



COVID-19: Source, Symptoms, Screening, Prevention and Treatment

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: COVID-19 is an infectious disease caused by the newly acquired SARS-COV2 virus. The disease is rapidly changing, as well as our understanding of the emerging virus. Not knowing what it was at the beginning of the year 2020, scientists have been able to classify, track, classify, and establish diagnostic tests. Severe illness may strike the elderly and those with chronic illnesses, such as heart disease, diabetes, or cancer.

Conclusion: Over the past four decades, the emergence of new infectious, global threats has reshaped national and international thinking and the level of public health responses needed to combat these threats. All countries are at risk of new diseases, according to International Health Regulations.

Keywords: Covid-19; SARS Cov-2; epidemic and airborne.

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1. INTRODUCTION

Coronavirus is a disease from China. Several crown-like nails on the surface of the virus give it the name "corona." COVID-19, a new type of corona virus, was first discovered in Wuhan, China, in December 2019. It has infected more countries in Europe and around the world. Most corona viruses are found in birds or mammals, especially bats. They move around in livestock, and some of them can be passed from animals to humans [1]. Corona viruses are closed, single-stranded, extinct human-induced ribonucleic acid bacteria that can infect biodiversity [1-6]. Tyrell and Bynoe discovered corona bacteria, which were cultivated in common cold patients, in 1966 [2]. Because of their morphology status as spherical viruses with a central cover and speculation of places like the corona of the moon, they are called corona viruses. There are less than four families of corona viruses: α -, β -, γ - and δ -corona viruses. While α - and β -corona viruses appear to come from mammals, especially bats, γ - and δ -corona viruses are found in pigs and birds. The size of the component can range from 26 kilobytes to 32 kilobytes. Corona virus is a seven-part subtypes of corona virus that can infect humans and cause serious illness and death, while alpha-corona viruses cause infections without symptoms or minor symptoms. SARS Corona Virus-2 belongs to the B family of corona viruses and has strong links with the SARS Corona virus [3,4]. At the genome stage, SARS Corona Virus-2 is 96 percent identical to a bat corona virus [5].

2. SOURCE AND SPREAD OF SARS CORONA VIRUS 2

The SARS 2 virus is a corona virus with undivided RNA virus that is as good as the envelope (subgenus sarbeco virus, subfamily Ortho-corona variance). The Corona virus is divided into four categories, each of which begins with the / Corona virus are usually infected with mammals, while - and Coovs appear to be infected with birds. Six Covers with low pathogenicity were previously identified as human-prone viruses; of these, CoCs HCoV-229E and HCoV-NL63, as well as CoVs HCoV-HKU1 and HCoV-OC43, cause mild respiratory symptoms such as the common cold. 'SARS Corona Virus and MERS Corona Virus' are two other well-known CoVs that cause serious and potentially fatal infections of the respiratory tract [7]. The genome sequence of SARS corona virus 2 is 96.2 percent almost the same as that of

RaTG13 bat CoV, although it shares 79.5 percent ownership of the SARS Corona Virus. Bats are suspected to be the source of viral origin based on results from viral genome sequences and evolutionary studies, and SARS Corona Virus-2 could be released from bats to infect humans with unknown pathogens. Human infections have been shown to use angiotensin-converting enzyme 2 (ACE2), a receptor similar to the SARS Corona Virus [1].

3. SCREENING CRITERIA

VRIC plans to pre-diagnose the SARS corona 2 virus using classical Koch postulates and electron microscopy to test its morphology. The clinical diagnostic gold standard COVID-19 to date detection of nucleic acid by real-time PCR in nasal and throat samples, confirmed in the next generation sequence [8].

3.1 Symptoms [9]

People with the Coronavirus disease have:

- A high temperature.
- Shortness of breath or difficulty breathing.
- A cough.
- Sore throat.
- Runny nose.
- Tiredness.

3.2 Treatments

The medical community began researching medicines that were already on the market that could be effective against the new virus. Antibodies against interleukin 6, for example, have been studied and found to be effective in modulating the immune system. This is because tissue damage in patients with serious disease is caused not only by the infection, but also by an accumulation of inflammatory molecules.

