

COVID-19: The Unravelling of a Corona Virus Pandemic

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Received: March 21, 2020; **Published:** April 08, 2020

This is the first time that a Corona Virus has been declared by the WHO as a global pandemic.

While everyone on planet earth is very concerned about the effects of this viral pandemic, due to its rapidly spreading nature, it is essential to know that there are basically 4 stages to any Pandemic. They are as follows:

1. **Stage I:** Usually sporadic cases in a country, due to international travel.
2. **Stage II:** Local transmission from the positive cases already present in the community.
3. **Stage III:** Disease spread within the community, wherein large areas get affected.
4. **Stage IV:** The disease takes the shape of an epidemic with no clear endpoint.

At present, most nations in the tropical and equatorial regions are possibly in Stage II, and this makes it vitally important to prevent a progression to Stages III and IV.

There usually is a window period of 3-4 weeks before Stage II progresses to Stage III, during which it is vitally important to adopt the following definitive steps (since, as yet, there is no definitive treatment for the infection):

- a) Quarantine.
- b) Rigorous contact tracing.
- c) Avoid mass gatherings.
- d) Preparation - scaling up infrastructure, which would include increased testing facilities, isolation beds, and acute management of positive cases, all taking place simultaneously.

While this will be the first summer of mankind with this new virus, it is believed that this particular strain of coronavirus could lose its "killing edge" in environments with high humidity and high temperatures, and its period of survival on ordinary surfaces could be considerably reduced.

Hopefully, this will work in our favour as summer sets in, and the temperature and humidity continue to rise.

If survival of the virus on ordinary surfaces gets reduced, or even if the virus loses its virulence considerably, transmission of the infection could decline, along with a reduction in morbidity and mortality.

Research just released from MIT [1] concerning the effect of temperatures on COVID-19 transmissions shows that the maximum number of transmissions occurred in regions that had temperatures between 3 degrees and 13 degrees Celsius (37.4 - 55.4 degrees Fahrenheit).

The data also shows that countries with mean temperatures above 18 degrees Celsius (64.4 degrees Fahrenheit) have seen less than 5% of the total number of cases.

The researchers at MIT also determined that this data is consistent with the data seen in the United States. Specifically, the warmer southern states have seen a significantly lesser number of cases in the outbreak than the cooler northern states.

The research from MIT is also similar to studies from Spain and Finland, which determined that more than 90% of all cases globally took place in a temperature range of -2 degrees and 10 degrees Celsius (28.4-50 degrees Fahrenheit).

What could this mean? As summer begins in the northern hemisphere (with temperatures in the 60's and above in Fahrenheit), we may see the number of new cases decline significantly.

Modes of transmission of COVID-19: a) the main mode of transmission is through touching infected surfaces and then touching one's own nose, mouth or eyes, which we must all learn to avoid. b) face masks serve to avoid direct contact with air-borne aerosol particles from an infected patient who is coughing. The face mask also helps in that, it discourages a person from touching his own face and mouth ever so often.

So, it is vitally important to follow basic hygiene measures, keep away from large crowds, seek prompt medical attention if unwell and keep updated with the latest developments on COVID-19.

Some countries such as Italy, South Korea, Germany, France and the US seem to have had a rather short Stage II and rapidly went on to Stage III with mass-community spread. Switzerland and Austria too had a sudden spurt of cases.

However, tropical and equatorial countries seem to have a reasonably long Stage II and should take full advantage of this window of opportunity, by adopting the above measures vigorously, as time is of the essence.

It is important to remember that case studies in China have shown that increased mortality was noticed in patients with comorbidities, with Hypertension being the most common (30%), followed by Diabetes (19%) and Coronary Heart Disease (8%).

Age too, is an important contributing factor with people over age 60 believed to be at an increased risk.

Besides fever, cough, sore throat, myalgia, breathlessness and headache, doctors have now recently observed that a significant number of patients also started developing a loss of sense of smell (anosmia) and diminished sense of taste (ageusia), as peculiar tell-tale signs of COVID-19. In South Korea, where testing has been widespread, 30% of 2000 patients who tested positive experienced anosmia as their major presenting symptom.

The American Academy of Otolaryngology [2] has said that anecdotal evidence is rapidly accumulating from sites around the world that anosmia, ageusia and dysgeusia (altered sense of taste) are also significant symptoms associated with COVID-19 and have suggested that these symptoms too be added to the list of screening tools for possible COVID-19 infection. They have further suggested that these

symptoms in the absence of other respiratory conditions such as allergic rhinitis, acute rhinosinusitis or chronic rhinosinusitis should alert physicians to the possibility of COVID-19 infection and warrant serious consideration for self-isolation and testing of these individuals.

The most common cause of death in patients with severe COVID-19 infection is usually fulminant pneumonia leading to Adult Respiratory Distress Syndrome (ARDS), which leads to impaired gas-exchange, with consequent refractory hypoxemia and multi-organ failure.

As yet, a vaccine is unavailable, but is now in the early stages of clinical testing. It is believed that it will take at least 12 - 18 months more, before a vaccine is widely available for clinical use in the general population.

In the meanwhile, various drugs are being tested for use against the virus directly, and also to mitigate the “cytokine storm” [3] which is a potentially deadly overreaction of the immune system to the virus, that can result in severe lung injury, leading to ARDS and consequent refractory hypoxemia, which further leads to multi-organ failure.

The overall situation regarding COVID-19 is very fluid and constantly changing. Hence, it is necessary to keep updated with the latest details on the trend and nature of this new pandemic, and its response to various medications, so that we can think well ahead of time and plan the management accordingly.

These are indeed testing times, but remember, “This too will pass!”.

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Volume 9 Issue 5 May 2020

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