

A Research on Corona Virus Disease 2019 (COVID-19)

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Abstract— In late December 2019, a few patients from Wuhan, China were admitted to medical clinics with some symptoms of pneumonia. As the quantity of patients giving comparative manifestations began to rise, the causative specialist was in the end disengaged from tests. This disease is known as Corona Virus Disease 2019 (COVID-19, previously known as “2019 Novel Corona Virus”). Throughout the following not many weeks, the infection spread from Wuhan to influence various regions in China and, within one or, two months, it is currently present in worldwide. According to World Health Organization (WHO), there have been 31,99,277 confirmed cases of COVID-19, including 2,26,790 deaths till April 30th, 2020 globally. In this case, since no immunization is accessible, the most ideal approach to battle the infection is by preventive strategies. The aim of this paper is to have a fundamental knowledge about the sickness, the methods for treatment, and avoidance right now of COVID-19.

Keywords— COVID-19, WHO, SARS-CoV, MERS-CoV, NIAID etc.

I. INTRODUCTION

Corona Virus Disease 2019 (COVID-19) is an infectious disease caused by Severe Acute Respiratory Syndrome – Corona Virus 2 (SARS-CoV-2) [1]. Recently, this disease was identified in late December 2019 in Wuhan, the capital of China's Hubei province, and has since spread globally, resulting in the ongoing 2019–20 coronavirus pandemic [2][3]. According to World Health Organization (WHO), there have been 31,99,277 confirmed cases of COVID-19, including 2,26,790 deaths till April 30th, 2020 globally.

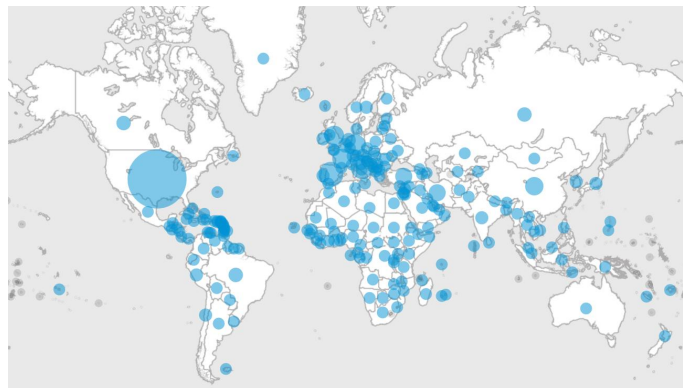


Fig. 1. Globally, on April 30th, 2020, there have been 31,99,277 confirmed cases of COVID-19, including 2,26,790 deaths, reported to WHO [4].

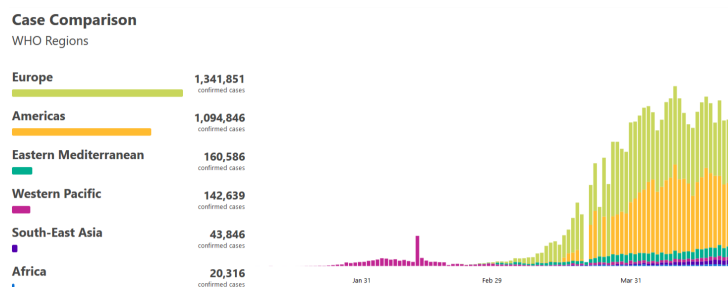


Fig. 2. COVID-19: Case comparison of various regions [4]

COVID-19 viruses are a large family of viruses which may cause illness in animals or humans. COVID-19 is an enormous group of infections that normally cause gentle to direct upper-respiratory tract diseases, similar to the regular virus. Now, three new COVID-19 has risen up out of creature supplies in the course of recent decades to cause genuine and widespread

illness and death.

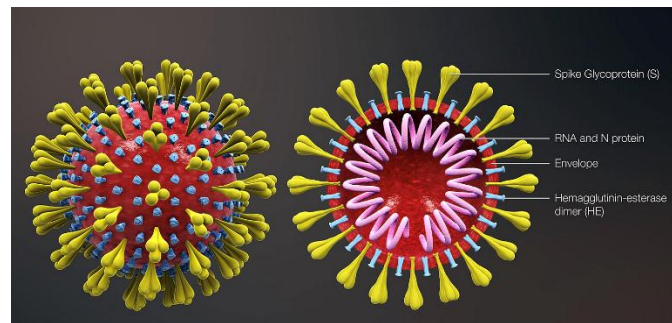


Fig. 3. Diagram of COVID-19 virion structure showing spikes that form a "crown" like the solar corona, hence the name [5].