Remdesivir and steroids are two repurposed medications that have been shown to have an impact in randomized clinical trials. Drugs specific to SARS-CoV-2 have also been produced. When given early, monoclonal antibody cocktails have been shown to be successful in slowing disease progression [10].

Anti-IL-6 receptor Monoclonal Antibodies: Interleukin-6 (IL-6) is a proinflammatory cytokine that is considered the key driver of the hyperinflammatory state

associated with COVID-19. Targeting this cytokine with an IL-6 receptor inhibitor could slow down the process of inflammation based on case reports that showed favorable outcomes in patients with severe COVID-19 [11].

4. ANTIVIRAL TREATMENTS

Based on past experience battling the SARS Corona Virus and MERS Corona Virus epidemics, we will learn various lessons for various treatment programmes to combat the corona virus. Remdesivir is a prodrug that is a 1'cyano-substituted adenosine nucleotide analogue with potent antiviral activity against RNA viruses. Even with intact ExoN proof reading activity, remdesivir can interfere with NSP12 polymerase, according to data from an in vitro cell line and a mouse model [1]. Reportedly, Remdesivir successfully handled the first US case of COVID-19 [12]. Chloroquine is a highly regenerative drug that is as promising as COVID-19 treatment [13].

4.1 Transmission of COVID-19

Although more proof is still being obtained, recent research shows that human-to-human transmission is occurring. COVID-19's transmission routes are currently unclear, but data from other coronaviruses and respiratory diseases indicates that the virus could spread through large respiratory droplets and direct or indirect contact with infected secretions [14].

Airborne transmission can occur in crowded areas and indoor rooms with poor ventilation, particularly when infected people spend a long time with others, such as a shopping mall, restaurant, etc. Furthermore, airborne delivery occurs in patient care settings while conducting surgical procedures [15].

4.1.1 Prevention

To avoid infection, you should wash your hands regularly, cover your mouth while sneezing or coughing, and wear a face mask. It's important to avoid crowds in cramped, poorly ventilated areas. In areas where viral transmission is strong, stricter social distancing initiatives have been implemented, such as encouraging telework, avoiding excessive travel, and maintaining a gap of at least one meter between people, among other things. These initiatives, along with the use of face masks, are assisting in slowing viral spread within the population and

preventing health systems from being overburdened [16-18].

4.1.2 Vaccine

The new corona virus spread so rapidly that it disrupted global timing. As of February 18, 2021, at least seven different vaccines had been tested in countries through three different sources. About 200 new vaccine candidates are being produced at the same time, with more than 60 of them in clinical trials. Vaccination for vulnerable populations is a top priority in both countries.

In line with their national regulations and legislation, countries have the autonomy to issue emergency use authorizations for any health product. Domestic emergency use authorizations are issued at the discretion of countries and not subject to WHO approval.

As of 26 November 2021, the following vaccines:

- The Pfizer/BioNTech Comirnaty, 31 December 2020.
- The SII/COVISHIELD and AstraZeneca/AZD1222 vaccines, 16 February 2021.
- The Janssen/Ad26.COV 2.S developed by Johnson & Johnson, 12 March 2021.
- The Moderna COVID-19 vaccine (mRNA 1273), 30 April 2021.
- The Sinopharm COVID-19 vaccine, 7 May 2021.
- The Sinovac-CoronaVac, 1 June 2021.
- The Bharat Biotech BBV152 COVAXIN vaccine, 3 November 2021 [19-21].

