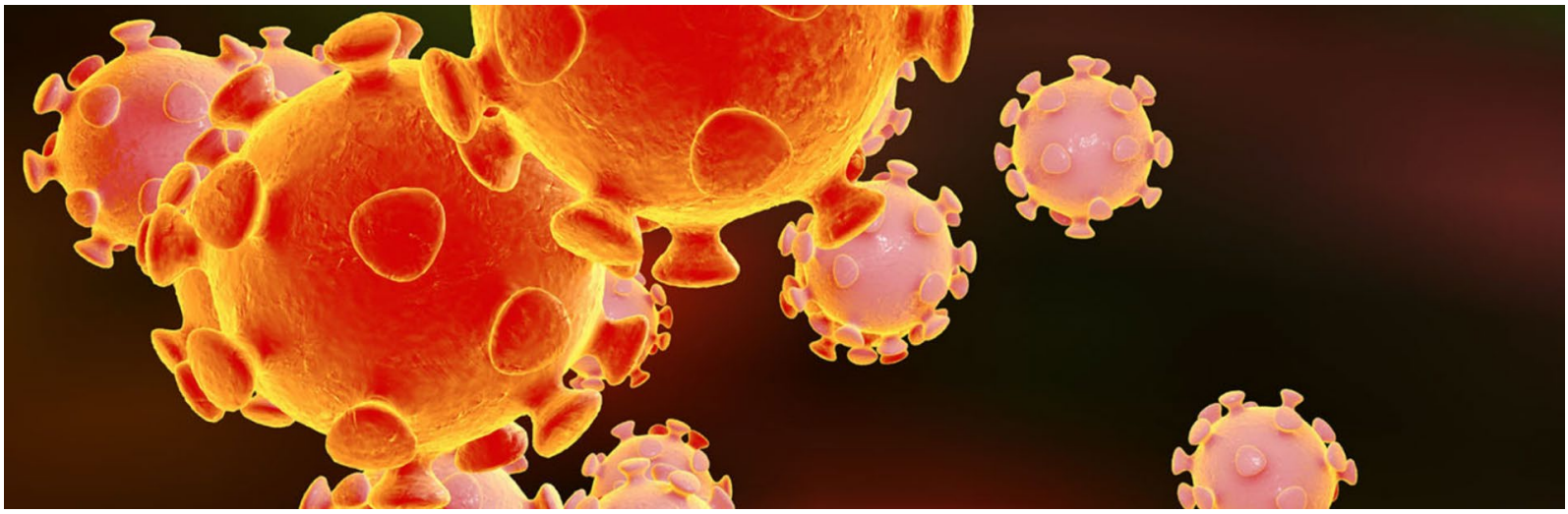

The Corona Virus Pandemic

An Analysis

by
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PART TWO: How to Prepare for 'The Next Big One'

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LESSONS LEARNED

In PART ONE good grounds were presented to describe how perverted the Covid-19 experience has been to date. Just about every resource expected to help define and support an effective public health response proved to be suspect: the WHO, CDC, FDA, NIAID, laboratory testing, statistics and computerized modelling, assessment of treatment options and the media. Those serious deficiences plus the lack of preparedness were made painfully obvious, with a devastating number of unnecessary deaths and a severe interruption of the global economy. We must seriously re-examine how to minimize deaths while not killing commerce. The cure must not be worse than the disease!

Eight major failures created a perfect storm:

1. The 'experts' at all levels were often flat out wrong
2. Bureaucratic obstructionism was rampant
3. Computer modelling wildly exaggerated risk
4. The media fanned the fire, driving unprecedented public paranoia
5. Large scale testing was dangerously delayed
6. Many well intentioned interventions were just plain guess work
7. Essential medical supplies, equipment and drugs had not been strategically stockpiled
8. Our political leaders succumbed to disinformation and media hysteria

But the most important lesson was that Common Sense was singularly ignored!

So let's review what must be done before 'The Next Big One'.

WHO

To be blunt, heads should roll. In particular Drs. Adhanom and Ryan for reasons amply defined in PART ONE, and they should be replaced by competent people recommended by the new head of the CDC (see below). Otherwise, the USA, as the principal funder of the WHO, should withhold any future financial support.

In my opinion the role of the WHO in future pandemics should be restricted to the following:

- Stockpiling a supply of material support to developing countries, under WHO control for initial supplies. The stockpile would be supplemented as needed by emergency production capacity in developed countries, activating already defined contingency plans.
    - Protective materials
    - Sample collection devices
    - Transportation logistics of collected samples to centers with high volume testing
    - Ventilators
    - Medications and protocols found to be effective (see Studies Needed below)
    - Field hospitals with ICU capabilities, and
    - Cremation equipment

- An efficient data collecting capability, updated daily from all countries (including Taiwan!), and,

- International standardization of Death Certificates, so that each country is reporting death statistics to the WHO in the same uniform manner

'EXPERTS'

The current heads of the CDC, FDA, and NIAID should also be summarily removed from office, and replaced by non-partisan experts approved by the US Congress. Pragmatism should be the prime quality for the appointments, and there is still lots of that around. Academic/medical credentials are required of course, but should not be the only factor in the search.