There are hundreds of viruses, most of which circulate among such animals as pigs, camels, bats and cats. Sometimes those viruses jump to humans—called a spillover event—and can cause disease. Four of the seven known coronaviruses that sicken people cause only mild to moderate disease. Three can cause more serious, even fatal, disease. SARS-CoV emerged in November 2002 and caused SARS. That virus was disappeared by year 2004. Middle East Respiratory Syndrome (MERS) is caused by the MERS coronavirus (MERS-CoV). Transmitted from an animal reservoir in camels, MERS was identified in September 2012 and continues to cause sporadic and localized outbreaks. The third novel coronavirus to emerge in this century is called SARS-CoV-2. It causes coronavirus disease 2019 (COVID-19), which emerged from China in late December 2019 and was declared a global pandemic by the WHO on March 11th, 2020. Building on previous research on SARS and MERS, National Institute of Allergy and Infectious Diseases (NIAID) scientists and grantees are well positioned to rapidly develop COVID-19 diagnostics, therapeutics and vaccines. These projects include conducting basic research to understand how the virus infects cells and causes disease, and what interventions can prevent and stop the spread of disease. Expanding on past research on SARS and MERS, NIAID researchers and grantees are all around situated to quickly create COVID-19 diagnostics, therapeutics and antibodies. These activities incorporate directing essential research to see how the infection contaminates cells and causes malady, and what intercessions can forestall and stop the spread of illness [6],[7].

II. EFFECTS OF COVID-19

On 1st day of the New Year 2020, when everyone was engulfed in celebration, a warning of new deadly virus COVID-19 was announced in China and it turned into a pandemic that was unabated all over the world, which did not forget all the countries. COVID-19 has spread from the open meat market of Wuhan with a population of 1.1 million. The severe effects of COVID-19 within 100 days are listed as [8]:

- On January 1st, 2020, Wuhan's meat market closed. News of mysterious disease went viral in China's social media. Taiwan, Hong Kong and Singapore first began screening.
- On January 9th, 2020, Chinese scientists identified a new corona virus, COVID-19, distinct from SARS, MARS.
- On January 13th, 2020, 1st case was found in Thailand outside China. China said that there are no signs of infection from human to human. Hundreds of cases were found in a week.
- On January 20th, 2020, China admitted that infection spread among humans. Dissemination in Beijing, Shanghai and Guangdong. 1st case in US, Japan and South Korea detected.
- On January 24th, 2020, Lockdown announced in Wuhan. Over 800 cases and 25 deaths revealed. Reached France. America said that we are not a threat.
- On January 31st, 2020, 1st patient appeared in India, Britain, Spain and Italy. Italy, Spain said that there is no threat to us. 11 thousand and 258 died in China. America banned China travelers.
- On February 4th, 2020, there were a total of 20 thousand patients and 425 deaths in China. American scientists warned Trump that the disease would go away as the heat progressed.
- On February 19th, 2020, in South Korea, an infected woman arrived at a church crowded with 1200, causing a flood of cases. Virus reached Iran. The transition led to big football matches in Italy and Spain, oblivious.
- On February 25th, 2020, Danger bell worldwide. 80 thousand cases reached in the world. There were 11 deaths in Italy and quarantine enforced in Bergamo. More than 50 deaths raged in Qom, Iran. On his tour to India, Trump again said, America is safe.

