that I felt that to address research questions that required complex data, I required further training in advanced epidemiologic methods. Today, I am a PhD candidate in Epidemiology, and I feel privileged to be at a prestigious university, where I focus on the subfield of causal inference methods development. I have a stable income as a researcher during the pandemic and access to countless resources to grow professionally.

Being part of an international community of epidemiologists (such as the Society of Epidemiologic Research) helped me put in perspective that epidemiology is an umbrella term that covers several specialized subfields and career pathways. And while my dissertation is specifically in a subfield, the pandemic has highlighted that being able to work on a specific subfield is a privilege limited to countries where both public health capacity and up-to-par educational and research resources allow it. In countries like mine, epidemiologists and public health professionals do the fieldwork, build their own data collection infrastructure, analyze the data to answer all kinds of research questions, and interact with governmental authorities and local stakeholders themselves. Working now with colleagues from Bolivia, who are in the pandemic frontline performing all the key aforementioned epidemiologic duties, reminded me that as an epidemiologist, different contexts require me to contribute with a lot more than my specialized skills.

Being involved in projects happening in Bolivia make me aware of how much of the top research published in highly recognized journals cannot be generalized to minoritized populations, and how much is lost when social determinants are not explored. To put Bolivia in context, it has the second-lowest score in Healthcare Access and Quality Index in Latin America and the Caribbean.¹ Currently, it has around 0.4 intensive care unit (ICU) beds per 100,000 people² while high-income countries have a capacity above 25 or more ICU beds per 100,000.³ The Bolivian political and economic context⁴ constrain health care professionals from implementing strategies proposed in prevention, diagnosis, and treatment, during (and beyond) the coronavirus disease 2019 (COVID-19) pandemic. For this reason, people have needed to find their own strategies to mitigate the health effects of the pandemic and especially, to help solve the consequences of social inequities. These interventions (which are often labeled as activism) are having a powerful public health impact.

From the Department of Epidemiology, Erasmus University Medical Center, Rotterdam, The Netherlands.

The author reports no conflicts of interest.

SDC Supplemental digital content is available through direct URL citations in the HTML and PDF versions of this article (www.epidem.com).

A Spanish translation of this essay can be found in the eAppendix; <http://links.lww.com/EDE/B741>.

Correspondence: L. Paloma Rojas-Saunero, Department of Epidemiology, Erasmus University Medical Center, PO Box 2040, 3000 CA Rotterdam, The Netherlands. E-mail: l.rojassaunero@erasmusmc.nl.

Keywords: COVID-19; Bolivia; Pandemics; Public health activism

Copyright © 2020 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 1044-3983/21/321-0000

DOI: 10.1097/EDE.0000000000001289

I am currently part of a multidisciplinary team that founded the Red Estratégica para el Autocuidado Socio-Comunitario (Strategic Network for Socio-Community Self-Care).⁵ We systematize collective experiences and community-based self-management strategies developed in hot spots of political conflict⁶ and marginalized rural areas with the intention of making them visible. We have interviewed local leaders who are developing strategies that range from opening soup kitchens to preventing starvation, to initiatives that promote and research traditional medicine as a response to the lack of access to medications for COVID-19 symptoms. This experience has helped me understand that strategies born from real need benefit and increase global health knowledge and epidemiologic research. Furthermore, although similar realities are being experienced in other countries of the world, they are not yet central to academic research in epidemiology. Thus, I have now understood that if my methodologic research is to have an impact in improving health, then I need to go back to listen and observe health problems from those who are in the frontline and translate this complexity on how we phrase research questions. By focusing on the research questions first, I am sure that we, as epidemiologists of all kinds, will face both the need to collect data that is being neglected, and we will have to improve methodologic research in ways that it can be well disposed to real applications and different contexts.

Being an epidemiologist in 2020 has allowed me to reconnect with my roots and with the motivations that led me to where I am today. It has meant appraising the value of

social epidemiology and how to put methods development at people's needs and service. It has meant being critical about the regional frontiers that divide science and epidemiology between the global north and the global south. Finally, I realized that, no matter how far I am from my home country, if I am not accountable for my privilege to this learning process, I will be perpetuating this division.

Note: A Spanish translation of this essay can be found in the eAppendix; <http://links.lww.com/EDE/B741>.

REFERENCES

1. GBD 2016 Healthcare Access and Quality Collaborators. Measuring performance on the Healthcare Access and Quality Index for 195 countries and territories and selected subnational locations: a systematic analysis from the Global Burden of Disease Study 2016. *Lancet*. 2018;391:2236–2271.
2. Almeida F. Exploring the impact of COVID-19 on the sustainability of health critical care systems in South America. *Int J Health Policy Manag*. 2020. doi: 10.34172/ijhpm.2020.116. Online ahead of print.
3. Halpern NA, Kay ST. *United States Resource Availability for COVID-19*. Society of Critical Care Resources. 2020. Available at: <https://www.sccm.org/Blog/March-2020/United-States-Resource-Availability-for-COVID-19>. Accessed 1 September 2020.
4. Trigo MS, Kurmanaev A, McCannAs A. *Politicians Clashed, Bolivia's Pandemic Death Rate Soared*. The New York Times. 2020. Available at: <https://www.nytimes.com/2020/08/22/world/americas/virus-bolivia.html>. Accessed 1 September 2020.
5. Red Estratégica para el Autocuidado Socio-Comunitario. 2020. Available at: <http://www.redautocuidadobolivia.org/>. Accessed 1 September 2020.
6. Bjork-James C. *Mass Protest and State Repression in Bolivian Political Culture : Putting the Gas War and the 2019 Crisis in Perspective*. Human Rights Program, Harvard Law School. 2020. Available at: http://hrp.law.harvard.edu/wp-content/uploads/2020/05/CBjork-James_20_003-1.pdf. Accessed 1 September 2020.

Hiding Behind a Mask

Perspectives from an Asian American Epidemiologist

Jasmine Ko Aqua^{a,b}

I secured my KF94 mask mailed from relatives in Korea around my ears and stared at myself in the mirror. The mask concealed more than half of my face—my nose, my mouth, and my chin. “Can you still tell I’m Asian?” I wondered to myself silently. The only part of my face that remained vulnerable from the protection of my mask were my eyes, staring back at me—dark brown, almond-shaped, unquestionably Asian.

As an Asian American epidemiologist at a state public health department in the US South, the initial few months of coronavirus disease 2019 (COVID-19) were paralyzing. Call after call, panicked residents questioned whether they should exclude members of the Asian community from their clinics, classrooms, and offices, solely on the basis of race and irrespective of travel or exposure history. The ceaseless, xenophobic rhetoric emanating from all branches of our elected government fueled the dangerous “Kung Flu” narrative, jeopardizing the safety of millions of Asians living in the United States. When my mom disclosed to me that she was scared to go to the grocery store, I attempted to alleviate her fears, dismissing them as unfounded. But the next time I went grocery shopping, I noticed that I too was tightly gripping the arm of my husband. As I stared at my masked reflection in the mirror, I realized that my mask could provide me with some protection from severe acute respiratory syndrome coronavirus 2, but it could not protect me from one of the most dangerous threats to public health—racism.

The initial stigma against Asians in America diminished as we started to see widespread community transmission, and the pandemic predictably shifted to expose the deep-rooted racial injustices against Black and Brown people in the United States. As a tuberculosis (TB) epidemiologist, I investigated TB clusters and outbreaks throughout the state—from populous downtown streets struggling with homelessness to crowded poultry plants employed by immigrants and refugees. It was no surprise that as the novel coronavirus spread throughout our state, it settled down among these same minority communities that bear a disproportionate burden of TB. As epidemiologists, we are taught to study the distribution and determinants of health and to apply that knowledge through evidence-based interventions to improve health outcomes. Is it our job or our place to address racism? This summer, as we watched the “Black Lives Matters” protests and social unrest following George Floyd’s murder, my mind stuck on the Asian police officer who stood by watching and participating in upholding white supremacy culture. I made note that being a minority does not mean you are excused from your responsibility to be antiracist. I made note that being an infectious disease epidemiologist does not excuse your responsibility to engage in antiracist public health work.

