"What they are implying by calling COVID endemic is that we will no longer have any COVID, which is patently false"

Boston University epidemiologist Dr. Eleanor Murray speaks on COVID-19 and endemicity

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This is the first of a two-part interview debunking the claims that COVID-19 has become endemic. Part two can be read here.

Dr. Eleanor (Ellie) Murray is an Assistant Professor of Epidemiology at Boston University School of Public Health whose work includes improving methods for evidence-based decision-making and human-data interaction. She primarily focuses on public health and clinical epidemiology applications, including applications to HIV, HPV, cancer, cardiovascular disease, psychiatric disorders, musculoskeletal disorders, social and environmental epidemiology, and maternal and adolescent health. She also conducts meta-research evaluating bias in existing research. During the COVID pandemic, Dr. Murray has been working on improving science communication about epidemiology and is an Associate Editor for Social Media at the American Journal of Epidemiology.

She has written commentaries for the Washington Post *on the pandemic and given many interviews on the topic. More recently, she has been critical of the call to declare COVID endemic, citing misuse of the scientific term and opposing politicizing it for opportunist policy maneuvers. She was kind enough to accept our request for an interview.*

Dr. Benjamin Mateus (BM): Dr. Murray, thank you for speaking with the WSWS and taking time from your day to do this interview. You're an expert on COVID and an epidemiologist. Perhaps we can begin by explaining to our readers what you do and how epidemiology functions in the broader aspects of public health?

Dr. Eleanor (Ellie) Murray: As you say, I'm an epidemiologist, and specifically, my specialty is on epidemiology methods, which means that, even before COVID, my work has been focused on trying to figure out how do we get excellent usable information from data on health and public health issues.

And how do we communicate that information to people? And so that's the frame that I bring to COVID research is making sure that we are asking the right kinds of questions that we're using the suitable types of data collections, statistical methods, and other kinds of ways to analyze that data.

And then that we're communicating correctly in a way that gets across what our data can tell us about the pandemic. That is what epidemiology does in the field of public health. Sometimes it's called the public health toolbox; data analysis is a particular component of public health.

But it is really about figuring out how to frame complex questions. Most of the time, we're interested in understanding the harms of something where it is impossible to do an experiment or a randomized trial.

We have to try to make sense of the world and understand the causes behind bad outcomes [such as illness or death]. What are the consequences of that exposure, and how do we mitigate that? How do we reduce that?

BM: Since you raised the topic, perhaps we can delve into it. On Wednesday, the US Department of Health and Human Services essentially ended its requirement that hospitals report COVID-19 deaths to the federal government.

States are also curtailing their COVID reporting, and many are ending their contact tracing programs. Additionally, the CDC has reduced isolation and quarantine guidelines to five days. Dr. Walensky has even suggested that you could return to work if you are asymptomatic. We are already seeing reports of rising hospital-acquired COVID-19 among inpatients.

The UK reported on a recent human challenge trial where participants knowingly infected with the SARS-CoV-2 virus were followed. They became infectious in two days and remained infectious on average over nine days and at least until twelve days, which raises many concerns over the CDC's guideline changes. And meanwhile, the pandemic continues to infect at high rates. As an epidemiologist, what do you think about these developments?

EM: This is hugely problematic. It's almost akin to the weather station saying that they're not going to track storm cells anymore, and they're no longer going to issue tornado warnings. And then states say that they're no longer going to investigate casualties following tornadoes.

I think people would be horrified. The government's job is to track weather systems, warn when things are about to get worse, and then look for and provide support to people who are injured or have died following a natural disaster.

But for some reason, people seem to think that with COVID they can bury their head in the sand and pretend tornadoes don't exist, and then it'll just pass right by them, and they'll be fine. And that's not true. We need the information, and we need the data to figure out, know where to target resources, and target early warning.

BM: Can you speak to why they would do such a thing? What's the motivation behind dismantling these COVID dashboards and public health measures?

EM: Not being in the room where these decisions are made, I can only speculate. But one can imagine that there appears to be a fair amount of pressure on the government to declare COVID over. With the data coming out regularly, that's much harder to do than if the information is not accessible to people.

BM: Besides the convenience for the government to declare the pandemic over, it raises concerning issues about the role of public health as an institution and the state of public health in the US.

I raise the issue from a historical perspective. In the last 200 years, life

expectancy in America rose two-fold because of public health policies and initiatives. But those gains have essentially been eroded despite increasing health care costs. The emphasis has shifted from developing public health infrastructure to accommodating what has been called an “expensive sick care system.”