- On March 6th, 2020, in Italy, deaths increased six times in six days, ten thousand cases occurred. 1st death from infection in Britain, but PM Boris Johnson said he would continue to shake hands.
- On March 11th, 2020, COVID-19 pandemic declared. With WHO declaring an epidemic, one lakh 16 thousand cases in the world and one thousand cases in America. Markets rolled out in the US, UK and India. 168 deaths a day in Italy. Britain's denial of social distancing.
- On March 17th, 2020, Europe's borders sealed. European countries sealed borders. France declared a war-like situation. There were 17 thousand cases in Spain. Approximately, one lakh 60 thousand patients reached the world.
- On March 22nd, 2020, there was a public curfew in India.
- On March 25th, 2020, lockdown after 6600 cases in Britain. Lockdown in India from late night March 24th. In New York, 20 thousand patients were found in America with 5 thousand. Lockdown in half the world by the end of March. 3 lakh 70 thousand patients in the world.
- On April 2nd, 2020, there were more than 10 lakh patients in the world and more than 50 thousand deaths. There were 2069 total patients in India. A record 950 dead in a single day in Spain. The figure of 2.5 million cases and deaths reached six thousand in America.
- On April 4th, 2020, the condition of infected British PM Boris Johnson is critical. 6500 deaths occurred worldwide.
- On April 8th, 2020, the total cases crossed 13 lakh and the death toll crossed 75 thousand.
- On April 10th, 2020, the total cases crossed 14,39,516 and the death toll crossed 85,711.

III. SYMPTOMS OF COVID-19

The most common symptoms of COVID-19 are fever, tiredness, and dry cough. Some patients may have aches and pains, nasal congestion, runny nose, sore throat or diarrhea. These symptoms are usually mild and begin gradually. Some people become infected but don't develop any symptoms and don't feel unwell. Most people (about 80%) recover from the disease without needing special treatment. Around 1 out of every 6 people who gets COVID-19 becomes seriously ill and develops difficulty breathing. Older people, and those with underlying medical problems like high blood pressure, heart problems or diabetes, are more likely to develop serious illness. People with fever, cough and difficulty breathing should seek medical attention [6].

IV. TRANSMISSION OF COVID-19

People can catch COVID-19 from others who have the virus. The disease can spread from person to person through small droplets from the nose or mouth which are spread when a person with COVID-19 coughs or exhales. These droplets land on objects and surfaces around the person. Other people then catch COVID-19 by touching these objects or surfaces, then touching their eyes, nose or mouth. People can also catch COVID-19 if they breathe in droplets from a person with COVID-19 who coughs out or exhales droplets. This is why it is important to stay more than 2 m (approx. 6 feet) away from a person who is sick [9].

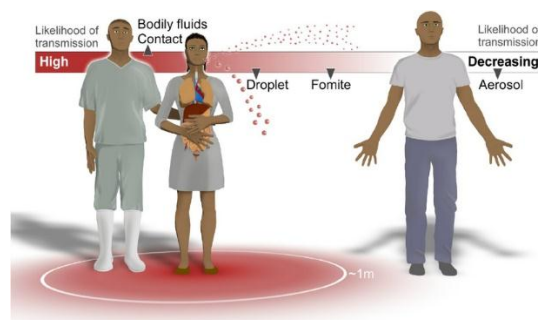


Fig. 4. Transmission of COVID-19 via airborne droplets [10].

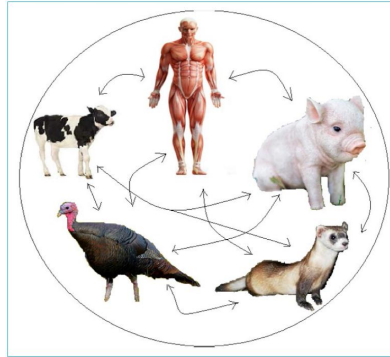


Fig. 5. COVID-19 targets [11].

V. PREVENTION FROM COVID-19

Stay aware of the latest information on the COVID-19 outbreak, available on the national, state and local public health authority. Many countries around the world have seen cases of COVID-19 and several have seen outbreaks. Authorities in China and some other countries have succeeded in slowing or stopping their outbreaks. However, the situation is unpredictable so check regularly for the latest news. You can reduce your chances of being infected or spreading COVID-19 by taking some simple precautions [2], [18], [19]:

- Regularly and thoroughly clean your hands with an alcohol-based hand rub or wash them with soap and water. Because, washing your hands with soap and water or using alcohol-based hand rub kills viruses that may be on your hands.
- Maintain at least 2 m (approx. 6 feet) distance between yourself and anyone who is coughing or sneezing. Because, when someone coughs or sneezes, they spray small liquid droplets from their nose or mouth which may contain virus. If you are too close, you can breathe in the droplets, including the COVID-19 virus if the person coughing has the disease.
- Avoid touching eyes, nose and mouth. Because, hands touch many surfaces and can pick up viruses. Once contaminated, hands can transfer the virus to your eyes, nose or mouth. From there, the virus can enter your body and can make you sick.
- Make sure you, and the people around you, follow good respiratory hygiene. Because, covering your mouth and nose with your bent elbow or tissue when you cough or sneeze. Then dispose of the used tissue immediately. Nose droplets spread virus. By following good respiratory hygiene, you protect the people around you from viruses such as cold, flu and COVID-19.
- Stay home if you feel unwell. If you have a fever, cough and difficulty breathing, seek medical attention and call in advance. Follow the directions of your local health authority. Because, National and local authorities will have the most up to date information on the situation in your area. Calling in advance will allow your health care provider to quickly direct you to the right health facility. This will also protect you and help prevent spread of viruses and other infections.
- Keep up to date on the latest COVID-19 hotspots (cities or local areas where COVID-19 is spreading widely). If possible, avoid traveling to places – especially if you are an older person or have diabetes, heart or lung disease. Because we have a higher chance of catching COVID-19 in one of these areas.

Protection measures for persons who are in or have recently visited (past 14 days) areas where COVID-19 is spreading, as [20], [21]:

- Follow the guidance outlined above (Protection measures for everyone).
- Self-isolate by staying at home if you begin to feel unwell, even with mild symptoms such as headache, low grade fever (37.3 C or above) and slight runny nose, until you recover. If it is essential for you to have someone bring you supplies or to go out, e.g. to buy food, then wear a mask to avoid infecting other people. Because, avoiding contact with others and visits to medical facilities will allow these facilities to operate more effectively and help protect you and others from possible COVID-19 and other viruses.
- If you feel fever, cough and difficulty breathing, seek medical advice promptly as this may be due to a respiratory

infection or other serious condition. Call in advance and tell your provider of any recent travel or contact with travelers. Because, calling in advance will allow your health care provider to quickly direct you to the right health facility. This will also help to prevent possible spread of COVID-19 and other viruses.

VI. TREATMENT FOR COVID-19

As we know, there are few or no treatment options for this COVID-19. In parallel with this knowledge, today there is no vaccine or effective treatment to prevent COVID-19 infection. Molecules are being tested for COVID-19 in invitro and human-based SARS-CoV and MERS-CoV trials. Studies evaluating the antiviral activity of types I and II interferons have reported, Interferon-Beta (IFNB), as the most potent interferon, was reducing in- vitro MERS-CoV replication [12], [13], [14].

As per knowledge of health experts, vaccines for COVID-19 may take nearly two years to develop. Still there are some home remedies which will be helpful for boosting immunity and may be helpful as treatment for COVID-19. They are [15], [16], [17]:

- To avoid the effects of COVID-19, it is important that we must drink lukewarm water regularly.
- We should drink juice of Amla, Aloe Vera, Giloy, Lemon etc. in appropriate amounts regularly.
- We can drink a few drops of basil juice in water.
- Drink warm milk with mixed turmeric powder.
- Drink Ashtadasang decoction, Guduchyadi decoction, Amrit Utterram decoction or Sirishadi decoction.
- We should regularly burn neem leaves, googal, resin, cedar and two camphor together. Allow its smoke to spread to the house and surroundings. Also, burn Guggal, Vacha, Cardamom, Tulsi, Clove, Cow's Ghee and Khand in an earthen vessel and allow its smoke to spread in the house and surroundings.
- We can regularly take 5 leaves of basil, 4 black pepper, 3 cloves, one teaspoon of ginger juice with honey.
- We should regularly drink tea made by adding 10 or 15 basil leaves, 5 to 7 black pepper, a little cinnamon and a fair amount of ginger.
- Always eat vegetarian and fresh food. Avoid consumption of carnivores.
- Mix camphor in mustard oil and put few drops in the nose.
- Eat jaggery instead of sugar.
- Take vitamin-C rich fruits like orange, lime, lemon, amla etc. regularly.

