

## Review Article

# Corona virus pandemic: current scenario and future hopes

Awadhesh Kumar Sharma\*

Department of Cardiology, LPS Institute of Cardiology, Kanpur, Uttar Pradesh, India

**Received:** 09 March 2020

**Accepted:** 15 April 2020

**\*Correspondence:**

Dr. Awadhesh Kumar Sharma,  
E-mail: [awakush@gmail.com](mailto:awakush@gmail.com)

**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

### ABSTRACT

Whenever we human beings challenge the existence of the god or tried to prove ourselves superior to the nature. The Nature bounces back in the form of these pandemics of infectious disease which forced us to either surrender or to lockdown ourselves in homes. The current outbreak of Corona Virus Disease-19 (COVID-19) is the same warning from nature. It is spreading very fast from one country to other and almost affects the whole world. We have many unanswered questions. Currently in absence of any definitive treatment, prevention is an only option. But future hopes are still there. This article gives a brief and accurate detail of COVID-19 pandemic regarding current situation and future hopes.

**Keywords:** COVID-19, Corona virus, Incubation period, Pandemic, Quarantine, Virulence

### INTRODUCTION

Whenever we human beings challenge the existence of the god or tried to prove ourselves superior to the nature. The nature bounces back in the form of these pandemics of infectious disease which forced us to either surrender or to lockdown ourselves in homes. In today's era it is impossible that an infectious disease will get limited to a certain geographical location. Current breakdown of COVID-19 infection from Wuhan City of China which is now spread to almost every part of world infected more than 1 million populations and resulting in more than 50,000 deaths and the number still increasing day by day very fast.<sup>1</sup>

#### Corona virus

Corona viruses are the family of viruses causing respiratory tract infection. They belong to order Nidovirales, the family coronaviridae. They are the unsegmented single- stranded positive strand RNA viruses. It is named after projections on its surface resembling crown (corona means crown in Greek). These are polymorphic and 50-150 nm in size. Most corona

viruses infect animals except SARS-COV and MERS-COV. Current strain COVID-19 is also capable of human to human transmission. Since it is first detected in Wuhan, China, so some also termed it as China virus. The known animal host for Coronavirus are bats, rats and camels. Genomic homology of COVID-19 is 85% similar to coronavirus found in bats. How this corona virus transmitted and infected to human is still not fully known but it seems that due to ingestion of uncooked or infected meat it transmitted to human species after a genetic mutation through an intermediate host, so that it became capable of causing human to human transmission. Exact idea about intermediate host is still not known and a matter of research.

#### Incubation period, virulence and environmental effect

Incubation period reported range from 1-14 days but exceptionally in few patients' symptoms seen even after 21 days.<sup>2</sup> The average incubation period is around 7-8 days. Since due to antigenic mutations it is new to human being and we have no immunity against it so In comparison to other corona viruses known so far it is fatal and had high infectivity and fatality rate especially

in immune-compromised individuals like elderly, heart failure patients, chronic respiratory disease patients, chronic kidney disease and malnourished patients. It is more virulent in cold and humid conditions. The survival time of corona virus at 20°C is 4 hours in air, 8 hours on fabric, 24 hours on stainless steel and 48 hours on wood. While sustained heat of more than 55°C, chlorine containing disinfectant, chlorhexidine, lipid solvent and 75% alcohol effectively inactivates the virus.<sup>3</sup>

### **Transmission**

Two main routes of transmission are respiratory droplet transmission and contact transmission. Inhalation of respiratory droplets from an infected person when he cough, sneezes or talk can cause infection in close contacts so it is advisable to maintain 1 meter distance from the infected person or to wear the face mask. Contact transmission occurs when one touches objects like door handle, lift switch etc. on which virus survive for 20-24 hours and then touches these infected hands to our mouth, nose or eye causing viral entry. It is advisable to do hand wash frequently to prevent this. Aerosol transmission (air to air) and maternal-fetal transmission not known till date. However few reports of feco-oral transmission reported from China.

### **Risk factors for transmission**

Overcrowding, poor indoor hygiene, mass movement, winter and spring season, older age, smoking, chronic heart failure patients, chronic lung disease patients, chronic kidney disease patients, immune-compromised, malnourished population.

### **Epidemiological stages of transmission**

Currently four epidemiological stages of transmission are known-

#### **Stage 1 (local outbreak)**

It is sporadic emergence of disease either limited to few persons or spots in a city this mainly due to an infected person who recently had a travel history to affected country or place. These are identified as hot spots of the disease. Preventive steps taken sternly at this point of time mainly in the form of contact tracing by mobile tracing and other methods of index case and its contact helps in preventing rapid spread of disease and progression into other stage.

#### **Stage 2 (community transmission)**

In this stage there is interpersonal transmission in communities and families of infected person e.g. close contacts of an infected person. In this stage every infected person infects around on an average 2.5 person and average doubling time of active cases is around 7.5 days.

#### **Stage 3 (widespread transmission)**

In this stage there is rapid transmission of disease with large population flow involving whole region or country irrespective of travel history or other risk factors. At this stage usually because of large number of infected and symptomatic persons, the health system of countries got collapse and even healthcare workers are too infected in a large number. Disease usually touches its peak both in number of infected cases but in number of total mortality too.

#### **Stage 4 (stage of decline)**

In this stage due to development of herd immunity and other factors like awareness of social distancing, hand hygiene and health care measures number of active cases and mortality rate starts declining with little occurrence of sporadic cases.