From the ^aDepartment of Epidemiology, Rollins School of Public Health, Emory University, Atlanta, GA; and ^bGeorgia Department of Public Health, Atlanta, GA. The author reports no conflicts of interest.

Correspondence: Jasmine Ko Aqua, Department of Epidemiology, Rollins School of Public Health, Emory University, 1518 Clifton Rd, Atlanta, GA 30322. E-mail: jasmine.aqua@emory.edu.

Keywords: Asian American; COVID-19; Racism in public health; Social epidemiology

Copyright © 2020 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 1044-3983/2020/321-0000

DOI: 10.1097/EDE.0000000000001282

I left my job at the state department of public health in July. It was a planned exit, as I was beginning a PhD program, but as my end date approached, I was overwhelmed with a sense of survivor's guilt. For the rest of my colleagues, they are continuing to sprint a marathon that has no finish line in sight. The COVID-19 pandemic has revealed clearer than ever that epidemiologists bear an immense responsibility to ensure the health of the public. But that is what epidemiologists do.

Long before epidemiology was a household term, epidemiologists bore the responsibility of studying and improving the health of our communities—without fanfare or recognition or relevancy. And long after this pandemic, when COVID-19 feels as distant to us as something like the bubonic plague, I am confident that epidemiologists will be actively working to dismantle the racial health inequities that this pandemic fully exposed.

What Has It Meant for Me to Be an Epidemiologist in 2020?

Usama Bilal^{a,b}

The year 2020 has brought three things to me as an epidemiologist: (1) a deeper understanding of what epidemiology is and what it contributes; (2) a reinforcement of the importance of social inequalities as one of the key drivers of health across and within populations; and (3) the importance of communication with and through media.

I am a social epidemiologist interested in urban health inequities, especially related to nutrition-related chronic diseases. I was born and raised in Spain, and trained (and living for the last 7 years) on the East Coast of the United States. These intersecting professional and personal identities have created a vortex of emotions, worries, motivation, and drive during 2020. When the coronavirus disease 2019 (COVID-19) outbreak was starting to become the center of all news reports, I kept thinking that I did not have much to contribute to these conversations; experts in infectious disease dynamics doing modeling had all of the knowledge and tools. It took me a while to get out of my own self-imposed professional silo. My stance shifted on 30 March, with a Twitter thread by Dr. Heinke,¹ where she highlighted that all epidemiologists can play a role in explaining many basic concepts common through the discipline. We have seen it with basic concepts such as sensitivity and specificity, the importance of understanding person, place, and time, and the role of societal arrangements in generating specific distributions of disease in populations.

Central to my identity as a social epidemiologist is a claim that the distribution of disease across and within populations results from mass influences acting on the population as a whole.² Some of the critical mass influences driving disease include our economic and social organization: capitalism, racism, colonialism, and patriarchy.³ These structures generate inequities in access to resources, leading to disease and health inequities.⁴ While these concepts are the bread and butter of my usual epidemiologic work, it took me a while to connect the dots and apply them to the COVID-19 pandemic. On 30 March, while watching the webinar “Implications of the Pandemic for Health Equity,” I heard Dr. Barber⁵ mention that most COVID-19 testing in Philadelphia was happening in wealthy neighborhoods while the consequences of the pandemic were going to be felt in the most vulnerable areas. It was not long until data started becoming available, and we clearly saw how testing was lower and positivity ratios and incidence rates higher in more deprived areas, and how minoritized groups had much higher hospitalization and mortality rates nationwide.

During all these months, one of the most time-consuming yet rewarding activities I have had the privilege to participate in is outreach with media, both local and national, in the United States and in Spain. Earlier this year, I attended a media training organized by my institution and got one specific thing out of it: “media is like a loudspeaker, you are talking to the audience, not the journalist.” During these months, I have taken that to heart and have

From the ^aUrban Health Collaborative, Dornsife School of Public Health, Drexel University, Philadelphia, PA; and ^bDepartment of Epidemiology and Biostatistics, Dornsife School of Public Health, Drexel University, Philadelphia, PA.

U.B. was supported by the Office of the Director of the National Institutes of Health under award number DP5OD26429.

The author reports no conflicts of interest.

Correspondence: Usama Bilal, Urban Health Collaborative, Drexel University, 3600 Market Street, Room 730, Philadelphia, PA 19104. E-mail: ub45@drexel.edu.

Keywords: Coronavirus; Covid-19; Epidemiology; Health equity; Health inequalities

Copyright © 2020 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 1044-3983/2020/321-0000

DOI: 10.1097/EDE.0000000000001281

tried to attend as many journalists as possible to make epidemiologic concepts, especially around health inequities, accessible to the public. Above all, the COVID-19 pandemic has solidified a vision in my mind that was already there: one of the primary roles of social epidemiology is to set the narrative around health inequities to a narrative about injustice and macro-level factors driving disease distributions within and between populations. COVID-19 has shown that one of our crucial tasks as social epidemiologists is to set this narrative, both within the general field of epidemiology and for the general public.

REFERENCES

1. Heinke D. @Epi_D_Nique: #EpiTwitter: we Have Our Orders! Go Forth and Help the Public Get Un-confused! 2020. Available at: https://twitter.com/Epi_D_Nique/status/1244455080012779521. Accessed 3 September 2020.
2. Rose G. Sick individuals and sick populations. *Int J Epidemiol.* 1985;14:32–38.
3. Riley AR. Advancing the study of health inequality: fundamental causes as systems of exposure. *SSM Popul Health.* 2020;10:100555.
4. Link BG, Phelan J. Social conditions as fundamental causes of disease. *J Health Social Behav.* 1995;35:80–94.
5. Barber S, Carroll-Scott A. Webinar: implications of the Pandemic for Health Equity. 2020. Available at: https://www.youtube.com/watch?v=KRh05MpDS08&feature=emb_logo. Accessed 3 September 2020.

What Has It Meant for Me to Be an Epidemiologist in 2020?

Martha M. Téllez-Rojo

I have been an epidemiologist for over 20 years. In 2001, I became the in-country (Mexico) principal investigator of two long-standing birth cohorts: ELEMENT and PROGRESS, both of which investigate the long-term effects of environmental exposures on mother and child health through a successful collaboration with partners in the United States. These two longitudinal studies have become platforms for student training, new research topics, methods development, and the generation of environmental policy.

My field team and I have weathered many crises over the last decades. During the 2009 H1N1 pandemic, we had to stop fieldwork for 2 weeks. In the 2017 earthquake that hit Mexico City severely, some of our participants lost their homes and property. We learned from these experiences how to maintain our relationships with study subjects and how to offer support. Neither of these crises, although, prepared us for the coronavirus disease 2019 (COVID-19) crisis. The 2020 pandemic has impacted every single member of our community: participants, field workers, researchers, and students, both in Mexico and in the United States. For the first time in 26 years, our research facilities have been closed for almost 6 months, we have suspended in-person data collection, and it is still not clear when and how we can return.

Although our cohort studies were built around academic goals, over the years, we have worked with three generations of participants, and so our connection goes well beyond research. This transformation has taught us that it is impossible to do research and fieldwork without being sensitive to the emerging needs of the study subjects whom so willingly have given us their time and trust over the years. Since the pandemic onset, we have developed creative ways to remotely connect and support study participants, while keeping our research moving forward. This includes providing information and guidance on how they can find resources to cope with the pandemic and mitigate domestic violence, procuring resources to deliver direct aid to those facing food insecurity situations, and learning how COVID-19 has impacted participant health and livelihood.