VII. CONCLUSION

COVID-19 is spreading human to human to transmission by close contact by means of airborne beads producing by smooching, kissing, sneezing and coughing. So, stay away from these activities with contaminated partners and relatives. COVID-19 may transmit through pet animals, for example, turkeys, cow, pig, cat, dog, etc. So, maintain a strategic distance from contact and separate them if watched any contamination activities like fever, diarrhea, cold, etc. According to WHO and European Centre for Disease Prevention and Control (ECDC) rule stay away from the contact with infected persons and furthermore stay away from the market or open spot as much as possible. This is the easiest safety trick. While there are many key gaps in our current information of its origin, epidemiology, time period of human transmission, and clinical spectrum of COVID-19, which could be fulfilled by more studies.

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I have taken my efforts to complete this paper with the help of available sources and used it with proper citation.

CONFLICT OF INTEREST

I have not any conflict of interest from any author.

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I have not used any funding source for this work.

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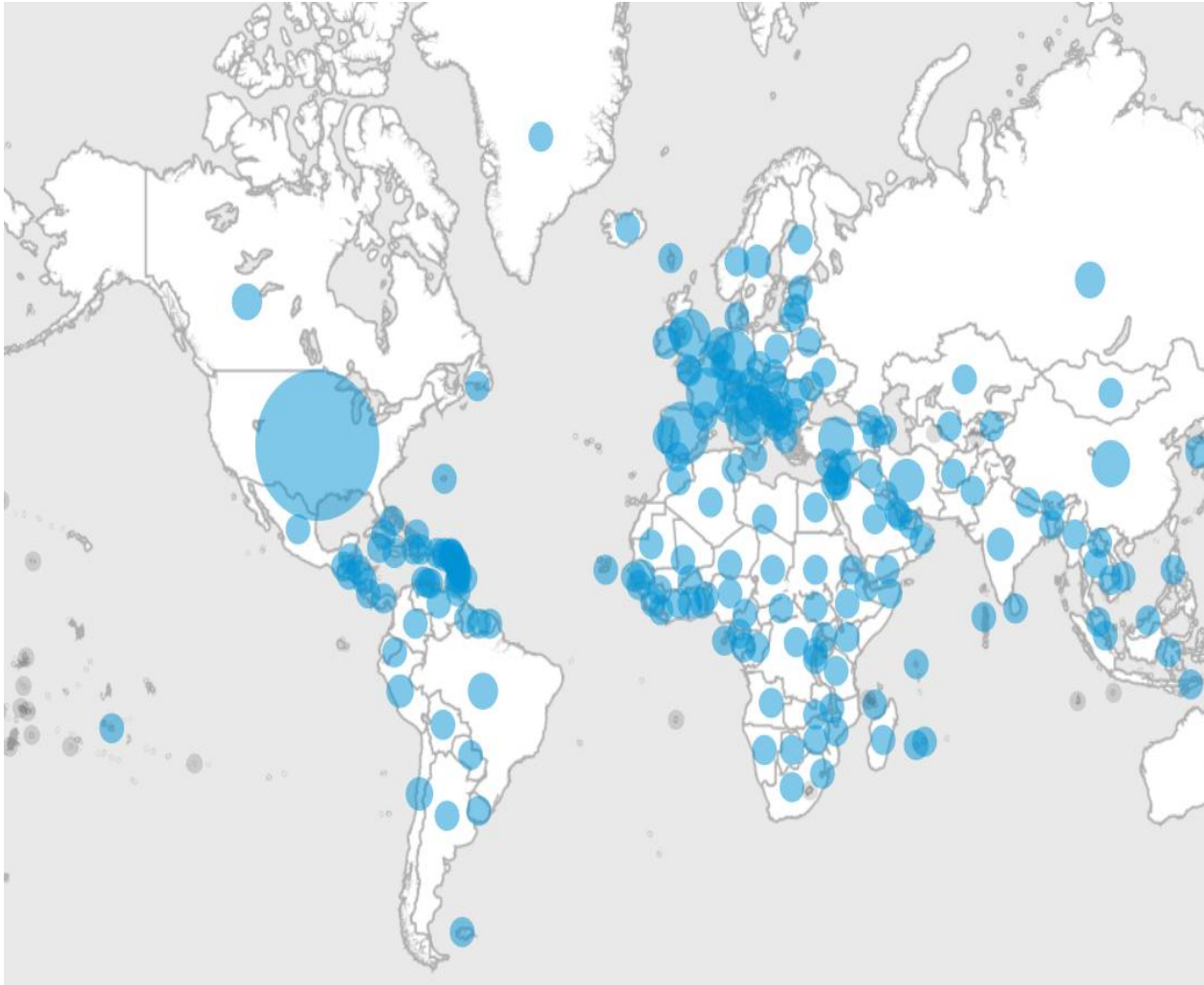