During COVID, we’ve seen life expectancy plummet and the health care system collapse due to repeated waves of infections. The workforce is worn out, and many have left the profession due to post-traumatic stress.

EM: I would describe public health in the US in three words. I’d say it is decentralized, underfunded, and exhausted.

People working in health departments have been working extremely overtime. More so, much of their attention and scarce resources have been diverted to COVID. As you can imagine, their ability to monitor other diseases gets very little attention.

The other thing to note is that we have this very decentralized, state by state, sometimes even county by county, the public health system in the US. There’s not one primary way in which public health is managed. Even the state health departments don’t report to any kind of … it’s not hierarchical. There’s not a national health department that the state health departments report to.

They provide information to the CDC [Centers for Disease Control and Prevention] at the CDC’s request. Still, the CDC is not a national health department in the way that we might imagine other departments work at a federal level.

We have some states where even the state doesn’t oversee the county health departments or the local health departments. And so, there’s a lot of people just trying to figure things out the best they can with what limited resources and guidance they have.

Public health has been chronically underfunded for decades. There’s never enough money to hire people. Frequently, health departments can only pay minimum wage. But the people they’re often trying to hire are professionals with master’s degrees in public health. For someone to take a $50,000 loan to pay for their education and training to get a master’s degree and then take a $30,000 a year job, that’s… well it shows you how committed they are to working in the field, but that’s not sustainable. The result is that many people in health departments have never actually had any public health training because it is so much more expensive to get the training than you can hope to get back in income.

Basically, public health in the US was in a sorry state even before the pandemic. And now, I think most public health professionals are running on fumes.

BM: Thank you for your frank comments. They are pretty eye-opening and significant.

I want to discuss the hot item topic frequently mentioned in every media: COVID is endemic, and we can declare the pandemic over. In October, you raised this issue in a long Tweet.

To briefly preface, there has been a shift in the official messaging away from the idea that we could achieve herd immunity. The federal and state health officials needed a new platform to hang their hats on. The concept that COVID is endemic has gotten a lot of traction, and for the public, it means living with the virus permanently. However, the idea of endemicity being tossed around is not based on a scientific construct but a political one.

In your Tweet, you wrote, “Everyone keeps talking about COVID becoming endemic, but as I listened to the conversation, it’s becoming more and more clear to me that very few of you know what endemic means.”

Could you first define these terms—pandemic, epidemic, and endemic—and then expand?

EM: The first thing is that a pandemic is an epidemic at a much grander scale, and endemic is not on that spectrum, and it is an entirely separate idea. The official World Health Organization (WHO) and CDC definition of a pandemic is a disease spreading out of control in two or more regions of the world.

The definition allows us to distinguish between a more localized regional pandemic and a global pandemic, though we typically don’t differentiate between these two. But an epidemic then is just something that’s in one location, but it’s out of control.

So, thinking about that definition, we can ask, “Is COVID [still] pandemic? Is it out of control in two or more world regions?” The answer there is clearly, “Yes!”

Endemic, on the other hand, is more of a technical term, and it has a couple of different meanings in epidemiology and an utterly other sense in ecology. And so, it’s a much more slippery concept, which I think makes it ripe for use as a sort of politicized term because it can be hard to pin down when someone is misusing it or they are just using it in the wrong context or framing.

When we think about it in mathematical modeling, which is a specific concrete construct, then endemic refers to a disease in a given region, in a given period, where on average, it infects one new person for each current infection over that period.

There’s a couple of really crucial pieces there. One is the idea that there’s average stability of cases. And that could be cases are roughly the same the whole time, or there’s some seasonal fluctuation, but any seasonal increase has to be met with a seasonal decrease to average out at that flat number.

But the other key point that is missing from the conversation is the time and place specificness; that something can be endemic today and epidemic tomorrow. And that’s not a conflict between what’s happening. Every year we have seasonal flu, and you can make the argument that seasonal flu is endemic to many parts of the world. But we can have a seasonal flu strain and a pandemic flu strain in the same flu season.

So, we can simultaneously have endemic flu and pandemic flu. There’s not necessarily any reason why COVID couldn’t do that to us, too, because we see that [the virus that causes] COVID mutates into new variants every time we have a big winter spike … so far. The virologists told us it’s evolving less quickly than the flu, but we’re seeing, from peak to peak of the COVID waves, the appearance of a new dominant variant.

In the long term, we could be in a situation where we have seasonal COVID and sometimes COVID pandemics.

BM: This raises an important question: can this virus ever really become endemic? Suppose we have a very contagious virus, immune evading, and constantly mutating. At the same time, we know that previous infections or vaccinations will not confer long-lasting immunity, with the added fact that it is an airborne pathogen transmitted between people. Can the SARS-CoV-2 coronavirus ever settle into a genuinely endemic state?