For longitudinal research, COVID-19 has become a natural “experiment” nested in the cohorts, opening new research opportunities requiring epidemiologic study designs capable of disentangling the direct and indirect COVID-19 effects from the existing cohort study outcomes. We also need to understand how shifts due to COVID-19 will affect our ongoing research objectives and might permanently modify our operational approach to field research, allowing us to collect personal information and biologic and environmental samples, while keeping participants and field staff safe in this new reality.

On a more personal note, what we are learning about the impact of COVID-19 on our participants’ lives reinforces again how privileged my own situation is. I can manage the

From the Center for Nutrition and Health Research, National Institute of Public Health, Cuernavaca, Morelos, Mexico.

The author reports no conflicts of interest.

Correspondence: Martha M. Téllez-Rojo, Center for Nutrition and Health Research, National Institute of Public Health, Cuernavaca, Morelos, Mexico. E-mail: mmtellez@insp.mx.

Copyright © 2020 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 1044-3983/2020/321-0000

DOI: 10.1097/EDE.0000000000001287

emerging challenges working from home with a secure salary, alongside a great working team that not only shares an adherence to rigorous research but also an ethical commitment to study participants. In addition, this school year, my two children have the resources they need, including internet access for their interactive private school instruction, while our project participant children who mostly attend public schools will receive their classes through prerecorded public television

classes. Finally, I have a supportive partner who shares the increasing domestic demands that this new life imposes on all of us. This is an unusual reality for women in my country where domestic and family demands rely unevenly in women, and COVID-19 has imposed even greater burdens.

Overall, this context has also become an opportunity to renew my commitment to my work as a meaningful way to contribute to improving population health.

What Has It Meant for Me to Be an Epidemiologist in 2020?

Nelson Gouveia

For many years, when asked about my profession at social gatherings, I used to refer to the “study of epidemics,” alluding to the spread and distribution of infectious diseases in the population, as the easiest way to help people understand what constitutes the work of an epidemiologist. However, as the main focus of my research has always been centered on environmental issues and not infectious diseases, I believe that on several occasions, I was not able to fully convey this message and people still did not know exactly what I and other epidemiologists do.

But suddenly, due to the severe acute respiratory syndrome coronavirus 2 pandemic in 2020, we epidemiologists were put in the spotlight. It is difficult to turn on the TV without coming across news or debates where epidemiologic terms are being used. We used to joke that in Brazil, during the football World Cup, we have one hundred million soccer coaches because everyone has passionate opinions on the best strategy for our national team to follow. During the pandemic, it seems that we have a hundred million epidemiologists! This popularization of epidemiology has made the discipline more understandable for the general population and helped to increase the recognition of its importance for the Brazilian Unified Health System (Sistema Único de Saúde [SUS]). If before this profession was discussed only in specialized circles, now everyone agrees on the need to have a well-trained epidemiologist in all Brazilian cities, contributing to local strategies to manage the current and future pandemics.

This unexpected prominence of epidemiology with the emergence of a disease caused by a new and unknown virus, and the consequent quarantine adopted as a response to control the pandemic, had substantial effects on my work routine. On the one hand, there was the process of adapting to measures of social distance and the accelerated transition to virtual activities such as classes, meetings, orientation sessions, and even social gatherings. Thus, in addition to learning new technologic tools, it was necessary to experiment with different educational strategies and techniques for preparing and recording classes, and to adopt teaching tools to improve remote education, which became mandatory. On the other hand, it was also necessary to dedicate time to read and study the new coronavirus, to recall specific concepts in the area of infectious diseases epidemiology that were not part of my daily life, both to respond to the growing demand for qualified information about the pandemic and its impact on our society, as well as to incorporate this knowledge into my teaching activities.

And, considering that my main area of activity is environmental epidemiology, I could not fail to establish the connection between the coronavirus disease 2019 pandemic and themes that I had been working on, such as air pollution and climate change, among

From the Department of Preventive Medicine, University of Sao Paulo Medical School, São Paulo, Brazil.

The author reports no conflicts of interest.

Correspondence: Nelson Gouveia, Department of Preventive Medicine, University of Sao Paulo Medical School, Av. Dr. Arnaldo, 455, São Paulo 01246-903, Brazil. E-mail: ngouveia@usp.br.

Keywords: Epidemiology; Pandemic; Quarantine; Teaching

Copyright © 2020 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 1044-3983/2020/321-0000

DOI: 10.1097/EDE.0000000000001279

other environmental issues. At a time when forest fires and illegal deforestation are increasing in Brazil, it is important to highlight that such environmental degradation enables the population to get closer to unknown viruses capable of unleashing new epidemics. In summary, my workload has increased considerably since the new coronavirus arrived, a perception shared by several colleagues.

Having lived these last months in the midst of the greatest pandemic of the last 100 years made me reflect on the importance of teaching epidemiology, not only with the objective of engaging future professionals for this specific area, but also to train future doctors in the main concepts and techniques of the discipline, and thus, prepare them to face future (and probable) pandemics.

What Has It Meant for Me to Be an Epidemiologist in 2020? Unprecedented Times and Lessons Learned

Izabel Marcilio

What has it meant for me to be an epidemiologist in 2020? Unprecedented. That is the word that will almost always be there as I read the scientific literature looking for updates on coronavirus disease 2019 (COVID-19). Unprecedented crisis, unprecedented patient surge, unprecedented demand for intensive care unit (ICU) beds. And that is for sure the word I would use to describe every aspect of what it has meant to be an epidemiologist in 2020.

Working at the Epidemiologic Surveillance Center within the main reference hospital for severe COVID-19 cases in the state of São Paulo, Brazil, my routine was vastly affected with an unforeseen escalation in workload. It felt like shifting from business-as-usual epidemiology to disaster epidemiology in the blink of an eye. A great deal of flexibility was needed as the hospital converted its 900 beds (including 84 ICU beds) to 300 ICU beds devoted to COVID-19 patients. For instance, while in the past, an average of 3,200 cases of notifiable disease cases per year were reported, our hospital has reported 3,300 cases in May 2020 alone. As of 7 September, we have reported 5,381 suspect and 3,799 COVID-19 confirmed cases, with a 33.6% case-fatality ratio. We have also reported 2,760 COVID-19 cases among health care workers, approximately 11% of our workforce. All this information needs to be compiled and quickly communicated to the hospital's directory board.

As an epidemiologist, I took part in the hospital incidence command (HIC), and it is the epidemiologist's duty within the HIC to provide situational reports to decision makers in a timely fashion. In my previous routine, I have always looked carefully at data, preparing graphs, tables, and tests to make the best use of figures. I would describe my practice as a reflective one, but suddenly there was no time for that: as numbers kept growing and patients kept coming in, decisions were being made and numbers were needing to be updated. The extent and severity of the COVID-19 has put epidemiology at another level within the hospital, and my urgency to learn and inform has pushed me through an unprecedented change. Being an epidemiologist in a COVID-19 reference center was definitely an opportunity to be assertive and ready, and to learn about communicating the epidemiologic way of thinking to decision makers.

Furthermore, since there is so much uncertainty about the disease, there is a constant answering of questions put forward both by health professionals and lay people. As often as never, I have seen myself communicating tragic facts to loved ones. As we now live amid rapidly shared information, and even the scientific community appears to have surrendered to non peer-reviewed papers, it seems that epidemiologists were repeatedly brought into action to interpret those uncertainties. I have never said "we still don't have the answer for that" so many times. And although I reckon that epidemiologists have no problem whatsoever dealing with uncertainties, we are not trained in difficult conversations. So, as we were suddenly called upon to talk about not knowing when this unprecedented crisis would end, and when we can expect

From the Epidemiologic Surveillance Center, Hospital das Clínicas—University of São Paulo Medical School, São Paulo, Brazil.

The author reports no conflicts of interest.