Figure 1: Globally, on April 30th, 2020, there have been 31,99,277 confirmed cases of COVID-19, including 2,26,790 deaths, reported to WHO.

Case Comparison

WHO Regions

| | |
|-----------------------|---------------------------|
| Europe | 1,341,851 confirmed cases |
| Americas | 1,094,846 confirmed cases |
| Eastern Mediterranean | 160,586 confirmed cases |
| Western Pacific | 142,639 confirmed cases |
| South-East Asia | 43,846 confirmed cases |
| Africa | 20,316 confirmed cases |

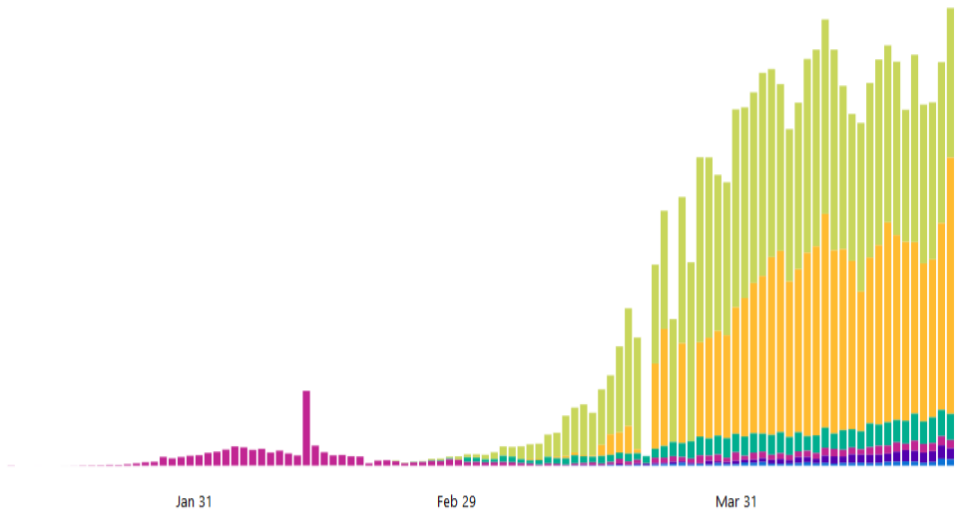


Figure 2: COVID-19: Case comparison of various regions.

