

# A Novel Coronavirus Disease (COVID-19) Outbreak as a Pandemic Crisis

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## ABSTRACT

A novel Coronavirus disease (COVID-19) is caused by the severe acute metabolic process syndrome coronavirus-2 (SARS-CoV-2) virus strain. It was first recorded in the foreign country called China and later has been spread to all over the world. Started with one case and now recorded with a rate of deaths per range of diagnosed cases is four (0-1%). The symptoms associated with this illness are fever, cough, running nose, mainly the respiratory issues. The strange thing is there is no available treatment or vaccine to treat this disease. Clinical trials were still going on to develop the vaccine against coronavirus and expected to be available by the year 2021. Till then, there are only precautionary measures that can handle or control this virus spread. The healthcare professionals and government authorities are doing great jobs to maintain social distancing by proving quarantine or isolation centers to follow advisories strictly from time to time so that we can make way for our own lives and lives of everyone.

**Keywords:** Coronavirus; COVID-19; social distancing

## INTRODUCTION

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by the severe acute metabolic process syndrome coronavirus-2 (SARS-CoV-2) virus strain. <sup>[1]</sup>The first COVID-19 case was recorded in 2019 at Wuhan, China. Since, then cases unfold globally leading to the coronavirus

pandemic crisis between 2019 and 2020. <sup>[2]</sup>To March 2020, the rate of deaths per range of diagnosed cases is four (0-1%). <sup>[3]</sup>The World Health Organization (WHO) proclaimed the 2019-20 coronavirus flare-up a pandemic and a Public Health Emergency of International Concern (PHEIC). <sup>[4]</sup>Evidence of nearby transmission of the sickness has been found in numerous nations over each of the six WHO regions.

Fever, cough, and shortness of breath are the common symptoms observed in the affected patients, whereas, the muscle pain, sputum production and raw throat area are unit less common. While, the majority of the cases end in gentle symptoms, some attain severe pneumonia and multi-organ failure. <sup>[5]</sup>The infection often spreads from one person to other through respiratory droplets produced throughout coughing and sneeze. <sup>[6]</sup>Time taken from exposure to onset of symptoms is usually between 2–14 days with a mean time of 5 days. <sup>[7]</sup>The infection can even be diagnosed from a mixture of symptoms, risk factors and a chest computed tomography scan (CT-scan) showing options of respiratory disease. Recommended measures to prevent infection includes frequent hand laundry, social distancing, keeping hands off from the face, and use of masks are usually recommended for those suspected with virus and their caregivers but not to the overall public. <sup>[8]</sup>To date, there is no vaccine or specific antiviral drugs available to treat

coronavirus. However, management involves treatment of symptoms, confirming care, isolation, and experimental measures. In this article, we discuss the etiology, diagnosis, preventive measures and the management of coronavirus disease.

## EPIDEMIOLOGY

The case fatality rate (CFR) depends upon the availability of healthcare, the standard age and health problems in the population, and the variety of undiagnosed cases.<sup>[9]</sup> In Hubei, the CFR was found to be 3% and 2% in January 2020 and February 2020.<sup>[10]</sup> The CFR numbers also alters based on the variations in time of confirmation, demise or remission. An unreview preprint of 55 deaths stated that early estimates of mortality can be too high as asymptomatic infections are missed. They envisioned a mean contamination fatality ratio ranging from 0.8% to 0.9%.<sup>[11]</sup> The outbreak from 2019–2020 has caused the at least 244,517 confirmed infections and 10,030 deaths.<sup>[12]</sup> Moreover, an observational study of nine people found no vertical transmission from mom to the newborn baby.<sup>[13]</sup> Also, there was no evidence of viral transmission through vaginal sex (from female to partner), but authors notice that transmission at some stage in sex might arise through different routes.<sup>[14]</sup>

## ETIOLOGY

The coronavirus disease is as a result of SARS-CoV-2 virus, previously referred to as the 2019 novel coronavirus (2019-nCoV).<sup>[15]</sup> SARS-CoV-2 virus can last as long as three days, remain feasible for up to 72 hours on plastic and stainless steel, 3 hours in aerosols. The virus has additionally been found in faeces, but as of March 2020 it is unknown whether transmission via faeces is possible, and the hazard is expected to be low.<sup>[16]</sup> Lungs are the organs most affected by COVID-19 because, the virus accesses host cells through the angio-

tension converting enzyme 2 (ACE2), which is most abundant in the kind II alveolar cells of the lungs. The virus makes use of a unique surface glycoprotein called "spike" to hook up with ACE2 and enter the host cell.<sup>[17]</sup> The density of ACE2 in every tissue correlates with the severity of the sickness in that tissue and some have suggested that decreasing ACE2 activity is probably shielding.<sup>[18]</sup> Although ACE2 uses angiotensin-II receptors, the usage of angiotensin-II receptor blocker (ARB2) medications will be protecting and that those hypotheses need to be tested.<sup>[19]</sup> As the alveolar sickness progresses, respiratory failure would possibly expand and death might also follow.

