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COVID-19 and the Rocket Science of Public Health

We are all fatigued, frazzled. Many of us have lost too many and too much, and still more will suffer long-term physical and mental effects. A strange geography has cropped into our lexicon: states, provinces and entire countries mapped by their rates of COVID-19, telling us how dangerous it is to go outside, go to work or school. It is also the geography of health care, leadership and policies that aim to protect people first—or not—the willingness to embrace the simply brilliant and brilliantly simple lessons of public health.

Coming for all of us, the entire human population, the disease has laid bare the social, economic and racial disparities between and within nations. It has exposed our failings brutally. Yet it has also revealed bright spots on the map that denote our resolve. The result is, indeed, a marked difference in how countries and people are faring, determined as much by the vagaries of the virus as by the public health protections already in place.

What we are learning from regions like the Caribbean, and from countries as diverse as Vietnam, Uruguay, Cuba and New Zealand, is that success in battling the pandemic is determined neither by blithe ignorance nor by blinding rhetoric, but by subtler, determined efforts born of a sense of public and personal responsibility, well-placed faith in sound healthcare systems that revere prevention, plus that elusive ingredient of empathy. Our collective predicament has driven home one of the basic tenants of public health: the success of any one public health campaign is determined not fundamentally by the amount of material resources, but rather how resources have historically been allocated to build in protection for entire populations.

Countries that had not made such investments in the public good—in scientific literacy and in comprehensive, functional and accessible healthcare—are adrift, their populations infinitely more vulnerable.

Nowhere is this more evident than in the Americas, the pandemic's most recent epicenter and home to its most glaring hot spots: the United States and Brazil. Latin America, already the world's most unequal region by any measure, is faced with a depression the likes of which has not been seen for decades. And the poor, the informal sector, the indigenous and Afro-descendent, the women…are already its most egregious, predictable victims. Yet, Uruguay, sandwiched between Brazil and Argentina, is doing much better. So is Cuba, the country and people shouted about, but so little reflected upon.

In this issue, we take a much closer look at what has galvanized public health efforts in Cuba, resulting in just over 6000 COVID-19 cases since the first were diagnosed last March, and fewer than 150 deaths. Perhaps it is Cuba that makes the clearest case for public health: its single, universal health system constituting an underlying, national grid already capable of prevention and care; an abundance of health professionals on the job; a strong primary healthcare subsystem accessible everywhere; an epidemiological surveillance network with experience facing down epidemics like dengue; a science and biotech capability poised to generate new medications and put old ones to work; a public schooled in public health. Not to mention that they early developed a national plan.

Two articles in this issue assess the Cuban response: one from inside the health system by Galbán and Más, and the other from the vantage point of the PAHO/WHO Permanent Representative in Havana, Dr José Moya, who also contemplates the country's current opening towards a "new normal" and the element of public trust in health care. He also refers to multilateralism and global solidarity as essential underpinnings for tackling the pandemic. In this respect, Cuban health professionals and medical educators have also provided examples of cooperation during COVID-19: 52 teams have served in 39 countries in Europe, Africa, Latin America and the Caribbean.

We dedicate the *Feature* in this issue to 17 young physicians who lost their lives to COVID-19 while serving in their countries. All were among the over 30,000 in 118 countries who had received scholarships from Cuba to study medicine at Havana's Latin American School of Medicine. Their average age was 35, reminding us of the thousands of health workers who have been felled by the virus on the front lines.

Cuban specialists in neurology, nephrology, mental health and veterinary medicine explore the seemingly infinite ramifications of the virus in the human body and beyond. Guzmán reviews the research and clinical practice involving COVID-19 patients at Cuba's Pedro Kourí Tropical Medicine Institute.

Cuban researchers anticipate a vaccine in first half of 2021

Cuba's Women of Science focuses on Dr Dagmar García who directs research at the Finlay Vaccine Institute in Havana, where efforts are concentrated on Phase I/II trials on the WHO-registered vaccine for COVID-19. In a classic case of burying the lead, at the interview's close she indicates that Cuban biotech will have a vaccine for the Cuban researchers anticipate a vaccine in first half of 2021. Cuba is the first and, at this writing, the only Latin American country that has produced a vaccine candidate in clinical trials, and is now moving to introduce others.

Cuban innovation in biotechnology, so important to patients in the country and worldwide, has been reinforced by the sheer necessity implied by stiffened US sanctions. The current US administration has taken some 120 new draconian measures against Cuba since 2019: everything from capping family remittances to barring US citizens from hotel stays on the island to eliminating US flights to every Cuban city but Havana. All apparently in a cynical drive to curry election votes among hardliners in Florida—who would perhaps be better served by more attention to the pandemic there.

Which brings us back to public health: Florida, with just twice Cuba's population, has registered over 762,000 cases and 16,000 deaths, according to *The New York Times*, or 3550 cases and 75 deaths per 100,000 population. In the USA as a whole, we see 8.4 million cases at this writing and 222,000 deaths, or 2525 cases and 67 deaths per 100,000 population. Comparing these data to Cuba, at 56 cases and just one death per 100,000 population, is reason enough to look at what Cuba is doing.

In contrast, the US federal government's pandemic response has been muddled by racism, misinformation campaigns and the politicization of simple preventive measures like mask-wearing and social distancing. All of this has landed in the context of a health system so difficult to access and navigate that 27.5 million people simply cannot, even after extensive reform. And now, with the Supreme Court dangerously swerving to thwart the Affordable Care Act, those 8 million-and-counting may be dumped from insurance schemes after suffering COVID-19, the disease labeled a disqualifying 'pre-existing condition.' Thus, while in 2019, the Global Health Security Index ranked the United States as the country "most prepared to respond to an epidemic or pandemic," by this year, it has become a tragic example of what *not* to do when faced with a public health challenge of such magnitude.

However, misinformation and faulty science are not the exclusive purview of certain public officials: the challenges continue to involve new faces, evidenced by the Great Barrington Declaration, a manifesto that, in direct defiance of everything we know thus far about COVID-19, urges policies based on eventual development of herd immunity. In the absence of an effective vaccine, the proposal would mean *millions* of deaths worldwide. ***MEDICC Review***'s Editor-in-Chief Dr C. William Keck has joined with thousands other scientists and health professionals in signing the John Snow Memo, a memorandum published by *The Lancet* that decries the strategies suggested in Barrington as both unethical and impractical; "ignoring sound public health advice" and "selling false hope that will predictably backfire."

As we move into the second year of the pandemic, one paper in this issue is particularly useful to help take stock: from Egypt, Dr Abd El-Wahab's extensive review of what has been learned worldwide about SARS-CoV-2 transmission channels.

COVID-19 is, fundamentally, a *lesson,* and one we can ill-afford to ignore. This is not the last pandemic we will face. It is likely not the worst. And certainly it is not the only challenge ahead for us as people sharing the same planet. What is working to stem COVID-19—a sense of collective responsibility and collaborative investment in population health, education and well-being, informed by the basic tenets of public health science—surely should guide us forward. Perhaps the most important lesson learned is that better results in any context boil down to leadership.

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