Correspondence: Izabel Marcilio, Epidemiologic Surveillance Center, Hospital das Clínicas—University of São Paulo Medical School, R. Dr. Ovidio Pires de Campos, 455, São Paulo—05403-010, Brazil. E-mail: izabel.marcilio@hc.fm.usp.br.

Keywords: COVID-19; Epidemiologic surveillance; Incident command center; Outbreak; Pandemic

Copyright © 2020 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 1044-3983/20/321-0000

DOI: 10.1097/EDE.0000000000001280

better days, it was also time to learn to communicate our uncertainties with empathy. To always bring about the idea that “Better times are sure to come” and “We will certainly get through this.”

In short, being an epidemiologist in 2020 was all about responsibilities and lessons learned. Out of all the changes I have had to go through to cope with this unprecedented time,

going beyond the basics to communicate epidemiologic data in an empathetic and effective manner was a major lesson learned. And despite the overwhelming workload, the fatigue, and the fear, I am very pleased to have taken part in a successful HIC and to have worked as an epidemiologist in the frontline during this COVID-19 epidemic.

What Has It Meant for Me to Be an Epidemiologist in 2020?

Julia Díez

When will life return to normal? I have been asked that question since March. Watching how the coronavirus disease 2019 (COVID-19) scenario has unfolded in Spain—with more than 300,000 cases, 28,498 confirmed deaths, and approximately 44,000 excess deaths as of August 2020¹—has been disheartening. The COVID-19 pandemic has presented Spain with societal challenges not seen since the Civil War.

I hold a doctorate in Epidemiology and Public Health and work as a postdoctoral researcher at the University of Alcalá (Madrid, Spain). Although my work has been focused on food environment research and social epidemiology, some journalists have contacted me over these last months to discuss the spread of SARS-CoV-2. Yet I prefer to let the epidemiologists who work in infectious diseases and pandemic response talk.

Frankly, my main contribution has been to help interpret epidemiology concepts down to notions that most of the people could understand. I have seen many of my friends and relatives trying to figure out what “basic” concepts such as test sensitivity meant. Also, many have called asking whether they should pay to have a polymerase chain reaction and/or a serologic test done. Over these months of information overload on the media, I have helped people to make sense of COVID-19 data. It should be part of our work to aid people in understanding what epidemiology is and how this discipline contributes to society.

Moreover, this crisis has shed light on the large and growing health inequities within our populations, and particularly within vulnerable groups. Also, on the relevance of where we live and work for our health. While this might be common knowledge within social epidemiologists, many have recognized these issues with the current pandemic. In fact, macro-level factors (e.g., workforce or racism) drive distributions of both infectious and noncommunicable diseases within and between populations.

Even though I am aware of my privileged circumstances, I am exhausted from working and teaching from my small apartment. My guess is you are, too. The burden and the burnout are real²; however, I wish that the shared recognition of epidemiology this 2020 creates collective action to finally tackle health inequalities.

REFERENCES

1. García-Basteiro A, Alvarez-Dardet C, Arenas A, et al. The need for an independent evaluation of the COVID-19 response in Spain. *Lancet*. 2020;396:529–530.
2. Corbera E, Anguelovski I, Honey-Rosés J, Ruiz-Mallén I. Academia in the time of COVID-19: towards an ethics of care. *Plan Theory Pract*. 2020;21:191–199.

From the Public Health and Epidemiology Research Group, Department of Preventive Medicine and Public Health, University of Alcalá, Madrid, Spain. The author reports no conflicts of interest.

Correspondence: Julia Díez, Public Health and Epidemiology Research Group, Department of Preventive Medicine and Public Health, Crta Madrid-Barcelona km. 33.600 University of Alcalá, 28871, Alcalá de Henares, Madrid, Spain. E-mail: julia.diez@uah.es.

Keywords: COVID-19; Epidemiology; Pandemic; SARS-CoV-2

Copyright © 2020 Wolters Kluwer Health, Inc. All rights reserved.
ISSN: 1044-3983/2020/321-0000
DOI: 10.1097/EDE.0000000000001276

Being a Latin American Woman in Science During the COVID-19 Pandemic

Brenda Crabtree-Ramírez

I am a mother of two daughters and an infectious diseases specialist. All my professional life I have been in the HIV field, focused on observational and epidemiologic studies. Being a woman researcher in Mexico is challenging due to low salaries and/or fewer research grants opportunities as compared with our male peers; gender inequity is still too common. Nevertheless, I consider myself privileged in my current position and I am grateful for my wonderful job every day.

HIV and, in general, the infectious disease discipline represents very dynamic work. However, this pandemic has been like a hurricane for those in our discipline that has made clear us the responsibility and importance of our opinion, expertise, and leadership, and the impact of our knowledge and commitment to our institutions and communities.

This was also my case; I have most fully understood this commitment since March 2020.

Although we have learned many lessons from countries affected by coronavirus 2019 (COVID-19) before us, Mexico has been profoundly hit by this pandemic due to the weak and already overwhelmed health system for decades, the inequities and social disparities in our nation, the limited access to testing throughout these 5 months and the political issues that have impacted the consistent use of facemasks and prevention strategies in all settings.

My institution has been a COVID-19-only zone for more than 23 weeks. Weeks in which I have seen my fellows go from enthusiasm and motivation to exhaustion, frustration and burnout. Twenty-three weeks in which I have tried to deliver useful and quality information to my community given all the fake news from the broader world that misinforms and brings so much harm. Twenty-three weeks of being available 24/7 in my phone witnessing and addressing the fear, uncertainty, and frustration of many people when, after they test positive for COVID-19 and need hospitalization, and cannot find a hospital bed. 23 weeks with my daughters at home, who are learning how to do homeschooling alone, worrying about their mom's risk of getting infected, isolating from other family members and friends, and having limited places to go and live as a child.

The COVID-19 pandemic is damaging health, social, and economic well-being worldwide. Less has been said about women leading the health response, but they make up to two-thirds of all the health care workers globally, exposing them to a greater risk of infection. Additionally, women are also carrying much of the burden at home: schools and childcare facilities are closed and, consequently, they suffer more from a disrupted balance between personal and professional life, increasing gender inequalities. Finally, women also face high risks of violence, abuse, or harassment during times of crisis.^{1,2}

From the HIV Program (Universidad Nacional Autónoma de México, UNAM), Departamento de Infectología, Instituto Nacional de Ciencias Médicas y Nutrición, Salvador Zubirán, Mexico City, Mexico.

The author reports no conflict of interest.

Correspondence: Brenda Crabtree-Ramírez, Vasco de Quiroga 15. Col. Bellisario Domínguez sección XVI. Tlalpan. C.P. 14080. Mexico City, Mexico. E-mail: brenda.crabtree@infecto.mx; brendcrabtree@hotmail.com

Copyright © 2020 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 1044-3983/21/321-0000

DOI: 10.1097/EDE.0000000000001293

That is just unfair and unsustainable for much longer. Yet, COVID-19 in Latin America seems never-ending.

As a female scientist, 2019 was a great year: I had the honor to serve as local Chair of the Scientific Conference of the International AIDS Society where one of my missions was to achieve gender balance throughout the entire event, which was not an easy task, but successfully accomplished. Unfortunately, this pandemic may put this progress at risk for many of us.³ Myself and most of the mothers in medicine I know have been faced with deciding among three scenarios: assuming the risk of infecting our children, not assuming the risk but being away from them, or quitting our job because we do not have someone to care for them while on lockdown. All 3 have had tremendous consequences on our personal lives.

The long-term consequences of this pandemic on health education; on the lives of our tireless residents and fellows; on this generation of children—like my daughters—who are in quarantine; and the impact of the increase in violence, gender

inequity, and social distancing are all unclear. This uncertainty is almost unbearable.

Nonetheless, I am still here, trying to do my best with passion and commitment because #WeAreID and this is what we do.

ACKNOWLEDGMENTS

The author thanks Claudia Cortes and Lorena Guerrero-Torres.