The virus is of animal origin,<sup>[20]</sup> it was first transmitted to human beings in Wuhan, China, in November or December 2019, and the number one source of infection have become human-to-human transmission by using early January 2020. The earliest known infection passed off on revolutionary organization was in November 2019.<sup>[21]</sup> As of March 2020, 67,790 instances and 0.5 deaths due to the virus had been said in Hubei province with a CFR rate of 4.54%.<sup>[21]</sup>

## Clinical Presentation

Majority of the patients contaminated with the infection might be asymptomatic, many have influenza like indications and few patients usually have upper respiratory side effects. Gastrointestinal manifestations are found in a minority of cases,<sup>[22]</sup> and a portion of the underlying cases in China recorded few cardiac side effects.<sup>[23]</sup> In a few, the ailment may advance to other symptoms. The signs and symptoms observed in COVID-19 cases are displayed in Table-1. Time taken from an individual affected with infection to when they create indications is known as hatching time frame. The hatching time frame for COVID-19 is commonly 5-6 days, it may also go from 2-14 days.

Influenza	Respiratory	Gastrointestinal	Cardiac	Other
<ul style="list-style-type: none"> <li>• Fever</li> <li>• Sickness</li> </ul>	<ul style="list-style-type: none"> <li>• Cough</li> <li>• Shortness of breath</li> <li>• Sniffling</li> <li>• Running nose</li> <li>• Sore throat</li> </ul>	<ul style="list-style-type: none"> <li>• Heaving</li> <li>• Loose bowels</li> </ul>	<ul style="list-style-type: none"> <li>• Chest snugness</li> <li>• Palpitations</li> </ul>	<ul style="list-style-type: none"> <li>• Pneumonia</li> <li>• Multi-organ disappointment</li> <li>• Death</li> </ul>

**DIAGNOSIS**

The WHO has distributed a few testing conventions for the disease.<sup>[24]</sup> The standard strategy for testing is continuous converse interpretation polymerase chain response (rRT-PCR).<sup>[25]</sup> The test samples include a nasopharyngeal swab or sputum and blood. Results are commonly accessible within a couple of hours to two days. Even though blood samples are tested by using two tests and dismantled for two weeks, the outcomes have minimal prompt value.<sup>[26]</sup> Chinese researchers had the option to disengage a strain of the coronavirus and distributed the hereditary arrangement with a goal that laboratories over the world could freely create polymerase chain response (PCR) tests to distinguish contamination by the virus.<sup>[27]</sup> By February 2020, there were no immune response tests or purpose-of-care tests available. However, endeavors to create them are ongoing.<sup>[28]</sup>

Symptomatic rules discharged by Zhongnan Hospital of Wuhan University proposed techniques for distinguishing diseases dependent on the clinical highlights and epidemiological hazard. This includes recognizing individuals who had in any symptoms or contact with other contaminated individuals: fever, imaging highlights of pneumonia, typical or decreased white platelet check, or diminished lymphocyte count.<sup>[29]</sup> An investigation distributed by a group at the Tongji Hospital in Wuhan demonstrated that a chest CT-scan test for COVID-19 has more prominent affectability (98%) than the polymerase chain response (71%).<sup>[30]</sup> False negative outcomes may happen due to PCR pack disappointment, or due to either issues.

One examination in China found that CT-scan demonstrated ground-glass opacities in 56%, yet 18% had no radiological findings.<sup>[31]</sup> Bilateral and fringe

ground glass opacities are the most common, straight opacities and opposite corona signs are other radiological findings. Initially, the sores are kept to one lung, yet as the sickness advances, signs show in the two lungs in 88% of supposed "late patients" in the investigation gathering (the time between beginning of manifestations and chest CT was 6-12 days).Ground glass opacities are additionally a typical component in kid's disease.<sup>[32]</sup>

**PREVENTION**

Till now, there is no vaccine is available to treat coronavirus disease. So, a key part of handling the COVID-19 pandemic is attempting to decrease the epidemic peak. Slowing the infection can reduce the hazard of health offerings and taking into consideration of the better remedy of contemporary cases provides more time for a vaccine and treatment to be developed.

