“This is a virus that we need to eliminate”—Dr. Deepti Gurdasani condemns “herd immunity” policies

Part one

Benjamin Mateus
1 August 2021

This is part one of a two-part interview. Part two can be found here.

Deepti Gurdasani is one of the world’s leading experts on COVID-19. She is one of the lead authors of the BMJ article condemning the UK government’s promotion of “herd immunity through mass infection,” calling its actions a “dangerous and unethical experiment.”

With a background in clinical epidemiology and statistical genetics, Dr. Gurdasani received her medical degree in internal medicine at Christian Medical College, Vellore, India. Her doctoral work, completed in 2013, examined genetic factors associated with disease in genetically diverse populations. Specifically, she developed machine-learning algorithms for large-scale clinical data sets.

During the COVID-19 pandemic, Dr. Gurdasani has provided indispensable information and public commentary on the pandemic, becoming a harsh critic of government and their criminal response to the public health crisis. She has used her Twitter account and the media to share information on the evolving situation. Her work on exposing the connection between school-aged children in community transmission and research on the incidence of Long COVID have been of great service to the public. She has also been involved with the COVID Action Group, a multidisciplinary global network of experts with the stated mission to eliminate COVID-19.

Recently, Dr. Gurdasani accepted our invitation to sit for an interview to discuss the state of the pandemic. This is part one of a two-part report on this discussion.

Benjamin Mateus: We’ve been following your social media writings on the pandemic and your advocacy on children and issues surrounding schools. It’s been very critical in trying to give teachers and parents a perspective on what’s going on because the teachers unions, the state officials, and people like Dr. Emily Oster from Brown University. I’m not sure if you know her…

Dr. Deepti Gurdasani : I know *of* Emily Oster, yes! [Emphasis added].

BM: So, she has been calling for school children to return to in-person classes, stating the virus poses little risk to them and the community. The information you have provided, rebutting this falsehood, has been very important.

Having said that, could you perhaps begin by telling us who you are, what you do, and how you became involved with the COVID Action Group?

DG: I’m Deepti Gurdasani, a clinician by background. But I trained in epidemiology and later moved into machine learning. My work sort of focuses on predicting outcomes in people with different conditions. And since the COVID-19 pandemic, I became more and more interested in understanding how different interventions in different parts of the world influence the pandemic trajectory, synthesizing the evidence into forming and advocating for an evidence-based policy [in relation to the pandemic].

I got involved because one of the founders of COVID Action Group, Dr. Yaneer Bar-yam, reached out to me and it sort of fit with work that I was already involved in. I do strongly believe that in the current pandemic, if we want to really affect change and bring science into policy, we need to work with multiple stakeholders. As you know, there is a part of science that also becomes advocacy and engaging with people who are most impacted and motivated to enact change to essentially influence those who can make that change but aren’t.

BM: The term herd immunity is being thrown back and forth but is a difficult concept to comprehend. Can you explain the origin of the term herd immunity and how it applies to epidemiology? And in particular, how does it fit in the context of these changing variants of the coronavirus that are more transmissible and perhaps more immunity-evading?

DG: The term came into play from farming and animal husbandry. And later on, it became introduced into epidemiology more in the context of vaccination to understand what proportion of the population needed to develop immunity from vaccination before those people who weren’t vaccinated or didn’t have immunity were protected. The idea of herd immunity or herd immunity thresholds is essentially that you reach such a level of immunity in a population, ideally through vaccination, so that the people who either aren’t eligible for vaccination or haven’t been vaccinated or cannot mount an adequate response to vaccination are also protected. It means that a hundred percent of the population doesn’t need to be immune, because at some level [of population immunity] the infection can’t spread. Even if it was introduced from outside, it extinguishes itself simply because there aren’t enough [vulnerable] people that it can spread to because of this wall of immunity in the population.

So, in statistical terms, herd immunity thresholds are the proportion of the population that needs to be immune for the reproduction number, which is the rate of growth of the pandemic to drop below one, which means that the pandemic or the spread of infection starts shrinking by itself without needing external measures or interventions to contain it.

BM: How does this apply to the present situation that we’re in where the share of the population that has been infected and vaccinated is unclear with possibly a considerable overlap? Meaning, theoretically, if every person who has been infected has received a vaccine that leaves a larger pool of unvaccinated and vulnerable population.

DG: To be clear, there’s no country that has attained herd immunity to SARS-CoV-2. And, certainly, there are countries with different levels of vaccination. I mean, some countries have over 60 percent of their

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population fully vaccinated. There are also countries that have had natural exposure to the infection at very high rates. But it hasn't extinguished the pandemic. We've always seen surges even after that. And I think that reflects several factors.

One, I think natural immunity can wane over time. And I think the durability of that immunity does depend on the severity of original infection. When infections are mild and asymptomatic, we can have at least weighting of neutralizing antibodies and how that correlates with waning immunity. We don't know yet, but we know that re-infection, or the getting infected again with the virus, either the same variant or another variant, are far more common than we originally thought. Although there is protection, even over longer duration of time, it's not absolute.

The second thing is that over time we've had many new variants arise in different parts of the world and they have shown a level of escape from previous immunity, which means that if you're immune against a previous variant of the virus, it doesn't necessarily mean that you're immune against a new strain. What that means is that even if you have a level of immunity against previous variants, you may not be able to reach the herd immunity threshold because this virus is constantly evolving.

The other thing about the herd immunity threshold is it depends a lot on transmissibility. The more transmissible a virus, and that makes sense, you need a much bigger wall of immunity, which means you need many more people to become immune to be able to reach that threshold. Measles, for example, which is a highly infectious pathogen, the threshold herd immunity is above 95 percent.