Dr. Fauci in particular has vacillated on matters of substance with his nightly hand-wringing in the media. He also insisted on a formal double-blind trial for hydroxychloroquine (a drug with initial successes in France and an outstanding safety record) while thousands of people were dying! That opinion was classic for an academic, but in this crisis he was totally out of his league – or gone "wobbly" as Maggie Thatcher would have said. He also dressed up absurd modelling predictions by saying that they "could happen", which of course the general public read as likely to happen – significantly ratcheting up public anxiety.

The FDA was similarly culpable for denying immediate use of hydroxychloroquine, actually intimidating very capable infectious disease specialists until they boldly decided to ignore the edict *en masse*.

As described below, the CDC would not need to scramble to design a high volume test method for a novel outbreak of a pathogen likely genetically related to Covid-19 and influenza, as once a new method has been approved for general use with standardized generic reagents (see below) it would be available for instant use world-wide.

TESTING

A radically different high-volume method for testing Covid-19 and related viruses

A US company is commercializing a Covid-19 test method that will potentially revolutionize the field. This method claims to have virtually no false negatives or false positives, can be run at high-throughput on existing instrumentation, and is price competitive with current centralized methods. But more importantly, it has a menu that includes other viruses in the same test that have similar presenting symptoms as the seasonal 'flu (which is a much more likely cause of presentation), as well as other historically relevant pathogens such as SARS and MERS. Remember that the vast majority of tests for Covid-19 are negative; but worried people don't just want to know what they don't have, they also want to know what they do have – giving additional confidence that the test is reliable.

This method is intentionally designed to not only simultaneously identify and confirm the specific genetic sequences of all the viruses in the panel, but also novel related viruses that could cause a new pandemic. It is a modification of the method used for the Genome Project (Sanger sequencing, the recognized Gold Standard). Therefore, it will be unnecessary to undertake immediate genomic sequencing of a genetically related novel virus before testing commences. The test itself would document the unique novel genetic sequence, and more complete sequencing could be performed later.

Testing strategy

- **Surveillance and Acute CaseTesting**
  Sentinel labs should be set up throughout the world, especially where a novel virus is likely to originate, and charged with repetitive genomic sequencing of viruses causing upper respiratory symptoms in that geographic region, using methodology similar to that described above.

  Once an outbreak is discovered due to a novel virus, vigorous local attempts could be made to contain it and keep the world so informed. However, in my opinion, attempts at effective local containment of the epicenter would be futile for these cogent reasons:
    - The horse would already be out of the barn for reasons previously described in **PART ONE** (air travel, viral incubation period, and asymptomatic spreaders)

- The required degree of restricted movement and contact tracing of the Taiwanese type, would not be tolerated in the Western world. (Bill Gates has actually had the audacity to suggest that patients testing positive for a novel virus should have a chip embedded under the skin of to ensure their movements could be tracked by GPS and that they were not evading quarantine! Is he aware this is 2020 and not 1984?)

But that is not to imply that capacity for high-volume accurate testing should not be established now; quite the contrary. **We will have no idea how virulent the 'Next Big One' will be, so we must prepare now for the worst possible future scenario.**

3 different types of tests are required to cover all situations:

- High Volume
  Confirmation of the new US test method described above as valid and useful for centralized high volume testing
- Low Volume
  Development for a miniature version of the high-volume test system for one-button low-volume walk-away laboratory use, with disposable single-use cassettes
- Point-of-Care
  Development of Point-of-Care self-use devices to determine:
  - Infection status – detecting the virus
  - Immune status – detecting antibodies to the virus (technically IgG and IgM)

- **Protecting the vulnerable**

Although in my opinion containment is likely to fail at the site of origin, immediate awareness of a new potential pandemic would be of huge value for the implementation of global mitigation efforts **if they were proven to be effective** in studies yet to be undertaken (see on), as well as the ramping up of pre-existing stockpiles by the WHO and individual countries with that capability.

That being said, **the prime issue** in my opinion would be to simultaneously protect the vulnerable and the economy. If early reporting of mortality demographics again indicates that death is occurring primarily in the elderly and those with co-morbidities, then that should be where the major protection is focused using proven methods, and with possible use of prophylactics. There would be no need to try and contain the infection within the rest of the general population at low risk of death, as it would inevitably be ineffective and would devastate the economy yet again.