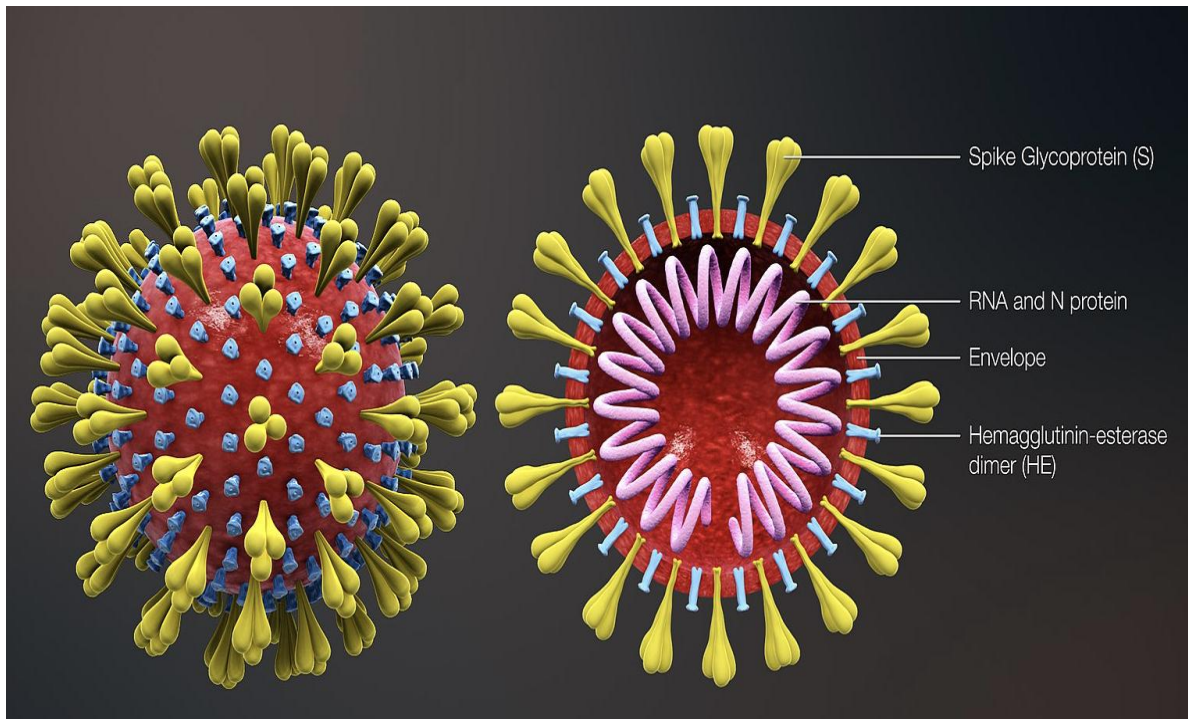


Figure 3: Diagram of COVID-19 virion structure showing spikes that form a “crown” like the solar corona, hence the name.

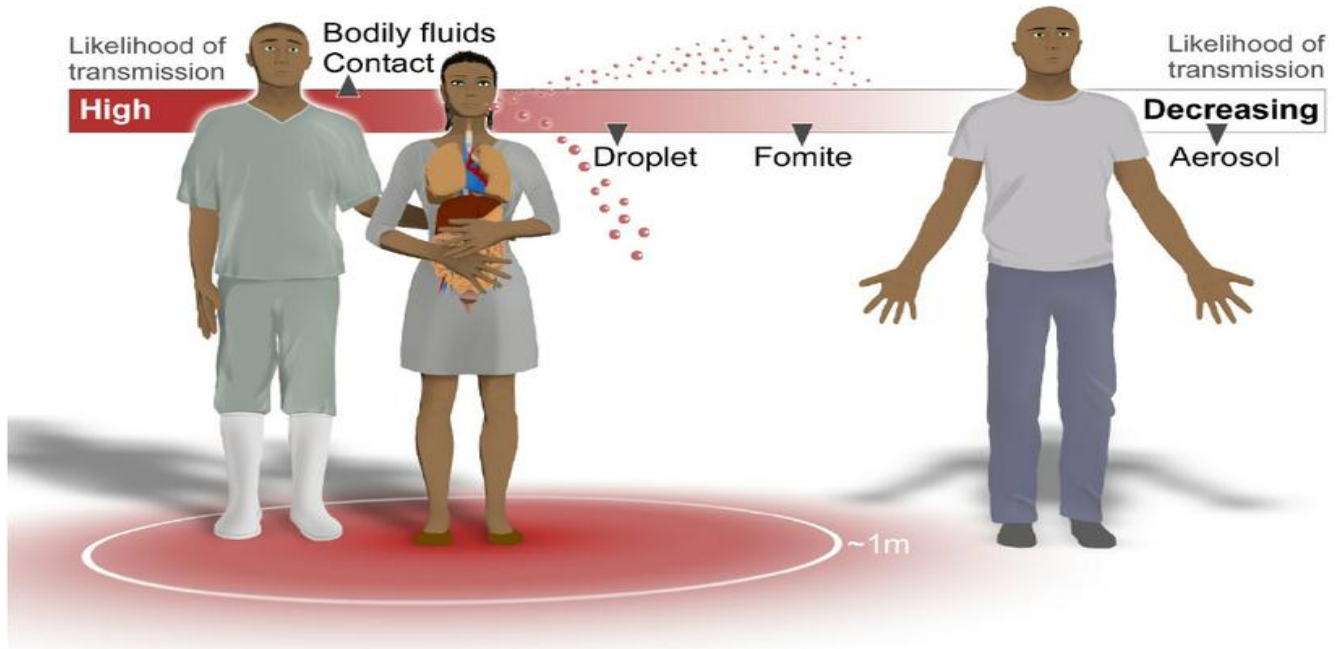


Figure 4: Transmission of COVID-19 via airborne droplets.