REFERENCES

1. The Organisation for Economic Co-operation and Development (OECD). Women at the Core of the Fight Against COVID-19 Crisis. OECD Policy Responses to Coronavirus (COVID-19). April 2020. Available at: <http://www.oecd.org/coronavirus/policy-responses/women-at-the-core-of-the-fight-against-covid-19-crisis-553a8269/>. Accessed 15 October 2020.
2. Boniol M, McIsaac M, Xu L, et al. “Gender Equity in the Health Workforce: Analysis of 104 Countries”, Health Workforce Working Paper, No. 1. World Health Organization, 2019. Available at: <http://apps.who.int/bookorders>. Accessed 15 October 2020.
3. Myers KR, Tham WY, Yin Y, et al. Unequal effects of the COVID-19 pandemic on scientists. *Nat Hum Behav.* 2020;4:880–883.

Epidemiology and Its Practice Using Electronic Healthcare Databases During the 2020 Pandemic Year

A Personal Experience and Some Perspectives

Maurille Feudjo Tepie

The opportunities and challenges of using real-world data for healthcare decision making have been increasingly debated in recent years. The debates have been driven by the increased availability of individual patients' data from routine clinical practice, powered by progress in information technology and in statistical epidemiology methods.

The coronavirus disease 2019 (COVID-19) pandemic led to the realization that the above-mentioned debates were facilitated by a lack of urgency, allowing stakeholders to calmly assess options before adopting their preferred approach. Under this assumption of "no critical time pressure," most situations permitted the choice between using real-world data or data from controlled experiments.

By sweeping the world at an unprecedented pace, the COVID-19 pandemic introduced a different perspective into these debates. Healthcare stakeholders had insufficient time to digest and organize their reaction. It quickly became obvious that the only available option for early and much-needed insights for tailored public health guidance was to use real-world data that fortunately (or unfortunately) was accumulating rapidly.

So, from my perspective as an epidemiologist, 2020 provided a unique opportunity to further exemplify how real-world data (and its extension, big data) can be leveraged for rapid responses to a public health emergency. The need to act fast made some of the earlier concerns around real-world data even more acute and obvious: data integrity, data reliability, data analysis, and appropriate interpretation, typified by the publication of three scientific papers, in major medical journals, that were subsequently retracted. A particular concern is that these incidents would, more than in previous years, negatively impact progress on the acceptance of the value of real-world data for healthcare decision makers, for patients, physicians, and the drug and vaccine industry.

Like other observational research team leaders during 2020, I had to (1) provide support and guidance to my team, who could have been experiencing one of the most challenging periods of his or her life—including caring for and protecting their loved ones while maintaining business continuity away from the office and (2) quickly adapt to the new conditions, redefine and reset priorities accordingly, and continue to identify and seize opportunities as they occurred. For the latter, I was fortunate to have a team of experienced epidemiologists, many of whom with a solid background in infectious disease epidemiology, enabling us to contribute to a companywide crisis initiative to build a COVID-19 disease projection model using accumulating global real-world data. Through a combination of a great sense

From the Centre for Observational Research, Amgen Ltd, Uxbridge, United Kingdom.

M.F.T. is a full-time employee of Amgen Ltd, a large multinational Biotechnology company, interested among others, in finding a treatment for the coronavirus disease 2019.

Correspondence: Maurille Feudjo Tepie, Centre for Observational Research, Amgen Ltd, 1 Sanderson Road, Uxbridge Business Park, Uxbridge UB8 1DH, United Kingdom. E-mail: maurille@amgen.com.

Keywords: COVID-19; Data; Epidemiology; Pandemic; Public-health-decision; Urgency

Copyright © 2020 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 1044-3983/2020/321-0000

DOI: 10.1097/EDE.0000000000001286

of responsibility, dedication, and long hours, the team quickly developed an automated data ingestion pipeline that simulates different scenarios and successive waves of the pandemic under various assumptions and can be refined as new input parameters become available. This proved instrumental to our company leaders, first to inform a wide array of critical business decisions, and second to advise national governments on the likely evolution and consequences on the healthcare ecosystem.

Last but not least, as a trained statistical epidemiologist, I found myself being called upon by friends, former colleagues, and relatives, to answer epidemiology-related questions more often than I ever had in the past 20 years. Most of the time,

they were looking for answers and guidance to help cope with their increased anxiety. There was an overflow of information in the media, which frequently seemed contradictory. Within a short period of time, hundreds of scientific papers and commentaries were published. Quickly digesting these as they became available and keeping up to date with the latest public health measures became a necessity for me.

The COVID-19 pandemic, and reactions to it by different healthcare stakeholders, has given epidemiologists the opportunity to do things differently and/or to do different things. It has also been an opportunity to reassess our responsibility toward the practice and society as whole.

What Has It Meant for Me to Be an Epidemiologist in 2020?

Kamalini Lokuge

I started my working life as a medical doctor in Australia, but it was only after my first mission in Afghanistan with *Medecins Sans Frontières* that I realized the importance of public health. It was key to the provision of effective care to each of my patients, and to the prevention of illness in them, their families, and communities. That was over 2 decades ago, and since then, I have worked as a medical epidemiologist and an applied researcher almost exclusively in humanitarian settings internationally. The practical experience and knowledge I have acquired working alongside communities and health workers fighting Ebola, other high-risk infectious pathogens, and issues such as maternal mortality and domestic violence, have guided my public health input to controlling coronavirus 2019 (COVID-19).

When SARS-CoV-2 first emerged, I was in Sierra Leone. I returned to Australia in early March to a disease that was beyond the experience of most policy makers and expert advisors. That, coupled with a lack of empirical evidence from settings they could identify with, resulted in a reliance on the wrong evidence and expertise. There seemed an almost mystical faith in modeling, with Chris Whitty, England's Chief Medical Officer, consigning the United Kingdom to a suppression strategy based on models that did not include community-based case detection or contact tracing. There also seemed an assumption that communities in Western democracies would not comply with restrictions on movement and other freedoms, and therefore, there was no point in asking them to. Early on, these views seemed to be informing Australian national policy as well.

For those of us who had worked controlling high-risk infectious pathogens internationally, practical experience and empirical data from such settings made clear how critical community measures aimed at person-to-person transmission were. That until we knew more, the precautionary principle should apply. That biomedical interventions such as diagnostics and vaccines were tools that could not be relied on in blind faith, but had to be part of a public health strategy founded on community engagement and trust. That the Australian community would need to be asked to do things they had never had experience of, and without them we would fail. And to date, because of the public's response, Australia has largely succeeded in controlling COVID-19. Where we have failed it has been because we have forgotten that fact.

I have now spent most of 2020 working on Australia's COVID-19 response. Initially through independent research which has informed national policy, and then directly with regions dealing with resurgent transmission. Working on outbreaks in high-density public housing, I learned again, as in every outbreak, that solutions come from true partnership with the people who live the problem. I was an expert witness in a court case defending the right of public health expertise, and not economic interests, to decide how we control our

Editors' Note: Related articles appear on pages xxx and xxx.

From the Australian National University.

The author reports no conflict of interest.

Correspondence: Kamalini Lokuge, Australian National University. E-mail: Kamalini.Lokuge@anu.edu.au.

Copyright © 2020 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 1044-3983/21/321-0000

DOI: 10.1097/EDE.0000000000001294

borders. I have been privileged to work alongside colleagues in state health departments who, just like in every Ebola outbreak I have dealt with, were working day and night to defend their communities against a common enemy.

COVID has made clear to me that practical public health experience matters, and such experience is relevant no matter

where it is acquired. I write in the hope that when we next deal with an unknown threat such as this, we judge expertise not based on traditional academic metrics, but on practical evidence of its impact, and in the hope that when we consider humanitarian and development assistance, we see it as a two-way exchange that will benefit us as much as those we are assisting.