- **The working well**

People outside the vulnerable group would be encouraged to go to work normally – just as they did in prior 'flu epidemics that killed substantially more people! If they were to get sick, they would not go to work, would stay home, not visit Grannie, take Tylenol and chicken noodle soup – just as they have before! They could test themselves with mailed out, easy-to-use, cheap point-of-care devices to see if they are negative for the novel virus or have immune status, so as to allow a reasonably safe return to work (despite the acknowledged poor accuracy of these types of tests). That way they would not have to leave the home to be tested and potentially spread the virus to others. Medications shown to be effective for treatment and/or prophylaxsis (see on) could be obtained by family members or delivered to the home.

STUDIES NEEDED

There is an urgent need to conduct numerous studies if this utterly disastrous train of events is to avoided in the future:

- Covid-19 virus related:
  - Incubation period
  - Transmissibility if infected and symptomatic
  - Transmissibility if infected and asymptomatic
  - Survival time on objects
- Patient related:
  - Death demographics
  - Prevalence of asymptomatic infection
  - Why do some people get infected and others don't?
    - It is of great interest that the entry point for Covid-19 into the cells of the lower respiratory tract is a receptor on the cell surface called ACE-2. This the same receptor for certain drugs for the control of blood pressure (ACE inhibitors). The ACE-2 receptor is known to have structural variants, and so the question needs to be asked if Covid-19 infection was more prevalent with certain sub-types of the ACE-2 receptor than others. Such a distinction could identify people at increased risk of death and be a valuable adjunct to preventing Covid-19 infection.
    - The importance of smoking history given the increased levels of ACE-2 in smokers
    - Vitamin D levels vs ethnic vulnerabilities (skin pigmentation) – Vitamin D is a powerful immune-modulator
- Containment
  - Risk of getting infected while simply walking on the side walk
  - Does 'social distancing' achieve anything if one is not symptomatic?
  - Does banning gatherings of any size, in particular music performances, church services, sporting events etc. have any measurable benefit?
- Documenting the increase in the suicide/addiction/bankruptcy rate during the pandemic
- Algorithms for when/how/where to test
- Medication related
  - Do hydroxychloroquine and other agents reduce mortality?
  - Were patients already taking hydroxychloroquine (for auto-immune diseases and malaria prophylaxis) and ACE-2 inhibitors (for hypertension) protected?
  - The value of hyper-immune serum from recovered patients
  - Are there safe effective prophylactics to protect health care workers, the general public, and vulnerable demographics?
  - Urgent vaccine development, recognizing that it will take a year or more to show its effectiveness and safety. As viruses of the Covid-19 type (RNA viruses) are always mutating, any vaccine may not have total effectiveness; very much like the 'flu vaccine is always for last years 'flu not the current one. It's like shooting at a moving target. The good news is that vaccines are only needed if pathogens reappear, and this one might not, just like the related SARS virus failed to return.
- Modelling – why did it fail so spectacularly?
- Inter-country comparisons
  - Sweden's bold determination to not follow the lemmings off the economic cliff (despite originating there!)
  - Why did Italy/Spain/France apparently have disproportionate deaths/million?
  - How did Taiwan do so well despite its proximity to China?

    - The degree of air pollution – Lombardy in Italy has Europe's worst air pollution (as well as Europe's highest percentage of people over 80 years) which may partially explain the mortality statistics there
- Do travel bans and point-of-entry screening really have any effect?
- The economy
    - Did closure of schools/daycares/businesses/restaurants cause any reduction in mortality?
    - What was the bottom line economic cost and what will that mean for annual debt servicing?

PREPAREDNESS

When the studies listed above are completed there will be a much better sense of what worked and what didn't. My suspicion is that nothing really works beyond:

- The usual precautions for seasonal 'flu with self-isolation, etc.
- Masks for the infected if outside the home
- Protection for health care workers
- Rigorous isolation of the vulnerable
- Potential identification of those genetically susceptible
- Vacination
- Possibly newly discovered medications for treatment and prophylaxis, and
- Tighter bio-safety controls in Level 4 virology labs, particularly in China

Paradoxically, the WHO and both the Governor and Mayor of New York (none of whom I particularly admire) may have been absolutely correct to say initially "Relax, it's just another 'flu"! Only further studies will reveal how a more balanced approach could protect both the vulnerable and the economy.

Nonetheless, standard international testing capability at all three levels is essential to better measure and track future pandemics, particularly if 'The Next Big One' is significantly more lethal. After the lessons with SARS, MERS, and now Covid-19 we should prepare for worst case scenarios, but not over-react. China cannot be trusted to improve its biosafety operating procedures in virology labs to accepted international standards.

Serious stockpiling by the WHO for undeveloped nations should certainly be undertaken, as well as contingency plans for ramping up production of essential supplies and medications in developed countries.