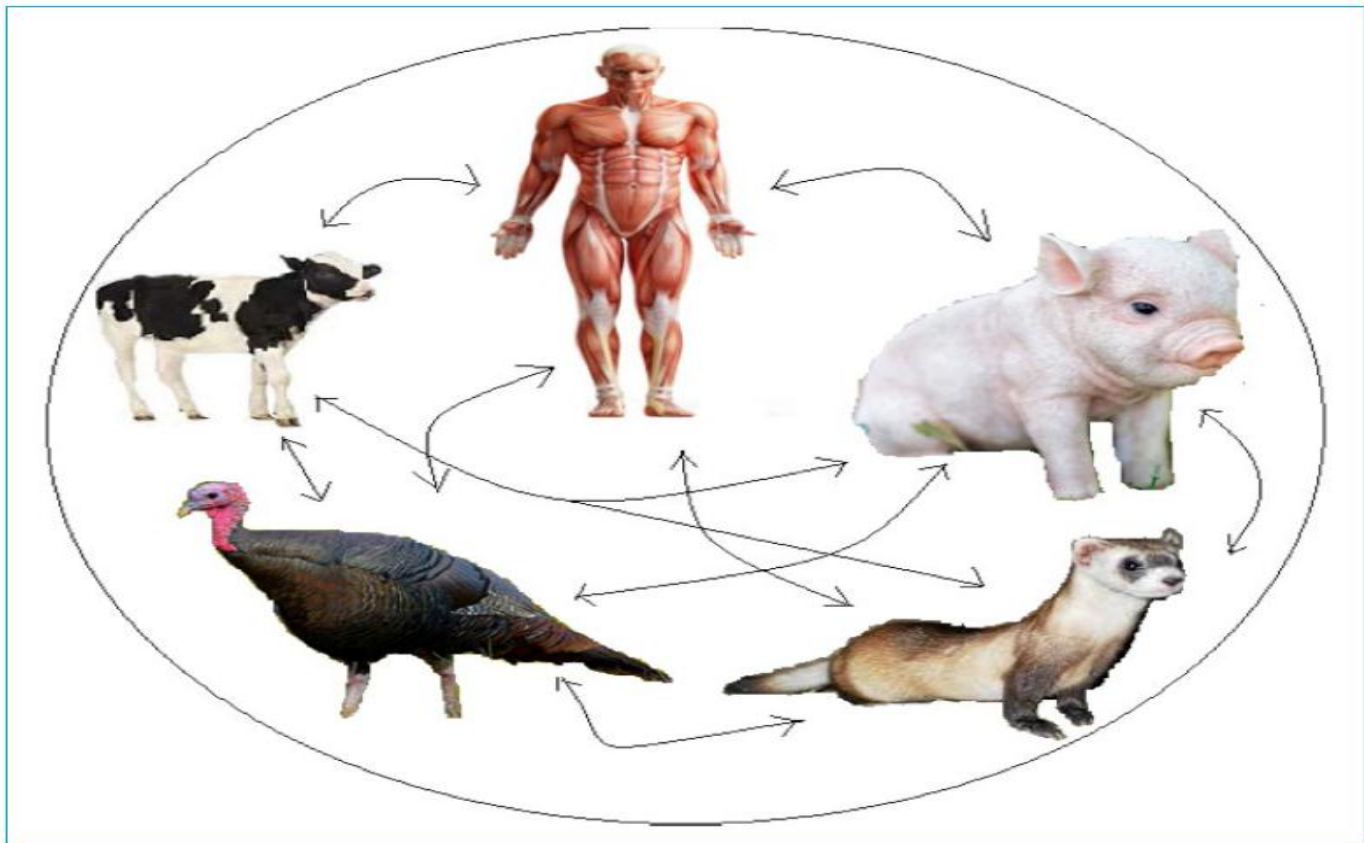


Figure 5: COVID-19 targets.