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**Research Article** 

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# **Knowing COVID 19 and its Treatment Proposals**

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# Abstract

Since the beginning of 2020 the scientific community has been investigating a recent coronavirus that has caused a global pandemic.bStarted in China at the end of December 2019, nine months later it is already a pandemic that has affected more than 3 million people in about 200 countries. This document is intended to help the reader understand what COVID19 is, what we know about it, and how it can be treated, by reviewing recent publications throughout the pandemic.

**Keywords:** Coronavirus; COVID19; Dexamethasone; hydroxychloroquine; Pandemic; Remdesivir; SARS-CoV2; Treatment

# Introduction

The WHO Assembly declared 2020 as "The Year of Nursing" for the bicentennial of Florence Nightingale's birth, what we did not imagine was that nursing was going to end up being visible due to a global pandemic.

The objective of this work is to understand what a coronavirus is, what makes it so contagious, what treatments are currently available to stop it, and how we can prevent it. In December 2019, Wuhan hospitals diagnose the first cases of pneumonia of unknown origin that is gaining strength. Carrying out a correct assessment and anamnesis, it is concluded that all the patients are linked to workers in the Wuhan wholesale seafood market, even related to a case in the fall of 2019. According to documents from the Government of Beijing, the first infected patient dates back to November 17, 2019. Months later, in March 2020, the WHO recognizes it as a pandemic [1, 2].

# What is coronavirus and COVID19?

Coronaviruses are viruses that circulate between animals, although some of them could infect humans.

They are called coronaviruses because they have a kind of spikes on the surface of the virus that surrounds them. The vast majority of described coronaviruses have been isolated from birds or mammals, especially bats. Coronaviruses can cause disease in both animals and humans and that ability to jump from one species to another makes the human species face a new infection for the first time. To date, various species of coronavirus have been discovered. SARS-CoV-2 is the new type of coronavirus that had not been detected before in humans and COVID-19 is the name associated with the disease. It is called this way (SARS-CoV-2) due to its genetic sequence, very similar to SARS, another coronavirus that caused a pandemic in 2002 with more than 8,000 affected and 800 deaths. Another coronavirus was diagnosed in 2012 in the Middle East (MERS-CoV) and is associated with camels [3].

# Signs and Symptoms

In humans, several coronaviruses are known to cause different symptoms, from the common cold or being asymptomatic, to more serious diseases such as Middle East respiratory syndrome (MERS) and severe acute respiratory syndrome (SARS). It enters through the respiratory tract to replicate inside the respiratory cells but other clinical manifestations occur in other types of animals, such as swine gastroenteritis. In the case of humans, the virus can also infect cells of the digestive tract, which explains the diarrhea and the presence of viral RNA in stool samples. The curious thing about this coronavirus is the diversity of symptoms it presents, respiratory, gastric and neurological.

The main symptoms are fever, cough and respiratory distress, although there have also been cases of patients who have presented with headache, nausea or diarrhea. Regarding neurological symptoms, the loss of taste (ageusia) and smell (anosmia) is frequent, in fact, there are cases in which only these symptoms occur [4, 5].

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#### How is it transmitted?

Animals are believed to be the original source of the coronavirus although currently, the current contagion is between people. Transmission is by contact and drops. It occurs when coughing, sneezing or talking, as well as touching the nose, eyes and mouth after touching a contaminated surface. The virus can live for a few hours on certain surfaces, even days.

Studies are still in progress but it is estimated that an infected person can transmit it to 2 or 3 other people. The incubation period of the virus is from 1 to 14 days, unlike other coronaviruses, it can be transmitted even before presenting symptoms or even being asymptomatic. It is estimated that the contagious period occurs during the first week of infection up to 12 days in moderate cases, extending to 2 weeks in the most severe cases 3.

#### Treatment

Currently we have different vaccines for COVID19, these are Astrazeneca, Pfeizer and Moderna. These have been studied and tested, so they appear to be safe and effective. With the massive vaccination we will see if the vaccines prevent contagion and transmission.

Treatment is focused on controlling symptoms since there is no one available that aims to end it.

There are currently many clinical trials to find an effective treatment but there are no results yet. About 150 drugs are being studied to see how effective they are.

- Different approaches are being investigated, these are:
- Antiviral drugs that affect the growth of viruses within the body: They are usually most effective in the early stage of the disease.
- Medications to enhance the immune system respons: since severe cases of coronavirus occur due to an exaggerated response of the immune system. They are usually most effective in the later stage.
- Antibodies: either from the blood of cured patients or manufactured in a laboratory [6]. At the hospital level, COVID-positive patients have been treated with hydroxychloroquine, tocilizumab, azithromycin, dexamethasone, lopinavirritanovir and currently Remdesivir, but are they really effective?

One of the studies carried out in the United Kingdom, called "Recovery", aims to publicize effective drugs against the coronavirus. In it we can find dexamethasone, azithromycin, tocilizumab and plasma from recovered patients. Any drug that is considered effective will enter the study. In this study carried out in about 12,000 patients in total, it has been shown that the use of Dexamethasone helps to improve symptoms in the most serious patients.