EM: This is where the *kind of squishiness* of the term comes in. In addition to this really formal mathematical definition, there’s a slightly more vague definition of a disease that is just behaving predictably over a sort of long-term period in a given area. Again, you do have that regional-specific and time-specific definition. Still, the predictability doesn’t necessarily have to be predictable at a stable level of cases in a certain way.

I mentioned that you could call seasonal influenza endemic, but seasonal flu is not at the same level all year round, and it does circulate throughout the globe. So, there’s also an argument that it’s not endemic.

One way to think about that is to ask, “Is the flu predictable?” And, by and large, the answer is, “Yes.” But in addition to it being predictable, we have to do constant monitoring to ensure that we don’t see an unpredictable pandemic strain begin to circulate.

Returning to COVID, if we want to ask, “Is COVID pandemic right now?” Then we have to admit it is since it is out of control in two or more regions of the world. “Is it endemic?” It’s not endemic under the

mathematical definition, but is it endemic under the predictable definition?

There, I think, there's sort of an argument to be made. But it's precisely the opposite of the one that people are using endemic to make, which is that for the last two years, we have reliably seen a summer peak and a winter peak, and the winter peak is maybe double the size of the summer peak. And those peaks are followed by hospitalizations and deaths despite vaccines or the mitigations in place.

And so, if we continue as we've been going, then our best prediction for the next decade of COVID is a series of summer and winter peaks repeating with potentially new variants every year, meaning we could need annual vaccinations with updated vaccines to match the new variants.

Maybe that is something that we could predict may happen. Using that definition, COVID can be construed as endemic, but that's not how people use it. They're saying that if COVID is endemic, we don't need to do anything any more. And that is a ridiculous prediction. What they are implying by calling COVID endemic is that we will no longer have any COVID, which is patently false.

As a point of clarification on this issue, after the interview, I asked Dr. Murray in an email follow up the following questions:

BM: You mentioned the predictability of flu and COVID-19 in winter. Aren't these waves a byproduct of human activity, a critical ingredient in the transmission of infections? Meaning, school reopening and cold weather is bringing people indoors, contributing to the predictability?

EM: This is a big unanswered question for COVID. We don't know how much our choices versus environmental factors affect the wave patterns yet. There is reasonably good evidence that humidity plays a crucial role in seasonality for the flu. But we also know that schools are key flu transmission spots. So, it's probably not ONLY about humidity.

Even though we don't completely understand why the flu season happens when it does, we can predict it reasonably well. We don't necessarily need to know why COVID waves happen to predict them either—but understanding why can help us develop solutions to minimize the size of infectious waves.

BM: Didn't the disappearance of the flu in 2020 when only one child died from influenza, a product of the mitigation measures in place at the time, offer any insight?

EM: It certainly will, but investigations into what those insights are haven't finished yet. It seems reasonable to at least conclude that the flu is easier to impact than COVID, given that we were trying to minimize COVID and instead mostly just minimized the flu.

BM: Flu's reproduction number (R0) is also much lower than SARS-CoV-2.

EM: Yes, it is.

The interview resumes here.

BM: I think it is essential to highlight the global character of the pandemic. What I mean by this is that even though we live in a particular region of the world, the global character of the communities we live in allows these airborne viruses to spread in a matter of weeks to every corner of the world.

For instance, Omicron was detected in South Africa on November 9, 2021, and in just a few weeks, it became dominant across the globe. The idea that the virus will remain endemic in a region over a period when it is traveling across the world, across every border, and infecting everybody makes the idea that somehow it can be endemic challenging to fathom.

By contrast, malaria is endemic because it requires the parasite that causes the disease to be transmitted by the Anopheles mosquitoes to humans in particular regions of the world—Asia, South America, and Africa. It isn't contagious between people.

Similarly, dengue fever, endemic in Brazil and not contagious between people, depends on a complex interplay between communities, climate, and mosquito dynamics, which thrive in standing water. You can see how these [particular] pathogens develop an endemic pattern you described.

EM: I think the link to malaria and dengue fever is an important and interesting one. People may have forgotten what malaria used to look like.

There was another mosquito-borne virus that was really important in American history called yellow fever. Malaria and yellow fever used to be regular occurrences in the United States in cities like Philadelphia, DC, and even in Boston. When the mosquitoes were out during the summer, we would see outbreaks of these diseases.

[*In the summer of 1793, a yellow fever outbreak killed ten percent of Philadelphia's population over several months. At the time, the connection between mosquitoes and the disease was yet to be appreciated.]*

The American government decided that was not something they were willing to put up with and instituted many different public health measures to control these endemic diseases. And they were able to eliminate malaria and yellow fever from the United States.