Preventive measures to be taken into consideration at the locations attacked with COVID-19 are: social distancing, self-quarantine, wash arms with soap and heat water regularly for minimum 20 seconds (proper hand hygiene), practice appropriate respiratory hygiene and keep away from touching the eyes, nose, or mouth with unwashed palms.<sup>[33]</sup> The centers for disease control (CDC) and WHO recommends masking up the mouth and nose with a tissue for the duration of any coughing or sneezing, it can be done into the interior of the elbow if no tissue is available.<sup>[34]</sup> They additionally recommend proper hand hygiene after any cough or sneeze. Social distancing techniques aim to lessen contact of infected persons with massive organizations by way of closing colleges and workplaces, restricting tour, and

cancelling mass gatherings. Spitting in public locations also ought to be avoided.

## MANAGEMENT

In addition to the preventive measures mentioned above, alcohol-primarily based hand sanitizer with minimum 60% alcohol can be used when soap and water are not available.<sup>[33]</sup> These hand sanitizers aren't difficult to find out in the remote regions and also WHO advised formulations for the neighbourhood production. The formulations include antimicrobial pastime of ethanol or isopropanol is enhanced with the aid of low awareness of hydrogen peroxide even as glycerol acts as a humectant.<sup>[35]</sup> Paracetamol is suggested for first-line use.<sup>[36]</sup> Extracorporeal film oxygenation has been utilized to address the issue of respiratory disappointment, however its advantages are still under consideration.<sup>[31]</sup> Particular individual defensive gear and the request in which human services suppliers should put it on when managing somebody who may have COVID-19 are: outfit, cover or respirator, goggles or a face shield, and gloves.<sup>[37]</sup>

## Experimental treatments

According to WHO, there was no prescription confirmed to treat the malady but some are suggested by singular national clinical authorities. Research into potential medicines began in January 2020 and a few antiviral medications are in clinical trials.<sup>[38]</sup> Although new drugs may take until 2021 to develop,<sup>[39]</sup> a few of the medications being tried are as of now endorsed for different uses, or are as of now in cutting edge testing.

## Antiviral drug therapy

Antiviral medicine might be attempted in individuals with extreme disease.<sup>[40]</sup> The WHO suggested volunteers to participate in preliminaries of the viability and wellbeing of potential treatments.<sup>[41]</sup> A few existing antiviral drugs are being taken a gander at to treat COVID-

19 and some are moving into clinical trials.<sup>[42]</sup> There is conditional proof for remdesivir as of March 2020. Remdesivir represses SARS-CoV-2 in vitro.<sup>[43]</sup> Phase 3 clinical preliminaries are being directed in the US, in China, and in Italy.<sup>[42, 44, 45]</sup>

Chloroquine, recently used to treat jungle fever, was being concentrated in China in February 2020, with constructive starter results.<sup>[46]</sup> In vitro, chloroquine and hydroxychloroquine successfully restrain SARS-CoV-2, whereas, hydroxychloroquine was found to be more powerful than chloroquine and with an increasingly decent wellbeing profile.<sup>[47]</sup> Preliminary outcomes from a preliminary proposed that chloroquine is compelling and safe in treating COVID-19 related pneumonia, "improving lung imaging discoveries, advancing an infection antagonistic transformation, and shortening the malady course".<sup>[46]</sup> However, there are calls for more audit of the exploration to date. The Guangdong Provincial Department of Science and Technology and the Guangdong Provincial Health and Health Commission gave a report expressing that chloroquine phosphate improves the achievement pace of treatment and abbreviates the length of patient's medical clinic remain. They also suggested it for individuals determined to have mellow, moderate and extreme instances of novel coronavirus pneumonia.<sup>[48]</sup> In March, the Italian Pharmaceutical Agency remembered chloroquine and hydroxychloroquine for the rundown of medications with positive fundamental outcomes for treatment of COVID-19.<sup>[49]</sup> Korean and Chinese Health Authorities prescribe the utilization of chloroquine.<sup>[50]</sup>

## CONCLUSION

There is no vaccine available to treat COVID-19, still trials are going on to find the appropriate treatment for coronavirus disease. Till then, preventive measurements should be followed strictly to reduce the coronavirus infection or illness.

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