Dexamethasone reduces death in a third of people who need ventilator support and a fifth in those who require oxygen. This is due to the fact that it dampens the response of the immune system when the virus enters the body since it causes, in the most severe cases, a disproportionate generalized inflammation, where the immune response ends up attacking the body. It is used in severe cases in hospitalized patients since, a mild symptomatology to covid, indicates that the immune system works correctly and in that case, with the use of dexamethasone, we would depress that physiological response.

The same study reveals that hydroxychloroquine (antimalarial, also used to reduce inflammation in patients with rheumatoid arthritis and lupus), lopinavir-ritanovir (reduces the amount of HIV virus in the blood), does not produce any benefit [7, 8].

In fact, the WHO temporarily suspended trials with hydroxychloroquine as a possible treatment for safety concerns. A study published in The Lancet magazine concluded that there was a higher mortality rate in patients who had been treated with hydroxychloroquine due to heart problems [9].

• **Tocilizumab:** Is an immunosuppressive agent that is used to treat diseases such as rheumatoid arthritis and is used in COVID 19 to slow down the inflammatory response.

According to the COVACTA phase III study, the objective of improving the clinical status of patients with severe pneumonia has not been achieved, however, discharge time in patients treated with Tocilizumab was shorter than in those treated with placebo, and therefore it follows under study [10].

• **Convalescent plasma:** It consists of using the antibodies from the plasma of a patient already recovered in order to use it in infected patients to increase their immunity. These antibodies would neutralize the coronavirus causing a significant improvement in symptoms. On the other hand, they could also be used as a prophylaxis in people at risk to avoid becoming infected. It is currently under study since it is necessary to have a sufficient number of recovered patients who can donate their plasma and for it to be effective, a certain amount is needed to administer it.

The use of plasma is not new to this pandemic but has been under study for years. In 2009-2010 it was used against H1N1 influenza reducing mortality. As for bird flu, it turned out to be effective with all of his recovered patients. All pandemics are different, but if it has proven beneficial in previous pandemics, why not this one? [11, 12].

One of the latest drugs considered effective in curbing the signs and symptoms of the coronavirus is Remdesivir, an antiviral drug initially used for Ebola but given its low effectiveness, it was reconverted to treat other previous SARS viruses.

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Remdesivir is the only licensed antiviral drug against the SARS-CoV-2 virus. It was not until July 9, 2020 that the European Commission issued a conditional marketing authorization. In Spain, until its commercialization is effective, the drug can be accessed through clinical trials and special situations.

Remdesivir could help prevent the worsening of symptoms and thus avoid having a high number of critically ill patients since it inserts itself into the genome of the virus preventing it from making copies of itself. It reduces mortality in 62% of critically ill patients and patients recover 4 days faster. Unfortunately, it is not a statistically significant reduction in the risk of death. On the other hand, its efficacy remains unclear as well as its side effects [6, 13].

The NIAID / CO-US-540-5776 ACTT-1 study comparing Remdesivir with placebo shows that patients with severe disease had a shorter recovery time than those who received placebo. On the other hand, no improvements were observed in patients undergoing mechanical ventilation or ECMO. In the same study, no clinical benefit was seen in patients with mild or moderate disease. Study GS-US 540 5773, where two treatment durations are compared, shows that hospitalized patients who do not require mechanical ventilation or ECMO, treatment for 5 or 10 days had a similar clinical benefit [14].

The use of Remdesivir is strictly controlled and not all patients diagnosed with COVID 19 can access it. As explained above, it makes sense that, in order to gain access, the patient must require supplemental oxygen intake but not invasive mechanical ventilation or extracorporeal membrane oxygenation (ECMO).

Patients must be older than 12 years and the maximum duration of treatment is 5 days. For the rest of the patients, it is necessary to wait for more scientific evidence to be able to treat them with Remdesivir.

#### **Materials and Methods**

A compilation of different documents has been made to be able to compare them in order to approach the current situation in an objective way. To do this, we have collected information since the beginning of the pandemic and we have closely followed the most current articles on new therapies. All articles read and web pages consulted are available in the bibliography and webgraphy.

#### Results

By reading the different articles and publications we know that: A person infects 2 to 3 people. The incubation period is between 1 to 14 days. It is transmitted by contact and drops although the theory of an airborne transmission is being studied. Symptoms vary from being asymptomatic to presenting respiratory, digestive, neurological and even skin symptoms. Dexamethasone is effective in severe patients but is not the treatment of choice in mild cases. We do not currently have a vaccine but different pharmaceutical companies are looking for it. Hydroxychloroquine has been withdrawn as a treatment due to its side effects and as it has not been shown to be effective.Currently Remdesivir has given benefits in terms of symptoms but does not cure COVID.

# Conclusion

We do not have a vaccine but there are advances in treatments to improve symptoms and thus avoid complications that lead patients to critical care units. Until we have a vaccine or an effective treatment, we will not be able to return to normality, so the best option is prevention. As it is a disease that is spread by contact and drops, social distancing, the use of masks and hand washing are essential to contain the contagion.

Due to the lack of resources and scarce doses of certain medications, we must strictly follow the guidelines to include patients in the appropriate clinical trials, in this way, we can make good use of the medication that we have and apart, draw conclusions reliable. There are still ongoing studies pending to show reliable results and surely, in the coming months, we will have more information and hopefully, better results.

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