THE MEDIA

The central issue is: How to control a beast that's more virulent than any virus? Can that ever be achieved without trampling on the freedom of the press as the watchdog for political incompetence and over-reach? The temptation to be partisan and drive ratings is probably irresistible, especially in a crisis. It's really all about that indescribable thing called the ethical exercise of responsibility. You have it or you don't. It can't be demanded.

The best antidote is probably on-point political messaging based on better advice and analysis from non-experts who can inject that missing vital quality of common sense!

To highlight this conundrum, I'm torn between using a quote, the original version of which is inaccurately attributed to Churchill, and a famous obituary, so I'll use both!

"Fear gets halfway around the world before common sense has a chance to get its pants on."

And here's a link to that famous alleged obituary in the Times of London on the death of Common Sense:
https://portal.clubrunner.ca/5453/stories/an-obituary-printed-in-the-london-times

POLITICAL DECISIONS

I believe the principal laudable objective of politicians in the Covid-19 pandemic was to reduce death, but whose death? The vulnerable, or those who will assuredly die because of unintended damage to the economy? (see on)

Politicians traditionally tend to err on the side of caution to avoid the wrath of the electorate for causing more pain than gain. So pity the poor politicians handling the Covid-19 pandemic when the 'experts', statisticians and computer modelers were all initially singing the same tune. How could they have been reasonably resisted? As we now know they were all dead wrong, but that's 20/20 hindsight.

Common sense should have been sought to add a counter balance to the collective hysteria, but even that might not have successfully injected wisdom. This whole episode is a florid example of a 4 letter word known to everyone – ***LIFE!*** Get used to it, it's inherently risky and we all roll the dice every day driving our cars. Not even the Nanny State can totally protect everyone from every imaginable risk.

As a pathologist I can attest to The Grim Reaper being always around the corner, with pneumonia still called the 'Old Man's Friend' for good reason. And Death Certificates often use the term 'Old Age' as the cause of death, which can be just as accurate as anything scientific. Although Covid-19 sadly took away prematurely many of those destined to die soon from their severe co-morbidities, it is not to say we couldn't have saved many of those souls with very focused protection from contact with Covid-19 and possibly prophylaxis, and also done more to protect exposed front-line health care workers. We could have but didn't, and in my opinion that should have been the principal objective, not over-reacting in the impossible hope of protecting everyone and thereby stopping the economy in its tracks.

What was lacking was balance between the unavoidable imminent death of the vulnerable *vs* the life of the economy *vs* personal liberty. In fact, putting a value on life itself! Not an easy task by any means, but a better attempt should have been made.

Politicians need to control the messaging, and not by default permit that role to be assumed by the media. I would suggest that next time our leaders focus on regular 'fire-side chats' to calmly put things into perspective, specifically countering media hyperbole, identifying the variables they are trying to weigh for the common good, and remembering: "A leader is someone who keeps his head while everyone around is losing theirs" (attrib.: Rudyard Kipling, IF).

THE LAW OF UNINTENDED CONSEQUENCES

The Covid-19 pandemic has highlighted a number of unforeseen consequences for individuals, the country and the world:

- Suicide. There is a well studied relationship between suicide, unemployment and the likely torrent of bankruptcies. In fact, doing the math results in the number of incremental suicides alone exceeding the overall mortality figures. Similarly for the consequences of substance abuse.
- The provincial and national debt – we have passed on to our children enormous debt servicing costs which can only result in higher taxes, reduced essential services or a devalued currency – or all Three Horsemen of the Apocalypse combined.
- Our huge dependence on China for medications and strategic supplies. This to me is the most interesting of all. As a result of this realization, many products currently manufactured in China will soon be made in the USA or other 'friendly' countries such as India. This will be good for the American economy, albeit increasing the cost of living, but more importantly it could have a destabilizing effect on the Chinese communist regime and its ability to suppress dissent. The educated Chinese in the major cities have become accustomed to the good life in a prosperous economy – take that away from them and it could have very unintended consequences indeed. That's the ultimate reason Rome fell, as well as Russia in the cold war.

So, without wishing to put too fine a point on it all, the up-side could be yet another example of the Butterfly Effect: just one pair of dirty shoes in Wuhan bringing down the last bastion of Communism!

SUMMARY

The Covid-19 pandemic has caused utterly unpredictable harm, way beyond the deaths in its wake. It should be a salutary wake-up call for our politicians to learn once and for all the vital importance of major investments in prevention, preparedness and strategic thinking. The cost of having done so before this pandemic would have been a minute fraction of today's reality.

On reflection, given the extreme current degree of hysteria, a good case could be made for calling this pandemic the Corona Pandemonium! But 'The Next Big One' could be equivalent to a direct hit by an asteroid – and we all know what happened to the dinosuars……..

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