### **Clinical manifestation**

The main clinical features as per report of the WHO-China Joint Mission on Coronavirus Disease 2019 (based on 55,924 cases and a study on 1099 cases by Guan et al, published in N Eng J Med) are:<sup>4</sup>

- Fever (87.9%),
- Dry cough (67.7%),
- Fatigue (38.1%),
- Sputum production (33.4%),
- Shortness of breath (18.6%),
- Sore throat (13.9%),
- A Headache (13.6%),
- Myalgia or arthralgia (14.8%),
- Chills (11.4%),
- Nausea or vomiting (5.0%),
- Nasal congestion (4.8%),
- Diarrhea (3.7%), and
- Hemoptysis (0.9%), and
- Conjunctival congestion (0.8%)
- Acute Respiratory Distress Syndrome (ARDS) (3%)
- Abnormalities on chest X-ray (59%)
- Radiological findings on chest CT scan (86%)

### **Diagnosis**

#### **Suspected case**

All symptomatic persons who had history of travel either to affected country or city in the last 14 days or all symptomatic contacts of the laboratory confirmed cases or all symptomatic healthcare personnel (HCP) or all hospitalized patients with severe acute respiratory illness (fever AND cough and/or shortness of breath) specially in stage of community transmission or asymptomatic direct and high- risk contacts of a confirmed case (should be tested once between day 5 and day 14 after contact).

### Gold standard test

Gold standard test for diagnosis of COVID-19 is real time reverse transcriptase polymerase chain reaction (rt RT-PCR) test done on specimens obtained from the throat or nasopharyngeal swabs or from fluid from trachea-broncheolar lavage or deep sputum from the affected person.

Other suggestive investigation findings are leukopenia with lymphopenia, and multiple peripheral patchy infiltrate on chest x-ray followed by ground glass opacity in late stages.

### Treatment

#### Asymptomatic confirmed patients

Quarantine that is separation of the patient from others who have not been exposed, for the incubation period of 14 days. If any symptomatic deterioration than admit in hospital.

#### Symptomatic confirmed patients

Admit in hospital. Start supportive therapy. Definitive treatment in the form of effective antiviral therapy and vaccine against COVID -19 is not available or discovered till date. Only supportive treatment available in the form of adequate hydration, oxygenation, systemic antibiotics to prevent secondary bacterial infection and ventilatory support in case of ARDS.<sup>5</sup>

#### Preventive measures

Till date prevention from getting COVID-19 infection has been the best strategy. Social distancing and home lockdown are currently in implementation among different affected countries. Other important preventive measures to be adopted are:

- To avoid crowded places such as malls, cinema hall, meetings, and conferences.
- To avoid meeting with residents who are taking care of the corona infected patients.
- To defer any plans of travel especially home particularly areas from where COVID-19 cases have been reported
- Practice regular hand washing and hygiene measures with sanitizer, soap and water
- To report to hospital authority if any of their friends, hostel staff develop fever or other symptoms suggestive of COVID-19.

#### Future perspectives

Up to writing of this article majority of countries in the world are fighting with this COVID-19 pandemic with their full efforts and are in stage 2 or stage 3 of the

pandemic except China which had entered into stage 4. Italy suffered a lot in terms of human loss. Health system of many countries collapsed including developed one like USA and UK. Some countries like India and other Asian countries are fighting with it. Indian leadership had imposed 21 days strict lockdown in his country which result in decrease in rapid progression of disease. New researches are ongoing for effective drugs against COVID-19. Health officials from WHO have noted that Remdesivir has demonstrated efficacy in treating the coronavirus infection. The US commenced clinical trials in humans at to test the safety and efficacy of the drug.

Indian guidelines have adopted following guidelines on the basis of clinicians personnel experience to treat COVID-19 patients:<sup>6</sup>

#### Hydroxychloroquine

- Suggested dose: 400 mg BD for 1 day followed by 200mg BD for 4 days maybe be considered.

#### Lopinavir /Ritonavir

- Suggested dose: (200/50) 2 tab BD for maximum 14 days

May be considered on case to case basis.

Few centres are working with serum plasma infusion extracted from recovered patients. Preliminary research has shown the potential of convalescent plasma therapy to improve clinical outcomes of patients with severe disease related to COVID-19. Vaccine against COVID-19 is in preclinical phase.<sup>7</sup>

### CONCLUSION

There is no doubt that currently COVID -19 pandemic is a serious threat to humanity. It has many hidden questions to be answered later on. But as an optimistic I has firm belief that we shall overcome again and win this fight between COVID-19 and humanity. Till than it is better to follow social distancing and prevent yourself.

### ACKNOWLEDGEMENTS

Author would like to thank his Director Dr. Vinay Krishna for unconditional support.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: Not required*

### REFERENCES

1. WHO. Novel coronavirus (COVID-19) situation. Available at: <https://experience.arcgis.com/experience/685d0ace5>

- 21648f8a5beeee1b9125cd. Accessed 24 March 2020.
2. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet*. 2020 Feb 15;395(10223):497-506.
  3. Wang Zhou. The Corona Virus Prevention handbook. In: Qiang Wang, Ke Hu, Zaiqi Zhang, Nanshan Zhong. 101 Science-Based Tips That Could Save Your Life. Simon and Schuster. Wuhan; 2020: 20-55.
  4. Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, et al. Clinical characteristics of coronavirus disease 2019 in China. *New Eng J Medi*. 2020 Feb 28.
  5. Lu H. Drug treatment options for the 2019-new coronavirus (2019-nCoV). *Bioscience trends*. 2020 Feb 29;14(1):69-71.
  6. Bhargawa B. COVID-19 Preparedness documents. *AIIMS,ICMR*. 2020:16-31.
  7. Shen C, Wang Z, Zhao F, Yang Y, Li J, Yuan J, et al. Treatment of 5 critically ill patients with COVID-19 with convalescent plasma. *JAMA*. 2020 Mar 27.

**Cite this article as:** Sharma AK. Corona virus pandemic: current scenario and future hopes. *Int J Res Med Sci* 2020;8:1957-60.