5. CONCLUSION

Over the past four decades, the emergence of new infectious, global threats has reshaped national and international thinking and the level of public health responses needed to combat these threats. All countries are at risk of new diseases, according to International Health Regulations. There are strong hopes around the world that all that is being done to detect and monitor emerging epidemics in this age of rapid and continuous access to digital information is global. Because there is no way to know how a newly diagnosed disease can develop, plans need to be made at national and international levels.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Rakesh Kumar Jha, Pradip Jain, Ranjit S. Ambad, Nandkishor. The Origin, Transmission and Mortality of Corona Virus. *JCR*. 2020;7(10):93-96. DOI:10.31838/jcr.07.10.23
2. Dhama K, Khan S, Tiwari R, et al. Coronavirus Disease 2019-COVID-19. *Clin Microbiol Rev*. 2020;33(4):e00028-20. Published 2020 Jun 24. DOI:10.1128/CMR.00028-20
3. Tyrrell DA, Bynoe ML. Cultivation of viruses from a high proportion of patients with colds. *Lancet*. 1966;1: 76–77.
4. Jr, BFP, Federico R. Tewes. What attorneys should understand about Medicare set-aside allocations: How medicare set-aside allocation is going to be used to accelerate settlement claims in catastrophic personal injury cases. *Clinical Medicine and Medical Research*. 2021; 2(1):61-64. DOI:https://doi.org/10.52845/CMMR/2021v1i1a1
5. GISAID Global Initiative on Sharing All Influenza Data. Phylogeny of SARS-like betacoronavirus including novel coronavirus (nCoV). Available:https://nextstrain.org/groups/blab/sars-like-cov
6. Zhou P, Yang XL, Wang XG et al. A pneumonia outbreak associated with a new coronavirus of probable bat origin. *Nature* 2020. DOI:https://doi.org/10.1038/s41586-020-2012-7
7. Rottier PJM. The coronaviridae. *Springer Science & Business Media*. 2013;115-137. Available:https://link.springer.com/content/pdf/10.1007%2F978-1-4899-1531-3_6.pdf).
8. Daniel V, Daniel K. Diabetic neuropathy: new perspectives on early diagnosis and treatments. *Journal of Current Diabetes Reports*. 2020;1(1):12–14. DOI:https://doi.org/10.52845/JCDR/2020v1i1a3
9. Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, et al. A novel coronavirus from patients with pneumonia in China, 2019. *N Engl J Med*. 2020;382(8):727–33.
10. Lu H, Stratton CW, Tang YW. Outbreak of pneumonia of unknown etiology in Wuhan, China: the mystery and the miracle. *J Med Virol*. 2020;92(4):401–2.
11. Cascella M, Rajnik M, Aleem A, et al. Features, Evaluation, and Treatment of Coronavirus (COVID-19) [Updated 2021 Sep 2]. In: *StatPearls* [Internet]. Treasure Island (FL): StatPearls 2021(1)
12. Yin Y, Wunderink RG. MERS, SARS and other coronavirus as causes of pneumonia. *Respirology*. 2018;23(2):130–7.
13. Daniel V, Daniel K. Perception of Nurses' Work in Psychiatric Clinic. *Clinical Medicine Insights*. 2020;1(1):27-33. DOI:https://doi.org/10.52845/CMI/2020v1i1a5
14. Abd Ellah NH, Gad SF, Muhammad K, E Batiha G, Hetta HF. Nanomedicine as a promising approach for diagnosis, treatment and prophylaxis against COVID-19. *Nanomedicine (Lond)*. 2020;15(21): 2085-2102. DOI:10.2217/nnm-2020-0247
15. Daniel V, Daniel K. Exercises training program: It's effect on muscle strength and activity of daily living among elderly people. *Nursing and Midwifery*. 2020;1(01):19-23. DOI:https://doi.org/10.52845/NM/2020v1i1a5

16. Niranjanamurthy M, Amulya MP, Dayananda P, Pradeep HG. Coronavirus – COVID-19 before and after solution through web application and app. International Journal of Advanced Science and Technology. 2020;29(5 Special Issue):27-41.
Available: www.scopus.com
17. Agostini ML, Andres EL, Sims AC, Graham RL, Sheahan TP, Lu X, et al. Corona virus susceptibility to the antiviral remdesivir (gs-5734) is mediated by the viral polymerase and the proofreading exoribonuclease. mBio. 2018;9(2):e00221–18.
18. Public Health England. COVID-19: epidemiology, virology and clinical features. Available: <https://www.gov.uk/government/publications/wuhan-novel-coronavirus-background-information/wuhan-novel-coronavirus-epidemiology-virology-and-clinical-features>. Accessed 14 March 2020
19. Zhou P, Yang X-L, Wang X-G. et al. A pneumonia outbreak associated with a new coronavirus of probable bat origin. Nature. 2020;579(7798):270–273.
Available: <https://www.isglobal.org/en/coronavirus>
20. Mohammad MHS. Immune response scenario and vaccine development for SARS-CoV-2 infection. Int Immunopharmacol. 2021;94:107439. DOI:10.1016/j.intimp.2021.107439

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