Unfortunately, because we've had new variants at a point in time where vaccines were developed against previous variants, they also show a level of escape from vaccines, which means vaccines are not as effective against these new variants as they were in terms of previous variants in preventing infection transmission.

All these factors make it very difficult to attain herd immunity. We need to remember with the current variant that is becoming dominant in different parts of the globe, because it's highly transmissible, we need about 85 percent or more of the population to be immune, not vaccinated, but immune and not be able to essentially transmit to other people. At the current point in time, we don't think that vaccines necessarily provided 85 percent effectiveness. Even if you vaccinated 100 percent of the population, you may not reach that level where the pandemic dies by itself, which is essentially the herd immunity threshold.

And that makes it very complicated. I think there needs to be a level of honesty around this. This is not a threshold we will likely be able to reach through vaccination or contain the pandemic through vaccination alone, unless we develop a next generation of vaccines that are effective against these newer variants, which may well happen. But it's unlikely to be able to keep up with virus evolution unless we prevent new variants from evolving.

It is likely that with the current generations of vaccines we are going to need mitigations in place to be able to contain the pandemic. But we also need long term investment and things like ventilation in indoor environments. And governments, I think, need to be very clear and honest about this because there is a consensus that's developing among scientists that it is unlikely we will reach herd immunity through vaccines alone with the current vaccines we have.

BM: I know that you and Boris Johnson's government have been dueling it out with words in the press. Why do you think the leaders from the UK, the EU, the US and other countries are not heeding the warnings scientists are making? In fact, what we're seeing is that many of the more principled scientists are being attacked, bullied or maligned. These elected leaders who are entrusted for their people's well-being, the safeguarding of their population, are working against them.

DG: I think several factors are at play; There are values at play, there are ideologies at play, and there are vested interests that are clearly influencing our governments who don't have a public interest at heart.

When we talk about the values, I think rather than the values of protecting public health and compassion, many governments have had values of short-term economic gains and have unfortunately not realized that there is no dichotomy between public health and the economy and the countries that have managed to protect the economies the most are the ones that have gotten on top of the virus and managed to contain it.

I think the second thing is ideology. I think there is a lot of libertarian ideology that has influenced governments, particularly in the West, and exceptionalism, where there has been a certain arrogance in not learning lessons from many parts of the world that we could have learned lessons from, and that were affected earlier than us in the pandemic and responded much better.

And I think there are actually disinformation groups and vested interests. And we've seen this, for example, the Great Barrington Declaration that came out sometime last year and had a massive influence in policy in many different parts of the world, including the UK, by our senior officials who met with proponents of the Great Barrington Declaration. For those who are unfamiliar with it, they essentially promoted an idea of focused protection of the vulnerable by some sort of shielding and letting the virus spread to the rest of the population for them to develop herd immunity through natural infection. This was obviously unscientific and completely unethical, which has been shown repeatedly now in real world experience as well.

But it's an idea that's permeated the consciousness and policy of many countries, including Sweden, I think the Netherlands, certainly the UK and much of the West, which has been quite disappointing to see given there were very positive examples that we could have followed quite early on. And even now it's not too late to follow those examples.

BM: The press has been speaking about endemicity, that the virus will inevitably become endemic. That's one of the more sinister strategies of the herd immunity policy that is being promoted, meaning we will have to learn to live with it. The sooner we accept it the better. What are your concerns regarding such a strategy that is being promulgated?

DG: I think endemicity is one of the most poorly understood and most poorly used terms by many scientists who have suggested that endemicity is somehow a good thing. Endemicity is essentially what we see for many diseases now, including malaria. And malaria kills millions of people.

Endemicity essentially means that infection or transmission will continue without an introduction of infections from outside. What you will see is different levels of infection or transmission happening continuously because there's sort of stable endemicity where one person transmits to another person and the transmission propagates. It doesn't extinguish. There might be periods where you have high endemicity, where you have high levels of infection. That will of course be devastating for a virus like SARS-CoV-2, which causes long-term disease, which can cause severe illness, and be quite fatal.

Of course, this idea of living with the virus and endemicity leads to new opportunities for the virus to evolve as we've already seen, because the more transmission happens, the more mutation happens. And if you have a population that's partially immune, that sort of high level of mutation hits a sort of partial protection against vaccination, which means that mutations that can escape a vaccine-based immunity or natural immunity are then selected.

And that's how the adaptation of the virus happens, to escape vaccines, and promotes new variants that are potentially more transmissible and more severe than we've seen. People who talk about endemicity often are speaking about benign viruses or the virus becoming benign over time, something like the flu that you live with, that comes in the seasons, kills a few thousand people, as if that's acceptable. But, in reality, the picture with SARS-CoV-2 is likely to look very different. It is likely it will be a high endemicity situation where the virus continues to adapt and, perhaps,

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even our vaccines can’t keep up with it. In which case we lose much of the gains we’ve already made. This will lead to a sort of pandemic and epidemic cycles.

And this will leave many people disabled with long-term disease. I mean, this is a virus we know can enter the brain, that causes long-term neurological deficits, that causes thinning in parts of the brain that are associated with taste, smell, and memory. We also know it affects different organ systems, even in those people with mild infection.

And we know that chronic illness isn’t rare [with this virus]. It’s nothing like the flu and it’s nothing that’s benign. And there’s absolutely no evidence that this virus is currently evolving in any way to become less severe or less transmissible or less able to escape vaccines. All indications point to the opposite direction. We should be very cautious and worried about letting this virus spread in our communities and achieving endemicity. This is not a virus we can live with or even want to live with. This is a virus that we need to eliminate, but that requires global coordination. And it requires countries to do what’s in the interest of public health and what’s based on evidence. And it also requires a scientific community to come together and not indulge in “exceptionalist” stances that are not grounded in evidence.

To be continued

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