What Has It Meant for Me to Be an Epidemiologist in 2020

Adetoun Mustapha^{a,b}

Starting a new role at work in January 2020, I had anticipated that 2020 would be different from recent years. However, the stretch to my professional and personal lives necessitated by the coronavirus disease 2019 (COVID-19) pandemic was beyond what I could have imagined. Being an epidemiologist in 2020 means engaging in practical activities beyond my primary role and collaborating across disciplines to advance public health. It also meant adapting to change and leading in uncertain times by demonstrating care for people.

Providing pointers to accredited sources of information about the COVID-19 situation in various professional and social WhatsApp groups became part of my daily routine to debunk the fake news that became rife on social media in Nigeria. This soon graduated to carrying out health promotion among focus groups using data from government and World Health Organization/Johns Hopkins COVID-19 dashboards, advocating what people can do to stay physically and mentally healthy and posting bulletins on social media. I paid more attention to my own health by intentionally taking recommended hours of sleep and eating locally available fruits and spices to boost my immune systems. I ate more of such natural immune boosters in a few months of 2020 than in the last 2 years!

The COVID-19 pandemic highlighted challenges on social and environmental determinants of health in Nigeria. Most of the population are engaged in the informal economy sector and depend on a daily wage; without a social welfare scheme during the lockdown, they had to resort to family and friends for sustenance. It was, therefore, a privilege for me to share with others and to support distribution of essential items to vulnerable people in the community. I witnessed the ethical dilemma of lockdown for public health protection and the need to keep the economy running to save jobs, and the difficult choice of potentially dying from exposure to COVID-19 versus starvation. Due to the complete lockdown of about 8 weeks, some people who otherwise would have been at work had to stay in overcrowded housing conditions. Increased indoor activities such as cooking created increased indoor air pollution, especially in homes with poor ventilation that cook with polluting fuels.

Leveraging an opportunity to provide an “on the ground” account of response to COVID-19 pandemic in Nigeria led to a cross-disciplinary collaboration with virologists to publish a commentary in an international journal. Similarly, teaming up with other environmental health scientist of Nigerian descent working in diaspora, I helped design and conduct an online survey to test the effectiveness of a public awareness campaign on COVID-19 in Nigeria. The result is aimed at providing information for community mobilization to prevent further exposure such as targeted delivery of social media messaging about preventive behaviors, symptom management, and where to access care.

From the ^aNigerian Institute for Medical Research, Lagos, Nigeria; and ^bImperial College London, London, United Kingdom.

The author reports no conflicts of interest.

Correspondence: Adetoun Mustapha, Nigerian Institute for Medical Research, Lagos, Nigeria and Imperial College London, London, United Kingdom. E-mail: Adetoun.mustapha03@alumni.imperial.ac.uk.

Copyright © 2020 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 1044-3983/2020/321-0000

DOI: 10.1097/EDE.0000000000001284

As the chair of the International Society for Environmental Epidemiology (ISEE) Africa chapter, I wrote several communication notes to members to manage all-round well-being including mental health and to promote more communication with people via social and electronic media at the peak of the COVID-19 lockdown across Africa. Leading during the crisis requires innovation to get people engaged. We held the first webinar in the chapter; it was on the topical issue of getting more papers from Africa published in international journals. Following record success of this, a second webinar held on funding opportunities for environmental health research in Africa attracted over 250 people. Further, we helped members adjust to the transition from the physical annual ISEE meeting to a virtual conference by providing tips on how to prepare for the conference and to navigate the conference sessions and ways to socialize virtually during the conference. Record participation in the conference across Africa and feedback by first-timers on how the conference is contributing to their professional development is heart-warming.

Following the death of George Floyd in Minneapolis, United States, in June 2020 and the global movement challenging anti-Black racism, I could connect with the need for racial justice. I wrote freelance short articles about how diversity and inclusiveness is crucial for the society. Further, I reflected on my personal experience as a researcher, discussed colonial conditioning of global health, and offered suggestions to address structural racism in a panel discussion on Structural Racism and Population Environmental Health at the ISEE 2020 virtual conference.

Navigating the challenges of working from home and adjusting to the new normal of attending online church services and online social events across the world are interesting developments for me. Having the expertise to study the spread of COVID-19 in the population can substantially contribute to minimizing the public health impacts of the pandemic. Doing this and addressing environmental justice issues (Black Lives Matter) make 2020 a moment for epidemiologists.

Living and Working During the COVID-19 Pandemic

Carlos del Rio

When I started hearing of cases of a novel Coronavirus emerging in Wuhan, China, in early January of 2020, I was fascinated by this novel outbreak and obsessively tracked it each morning using the Johns Hopkins website.¹ During that time, I saw how China was implementing draconian measures for its control and was certain they would be able to control it within their borders. It is clear now that I was wrong and that, even in those early days of the pandemic, the virus was already silently circulating beyond China and that a global pandemic that has thus far infected over 30 million people and has killed over 1 million had already started.²

In early February, my wife and I attended a scientific conference, the 46th Remington Winter Course in Infectious Diseases, in Vail, Colorado and, as the outbreak was growing we were asked by the organizers to give a talk about this novel disease, coronavirus 2019 (COVID-19), which we did on February 14. The talk was livestreamed (<https://vimeo.com/391526323>). At that point, there were fewer than 20,000 cases globally and just nine had been diagnosed in the U.S. Little did we know that SARS-CoV-2 was actively circulating in Vail and that several Mexican friends would get infected there and be the first cases of COVID-19 in Mexico.³ The following 2 weeks I traveled to Washington, DC twice and to Mexico City once. Around that time, Dr. Nancy Messonnier from CDC warned the American public that disruptions to daily life would be severe.⁴ In addition, hearing from colleagues at the Department of Health and Human Services how the outbreak was rapidly spreading gave me a sense of urgency to work on trying to limit the spread. As a result, I worked with civic and sports organizations, such as the Atlanta Symphony Orchestra, the National College Athletic Association, and the Atlanta Committee for Progress, and was put in the difficult position of communicating the public health need to shut down public events such as concerts and the “Final Four” the culminating event of the college basketball season.

I have also been advising many in the travel industry, from cruise lines to hotel chains and Delta airlines, and have learned more than I ever thought I wanted to about airflow, safety protocols and many other nuances that make the travel industry one of the most heavily hit by this pandemic.

On March 8, the first person under investigation was admitted to Grady Hospital. The next few months were nothing less than a storm with my job as Executive Associate Dean at Grady requiring me to attend almost daily meetings and calls as we saw an increasing number of patients with COVID-19 show up in the Emergency Room. Working with the hospital leadership, we began making plans for surge capacity, canceled all elective procedures, restricted visitors, and ensured adequate supply of Personal Protective Equipment. I wanted to be sure that we provided truthful, timely, and transparent information to health-care workers and thus started having daily calls with Emory service chiefs and a weekly

From the Department of Medicine, Emory University School of Medicine and Departments of Epidemiology and Global Health, Rollins School of Public Health of Emory University, Atlanta, GA.

The author reports no conflict of interest.

Correspondence: Carlos del Rio, MD, Emory University School of Medicine, 49 Jesse Hill Jr. Dr. S.E., FOB Room 201, Atlanta, GA 30303. E-mail: cdelrio@emory.edu.

Copyright © 2020 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 1044-3983/2020/321-0000

DOI: 10.1097/EDE.0000000000001290

COVID-19 virtual town hall meeting. To update clinicians and public health workers with ever changing information on COVID-19, I have also written several Viewpoints in JAMA and a clinical update in the New England Journal of Medicine.

