Pragmatic Assessment of Our Future, COVID-19

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In trying to make sense of this pandemic, some of us are still focused on optimistic projections and promising remedies instead of looking at the hard facts. However, an objective view of what the future holds helps us plan accordingly. The goal here is to sift through the noise and determine what will happen next based on what we know for sure about the coronavirus and its recent impact. It's also helpful to assess the practicality and likely effectiveness of proposed solutions to manage the pandemic.

A major source of confusion among many is a lack of understanding of what "testing" currently means. To make sense of statistics reported in the news it's important to know there are two different kinds of tests for COVID-19, an infection test and an antibody test. They measure very different things.

(1) Infection Test: An infection test detects the presence of the virus. An infection test will be positive for someone with an active infection and negative for someone who has fully recovered or was never infected.
(2) Antibody Test: An antibody test, sometimes referred to as a serology test, detects antibodies to the virus. Antibodies are highly specialized immune proteins the body creates to neutralize the virus. An antibody test will be positive for someone who was infected and fully recovered and negative for someone who has an active infection or who was never infected. Widespread testing with both kinds of tests is required to understand the severity of the disease and the extent of the pandemic.

Up until April 15, 2020, testing results and statistics reported in the news were only from infection tests. On April 17, 2020, Stanford and USC announced the results of studies using antibody tests. The results indicate 2%-5% of the San Francisco Bay Area and Los Angeles population have already been infected. Because of bias in these studies by recruiting for test participants "that felt they may have been infected" rather than using an unbiased random sampling, the actual infection rate is likely closer to 2%. We haven't seen a surge of cases in California because lockdown measures dramatically slowed the spread. The pandemic is just beginning in California and approximately 98% of the population is still vulnerable to the virus.

In contrast to California's 2% who may be immune, New York City is estimated to be approximately 21% immune based on results from the first antibody test of their population announced April 22, 2020. The NYC results provide a much clearer picture of what we can expect in the future because we now understand what happens when approximately 21% of the population gets infected. We know that without restrictive measures, spread of the coronavirus can happen quickly, with around 21% of the

population infected within a couple months in NYC. We know the health system gets overwhelmed.

Based on numbers as of April 22, 2020, we see that approximately 2.5% of all infected require hospitalization. We also see that approximately 0.6% of those infected will die. The actual mortality rate is likely to be significantly higher since the currently available statistics are known to be missing undiagnosed cases. We also know that approximately 79% of the NYC population is still vulnerable to being infected.

The NYC antibody results are crucial because for the first time, we have a clear sense of how deadly COVID-19 is. These are measurements from a surge that has happened. We now have firsthand knowledge of how fast the virus can spread and what hospitalization and death rates to expect. Extrapolating what has happened in NYC with its population of 8.4M to the US population of 382.2M results in *8.2M hospitalizations and 1.97M deaths* if the pandemic is allowed to advance unchecked. *This is not a mild disease we can ignore.* Our challenge now is how to stretch the spread out over time until a vaccine or drug treatment is available.

Opening the economy will be an experiment on how far we can relax measures before hospitals get overwhelmed. And, we will have to keep experimenting until the virus has worked its way through the whole population. Most parts of the country that haven't seen a huge surge will be similar to California with 98% of the population still vulnerable. It doesn't take a math genius to figure out that some level of restrictions will be required for well over a year. For example, if 5% of the population getting infected each month is a rate manageable for hospitals, 20 months of restrictions will be required before 100% of the population has been exposed and acquires immunity.

What will be the impact to the economy over the next 12-18 months? 70% of the US economy is consumer spending. With restrictions to slow the spread to an acceptable level and consumers hesitant to resume normal activities, it's not unreasonable to estimate that consumer spending will decline 20%, and the overall economy by 15%. It's not unreasonable to expect the unemployment rate will exceed 10%. That's not factoring in additional ripple effects - failure of large corporations, economic collapse in other countries, supply chain disruptions, etc. With the virus lurking, Fed intervention will do little to improve consumer confidence and consumption.

Can we count on a vaccine to get us back to normal sooner? No. Vaccines work only when a majority of the population gets vaccinated. It's reasonable to predict that many will refuse a vaccine that has been rushed through safety testing, especially when vaccinating our own children. Proper safety studies take a minimum of 18 months including testing in animal models and carefully controlled human studies to check for side-effects that might maim or kill. Also, a vaccine may not be possible. There has never been a vaccine created for a coronavirus. Scientists have struggled for decades to create vaccines for other types of viruses and failed. An additional complication is the COVID-19 virus is acquiring two significant mutations a month. A vaccine designed for the viral strain driving the current pandemic may be ineffective by the time it's available.