Today, we may see people come into the country with those diseases, but we don't see people getting infected with them regularly in any sustainable way. Some of the things they did were dig drainage ditches and use insecticides to control the mosquito populations. The US Army Corps of Engineers dug miles of drainage ditches throughout the country with great success. That was a crucial part of eliminating malaria and yellow fever. Because as you mentioned, the mosquitoes need water to breed, and if you drain the standing water, it will disrupt their breeding cycle. Even if you temporarily get rid of the mosquitoes, it will help get rid of the diseases.

But now the mosquitoes are coming back as temperatures are increasing during the summer and winters are coming less cold. We're seeing more and more spread of mosquitoes that can potentially carry these pathogens. It's entirely possible under the right conditions whereby a couple of people with malaria happened to be in a place where there are many mosquitoes that we see these diseases take off again in the US. They can become reestablished in the mosquito populations, and the disease can become endemic in the country again.

That is the other thing that we should acknowledge. When a disease exists somewhere in an endemic state, it doesn't mean it will remain endemic. We can eliminate it but eliminating doesn't mean it will always be limited. It can come back.

BM: A couple of interrelated points you made in your Twitter thread on endemicity struck me.

One was the idea that an endemic disease does not imply a benign infection as the media has tried to make of endemic COVID. A recent *New England Journal of Medicine* report noted that the Omicron variant's intrinsic virulence is 75 percent of Delta's. You also said that eradication and elimination might be challenging to accomplish, but if we could achieve them, we wouldn't have to think about COVID again. Then you wrote, "Endemcity means to always think about COVID."

What does endemic COVID look like? What social obligation does the government have to the public when a disease is endemic? And if we can control the disease through technology, through testing, medical interventions, doesn't that also mean we can eliminate it, meaning that elimination is *the best* method of control?

EM: Elimination means that the disease is no longer present in a given area, country, or region. Their control efforts have to amount to making sure it doesn't come into the country or region or, if it does, responding quickly to interrupt the chain of infections. But there's nothing they have to do most of the time outside of surveillance.

Eradication means it's just completely gone from people in the world. And maybe it only exists in a lab like smallpox.

Many people say COVID will never be eliminated. In the foreseeable future, I suspect that COVID is not going to be eliminated in the United

States. But some countries have eliminated COVID, and some countries are trying to stop COVID and are likely to do it successfully.

Elimination of COVID, locally, regionally, or at a country level is possible. We've seen examples of it happening. But the real issue is if the political will is there to enact it.

But in terms of not eliminating COVID, what we might expect it to look like, I think this is where finally all of those *COVID is like the flu* comparisons bear some fruit. When we think about flu surveillance monitoring response annually, it is a vast industry.

There is surveillance. There is genotyping. There is genome data sharing. There are vaccine updates. Committees meet to decide what the composition of the next vaccine will be. There are sentinel site hospitals where any patient who comes in with a particular set of symptoms will get tested for respiratory pathogens, including the flu. Those tests results will be reported to the CDC so that the CDC can monitor them, looking at what percentage of people with flu-like symptoms have the flu at a given time. And those are spread throughout the country.

There are also plans for hospitals if they have a certain amount of flu. They will institute certain precautions like limiting visiting hours or stopping all visitors for a short period.

On the medical campus where I work, if employees choose not to get vaccinated for the flu, then they're also saying that when flu gets to a certain level and the campus has to enact precautions, they are accepting that they will take an unpaid furlough during those precautions. That's the consequence of not taking the flu vaccine when you work in a place where the flu has a significant impact on many people and at-risk people.

And all of these things that we do for the flu, we're probably going to have to do them for COVID too. And then COVID is not the flu. It is worse than the flu. And so, what we see too is that we have Long COVID, and we have people with COVID suffering from chronic conditions. We have COVID that's triggering other health conditions. There's some evidence that it might be starting diabetes, at least in younger people. And all of these chronic post-COVID conditions, we're going to need to invest in monitoring, treating, and doing research on them.

We'll probably need to see a whole separate stream of research funding dedicated to COVID indefinitely, as we have for HIV/AIDS. If COVID cases continue to occur at current levels, we will need to dramatically expand our health care system, our health care workforce, our ICUs, and our ICU-trained workforce.

We may need to think about having nurse practitioners take on more of the tasks that doctors do so that doctors are free to focus more on treating severe COVID patients. If this is what it looks like, how do we make that sustainable for our society? Because right now, it's not sustainable.

To be continued