In addition to these activities, hundreds of media interviews with CNN and other media outlets, and webinars with the National Academy of Medicine and the American Public Health Association (<https://covid19conversations.org/>) I have continued seeing patients with COVID-19 in the Emory Infectious Diseases consult service at Grady Hospital and doing related research. These two activities have been accelerating and quite taxing. Early on, it was not easy to see patients deteriorate in front of your eyes with not much to offer them as therapy. This was not dissimilar to the early years of HIV, where we saw patients die without much to offer them. The opportunity to provide access to drugs like Remdesivir through clinical trials and later through the expanded access program offered an opportunity to do something for patients. Now, because of research, we have better therapies, and survival has improved dramatically, but we still have some way to go. Nevertheless, I am convinced that research is the road to the end of COVID-19 as a public health threat through the discovery of effective treatments and a vaccine for COVID-19.

I have been at the hospital almost every day walking the floors, talking to healthcare workers, and taking care of patients. In each one of those activities, I worry about getting infected, about taking the infection home, and about the potential impact it could have on me as a 60-year-old. For those

reasons, I am obsessive about properly wearing my PPE and I have rarely ventured outside a routine of home to hospital and back to home. I also get tested about once per month and pray that I will avoid getting infected as both my children are having babies this year and I want to be sure to be able to meet my grandchildren and be with them. I am a big believer in vaccines but, as you can see, I also have personal reasons to want to be first in line to get a COVID-19 once it becomes available. This is clearly not a sprint but a marathon and a vaccine will not end this right away. We need instead to be resilient, to adapt to a new way of living and make sure we take care of ourselves and those around us. This is hard but not impossible and as epidemiologists we are uniquely positioned to lead. Our time is now.

REFERENCES

1. COVID-19 Dashboard from the Center for Systems Science and Engineering at Johns Hopkins University. Available at: <https://gisand-data.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd-40299423467b48e9ecf6>. Accessed 4 October 2020.
2. Worobey A, Pekar J, Larsen BB, et al. The emergence of SARS-CoV-2 in Europe and the U.S. *bioRxiv*. Available at: <https://www.biorxiv.org/content/10.1101/2020.05.21.109322v1.full.pdf>. Accessed 4 October 2020.
3. Navarro A. *Vail Emerges as Virus Hotbed for Mexican Skiers Coming Home*. *Bloomberg News*. Available at: <https://www.bloomberg.com/news/articles/2020-03-19/vail-emerges-as-virus-hotbed-for-mexican-skiers-returning-home>. Accessed 4 October 2020.
4. Centers for Disease Control and Prevention. *Transcript of the CDC Telebriefing Update on COVID-19*. 2020. Available at: <https://www.cdc.gov/media/releases/2020/t0225-cdc-telebriefing-covid-19.html>. Accessed 4 October 2020.

Shouting into the Wind: Being a Black Epidemiologist in 2020

Zinzi Bailey

Being an epidemiologist in 2020 is like shouting into the wind.

January 2020: As news began to pour in about a mysterious, deadly respiratory illness in Wuhan, my epi-“spidey senses” immediately started going off. I kept thinking, “The data don’t look good, and this thing seems to be spreading awfully quickly.” Should not we be concerned?!

February 2020: The Diamond Princess—sitting in the Yokohama port, the final port of the same exact itinerary my mother and I completed exactly one year before—started reporting confirmed cases of what is now known as coronavirus 2019 (COVID-19). Flashbacks to EPI 101—containment cannot just be restricted to isolated cruise ships and cities, right? Has not other travel continued? How can restricting travel from China stem this tide now? How can this simultaneously be a hoax?! How are we containing this? Shouldn’t we be concerned?! Should not we be responding?!

March 2020: My sister, father, and I start doing yardwork. My sister starts feeling ill, developing chills, body aches, and a cough while at my house. I give her the first mask that I received in the mail. As I take her temperature and bring her soup, I try to find a way to get her tested for COVID-19. Despite symptoms and pre-existing conditions, she is turned away several times. However, we can be pretty sure of her condition—my father, at 72 with pre-existing conditions, is finally able to get tested, after threatening a lawsuit. Positive for SARS-CoV-2, as we suspected. Why were they denied testing?

Businesses start closing down and shelter in place orders are enacted, but not uniformly. Who are the essential workers, and how are they being protected? How are we holding corporations and organizations accountable? As I send food, masks, and warnings to my family members, I worry about the structural fault lines of inequity in this country and wonder who is slipping through the cracks. Where is the data? Where are the tests? Who are we missing? Where is the contact tracing? Should not we be more concerned?! What are we doing?!

April 2020: This is real. All too real. People are getting sick and people are dying. Marginalized people are dying. Young Black, Indigenous, and Latinx people are dying. Where is the data? Where are the tests? We should be concerned! What are we doing?!

Being a Black epidemiologist in 2020 is like shouting into hurricane-force winds.

May 2020: So much death. Yes, COVID-19, but also so many more. Ahmaud Arbery. George Floyd. Breonna Taylor. Rayshard Brooks. Daniel Prude. We should be concerned!!! What are we doing!! How are my white colleagues continuing on—business as usual? We know a lot about how structural racism operates—the same racism that drives the conditions and environment that kill Black, Indigenous, and Latinx people disproportionately is

From the Division of Medical Oncology, Department of Medicine, University of Miami Miller School of Medicine, Miami, FL.

The author reports no conflict of interest.

Correspondence: Zinzi Bailey, Division of Medical Oncology, Department of Medicine, University of Miami Miller School of Medicine, 1120 NW 14 Street, Miami, FL 33136. E-mail: zbailey@miami.edu.

Copyright © 2020 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 1044-3983/21/321-0000

DOI: 10.1097/EDE.0000000000001291

the same racism that drives disproportionate police violence and vigilantism with impunity. We must be concerned! We must act!

June 2020: Just a few days after Mr. Floyd's murder, companies like Peloton, SoulCycle, and beyond were sure to post statements and send emails declaring that Black lives do, in fact, matter to them. What does that mean in corporate America? How are corporations and organizations being held accountable? If Black lives matter, how is that reflected in how the organization and its members operate? How does apply to the institutions I belong to? We must be concerned and moving beyond lip service. This is essential.

July 2020 and beyond: I am channeling my anger, disappointment, despair, and alarm into new work and new positions—it is not an option anymore. I have to work for marginalized communities, my communities. As everyone is becoming a “health equity” or “racial equity” expert, I must be thoughtful and responsive to the needs of my communities no matter how difficult the conversations. My experience is

not new; many Black women have come before me and I find solace and motivation in their experience.

In the words of Audre Lorde: “I cannot hide my anger to spare you guilt, nor hurt feelings, nor answering anger; for to do so insults and trivializes all our efforts. Guilt is not a response to anger; it is a response to one's own actions or lack of action. If it leads to change then it can be useful, since it is then no longer guilt but the beginning of knowledge. Yet all too often, guilt is just another name for impotence, for defensiveness destructive of communication; it becomes a device to protect ignorance and the continuation of things the way they are, the ultimate protection for changelessness.”¹

Being a Black epidemiologist in 2020 is becoming a hurricane force wind.

We must continue to be concerned. We must stay vigilant. We must act.

REFERENCES

1. Lorde A. *Sister outsider: Essays and Speeches*. Penguin Classics; 2020.

Silence Is No Longer an Option

Reflections on Racism and Resistance in the Midst of Coronavirus Disease 2019

Sharrelle Barber

On 13 March 2020, at approximately 12:40 AM, police officers in Louisville, Kentucky, executed a no-knock warrant in a botched drug raid that ultimately led to the horrific murder of Breonna Taylor, a 26-year-old emergency room technician and first responder who committed herself daily to saving lives. On the same day, the Trump administration declared the coronavirus disease 2019 (COVID-19) pandemic a National Emergency after months of irresponsibly downplaying its seriousness. Within a few weeks, a virus that was first viewed as a “great equalizer” began a deadly trajectory, disproportionately impacting Black Americans and other marginalized racial groups. By mid-September, the COVID-19 pandemic had claimed the lives of nearly 40,000 Blacks, accounting for 20% of COVID-19 deaths. And on 23 September 2020, after months of local, national, and global protests demanding that we #SayHerName, the police officers responsible for Breonna Taylor’s untimely and unjust death walked away, unscathed by a system indifferent to Black lives but fully committed to protecting its own at all costs.