Can we count on drug therapy? No. It turns out that much hyped hydroxycloroquine doesn't work. One of the more promising drugs being tested is remdesivir. It's an antiviral drug first developed for ebola that turned out to be ineffective. Initial studies with this drug show promise for treating COVID-19, but it has severe side-effects including nausea, diarrhea, rash, renal impairment, and possible liver damage. Avigan, a drug being tested in Japan is similar in mode of action. In the best case scenario where these drugs show benefit in reducing mortality, these are drugs that anyone with mild or moderate symptoms will hesitate to take due to severe side-effects and they are drugs that need to be administered intravenously. In real life, they will do little to make us feel safer.

Can we count on contact tracing? No. Success with contact tracing depends on several factors including availability of test kits, personnel to track everyone a confirmed infected person came in contact with, and keeping those contacts in quarantine. Previous epidemics where contact tracing worked dealt with pathogens that had short incubation periods. People knew they were sick and could be identified before they could spread the disease to many others. COVID-19 has an insidiously long incubation period of up to 14-days. With many asymptomatic spreaders, some people have been documented to have infected over 70 others. Who among us can identify everyone we spent time with over the last two weeks? Contact tracing becomes logistically unfeasible as the pandemic advances.

What does this all mean?
It's normal to want to interpret the news in a hopeful way, but a common sense and objective assessment is necessary to determine what is most likely to happen next. As we near the end of April, we have enough hard data, know enough about the virus, and witnessed our society's response to have sufficient clarity. *It's now reasonable to expect life and the economy cannot return to normal for at least 12-18 months. The economy will shrink about 15% in the coming months with unemployment at 10% or higher. We should all plan accordingly.*

Could it be longer or get much worse? Yes.

Here's what we can't predict:

1. **2nd Wave:** For the sake of the economy, we will start relaxing lockdown measures. There is no margin for error unless we can accurately test the whole population for infection on a weekly basis. Because COVID-19 has such a long incubation period with many silent spreaders, the first sign that measures were too relaxed will be a small uptick in cases signaling a large surge to follow within days. The only option to bring it under control will be an immediate, strict 30-60 day lockdown. Déjà vu.

2. **Deadly Mutation:** The virus is acquiring two significant mutations per month and the rate of mutations will increase as the pandemic advances. Mutations are random errors in replication and most of the time these errors are minor or detrimental to the replicate's survival, like a bad birth defect. On rare occasion, they make the virus replicate deadlier or more infectious, like the mutation that allowed this virus to jump from animals to humans. Each person infected generates up to a trillion

viral replicates and each replicate is a chance at a mutation that is more infectious or lethal, including more lethal to the young and healthy. SARS and MERS were caused by coronaviruses that are close cousins of the COVID-19 virus, sharing 79% of the same genetic code. SARS had a mortality rate of 10% and MERS 35%.

3. **Short or Partial Immunity:** Immunity acquired after recovering from COVID-19 may turn out to be short-lived, partial or in the worst case, offer no protection from being re-infected. If this turns out to be the case, restricted measures will be required for years and implies that developing a vaccine will be extremely difficult.

Is there a way out of this? Yes.

While current measures have drastically slowed the spread of the virus, we can enhance those measures to stop the spread completely and end the pandemic.

The COVID-19 virus, like all non-persistent viruses, lacks the biological mechanisms to hide or linger in the body when an infected person fully recovers (or dies). We can use that fact to eliminate the virus from the human population. Success of such an approach would be determined by several factors: coordination and support from government, cooperation by the public, public awareness on infection prevention, and synchronization across all affected populations. The concept is based on the best, time-proven way of ending pandemics. Let me explain.

We understand that if we could have somehow identified and isolated the first dozen people who were infected with this new virus, the pandemic wouldn't have started. The virus would have run its course in the isolated group within 30 days. Most would have recovered and maybe a few would have died. The virus would have burned out of existence in the isolated group and the recovered people could have safely rejoined society.

It's not too late to do the same thing. Let's assume any of us might have recently been infected, like those unlucky few that started this whole thing. If we as a society effectively isolated ourselves into small groups for about 30 days, we could achieve the same result as going back in time and isolating the first few who started the pandemic. *In essence, we each need to see ourselves as having the power to stop a bigger pandemic from happening. That's exactly what we would be doing.*

Learn more at FlattenToZero.org

The Daily Wellness Company has been active in the medical research community for the past twenty years. In the validation of its proprietary formulas, it has sponsored clinical studies at Stanford University, Yale University, and Wake Forest University. Denny W. Kwock, President & CEO of the Daily Wellness Company, was a retrovirus researcher in the 1980's during the AIDS pandemic. His published research was instrumental in developing screening methodologies that culminated in FDA trials on testing to prevent infection from donated blood.