The confluence of these events—an act of state-sanctioned violence against a young Black woman with no rendering of justice and a global pandemic wreaking havoc on Black communities across the country—is the backdrop against which I must situate my reflections on what it has meant to be Black, a woman, and a social epidemiologist in 2020. The range of emotions have been wide—from crushing heartbreak to seething rage to physical and emotional exhaustion—as I have joined in collective mourning over the unjust and avoidable deaths we have all had to bear witness to in this moment and also engaged in collective scholarship and activism in an attempt to document and disrupt this reality. Suffice it to say that 2020 has been a gut-wrenching reminder that racism, in all of its forms, is deadly, bringing into sharp focus what so many scholars have been saying for so many years. It has been a year of hypervisibility in a field that has, more often than not, sidelined and sometimes silenced these ideas, deeming them marginal (at best) explanations of the truncated lives and “too often violent” deaths that have plagued Blacks in this country for over 400 years.

While truly tragic, and at times unbearable, 2020 has forced a collective reckoning that can prove instructive if each of us is willing to imagine our world—and our field—awnew. As a part of that reckoning, I will end by posing three questions that I asked in front of a standing-room-only audience gathered for an organized symposium on Critical Race Theory and Epidemiology at SER’s Annual Meeting in 2019:

Will we as a discipline take seriously the complexity of race, racialization, and racism and attempt to capture this complexity in the theories we bring to bear in our work, the research questions we ask, and the methods we develop and implement?

Department of Epidemiology and Biostatistics, Drexel University Dornsife School of Public Health, Philadelphia, PA.

The author reports no conflicts of interest.

Correspondence: Sharrelle Barber, Department of Epidemiology and Biostatistics, Drexel University Dornsife School of Public Health, Philadelphia, PA 19104.

E-mail: smb483@drexel.edu.

Copyright © 2020 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 1044-3983/21/321-0000

DOI: 10.1097/EDE.0000000000001285

Will we as a discipline make room for a diverse set of voices from formally marginalized and excluded racial groups—our presence, our perspectives, our lived experiences, and our critique of the field?

Will we as a discipline commit to mobilizing data for action and forge bold new paths of scholar-activism that radically transforms our field and our world?

For me, the answers are clear. If our field is truly committed to preventing death, saving lives, and

eliminating racial inequities, then we can no longer be content with status quo. In this moment and beyond, we must rise, resist, and align ourselves with the communities and social movements demanding the kind of radical restructuring of society that we all deserve. Silence is no longer an option, and speaking truth to power is the only way forward. Justice demands it and our collective lives depend on it. If 2020 has not convinced us of this, I fear nothing else will.

In Search of the Truth as an Epidemiologist in 2020

Jaclyn L. F. Bosco

The year 2020 has struck our world with many challenges—coronavirus 2019 (COVID-19) pandemic, natural disasters (i.e., fires and hurricanes), and racial injustice events. I do not specialize in infectious disease, environmental, or social epidemiology. However, being an epidemiologist seems more important than ever. We are looking to understand the comparative safety and effectiveness of treatments, and wonder whether our results are reliable and generalizable and to what extent they are influenced by bias. Our expertise in causal inference and applying appropriate methods to quantify the impact that biases may have on our observations is a core, fundamental epidemiology skill. Epidemiology as a discipline aims to find the truth while weighing alternative explanations. As COVID-19 made its way around the globe, the rush for an immediate solution without proper attention to data provenance¹ ultimately affected scientific interpretation and led to the retraction of publications from 2 high impact journals. This highlighted the necessity to have epidemiologists do epidemiology research² as well as follow our basic principles for evaluating good scientific research.^{3,4}

The 2020 events have tested our public health infrastructure to an extreme that it has not been tested before and our society is counting on rigorous science to provide valid and robust answers. In an era of social media and access to instantaneous news at our fingertips, it is easy to confuse fact with fiction. Like many others, I have personally been called upon by friends and family to help translate the volumes of information pushed out to the world and to help identify valid sources, as well as to explain the importance of good hand washing, social distancing, and mask wearing in a way that is as understandable to a 3-year-old as to the elderly.

The pandemic has presented the opportunity for real world data to answer important and immediate public health questions.⁵ Additionally, it has been a catalyst for innovation in how to conduct research and utilize technology to efficiently obtain answers to questions our society is asking. To reduce COVID-19 exposure, patients receive telehealth visits or have reduced treatment schedules. These preventive measures require new approaches to research such as direct-to-patient data collection and the use of artificial intelligence, machine learning, or natural language processing techniques to identify patient populations, diagnoses, and safety events from unstructured data to enable continued research.

As a leader of a global pharmacoepidemiology team, I am motivated by working with colleagues who apply innovation to turn 2020's challenges into opportunities, such as:

1. Designing the CARE project to help stop COVID-19 while attracting participation from patient populations who otherwise may not be presenting for medical attention and may not be getting the information they need.⁶
2. Understanding the safety and effectiveness of vaccines and treatments for COVID-19 as well as how COVID-19 may work as a confounder or modifier in safety and effectiveness studies of drugs, devices, and biologics.

Editors' Note: Related articles appear on pages xxx and xxx.

From the Epidemiology and Outcomes Research, Real World Solutions, IQVIA, Cambridge, MA.

J.L.F.B. is a full-time employee of IQVIA and own stock in the company.

Correspondence: Jaclyn L. F. Bosco, Epidemiology and Outcomes Research, Real World Solutions, IQVIA, 201 Broadway, 5th Floor, Cambridge, MA 02139.

E-mail: jaclyn.bosco@iqvia.com.

Copyright © 2020 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 1044-3983/20/321-0000

DOI: 10.1097/EDE.0000000000001292

3. Enabling our national sports teams to get back in action with appropriate precautions, tracing, and reporting.⁷

Although the 2020 year has opened doors to more quickly adopt the use of real-world data and innovative approaches, epidemiologists should continue to capitalize on our core foundation to conduct valid and robust research in our quest for the truth.

REFERENCES

1. Reynolds M, Bourke A, Dreyer N. Considerations when evaluating real-world data quality in the context of fitness for purpose. *Pharmacoepidemiol Drug Saf*. 2020. doi: 10.1002/pds.5010.
2. Pink Sheet. Informa Pharma Intelligence. Real- World Evidence Likely Untainted by COVID-19 Journal Article Debacle. Available at: <https://pink.pharmaintelligence.informa.com/PS142343/RealWorld-Evidence-Likely-Untainted-By-COVID19-Journal-Article-Debacle>. Accessed 5 October 2020.
3. Dreyer NA, Schneeweiss S, McNeil BJ, et al; GRACE Initiative. GRACE principles: recognizing high-quality observational studies of comparative effectiveness. *Am J Manag Care*. 2010;16:467–471.
4. Dreyer NA, Bryant A, Velentgas P. The GRACE checklist: a validated assessment tool for high quality observational studies of comparative effectiveness. *J Manag Care Spec Pharm*. 2016;22:1107–1113.
5. Reynolds M, Christian JB, Mack CD, Hall M, Dreyer N. Leveraging real-world data for COVID-19 research: challenges and opportunities. *J Precision Med*. 2020;6:1–6.
6. IQVIA COVID-19 Active Research Experience (CARE) Project. Available at: www.helpstopCOVID19.com. Accessed 5 October 2020.
7. CNBC Sports. Here's the device the NFL and NBA are using for coronavirus contact tracing and social distancing. Published 21 July 2020. Available at: <https://www.cnbc.com/2020/07/21/nfl-nba-to-use-safezone-tags-for-coronavirus-contact-tracing.html>. Accessed 5 October 2020.