

## Effect of COVID 19 on the Human Body

Shimon Shatzmiller

*Department of Biological Chemistry, Ariel University, 40700 Ariel, Israel*

**\*Correspondence to:** Dr. Shimon Shatzmiller, Department of Biological Chemistry, Ariel University, 40700 Ariel, Israel.

### Copyright

© 2020 Dr. Shimon Shatzmiller. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

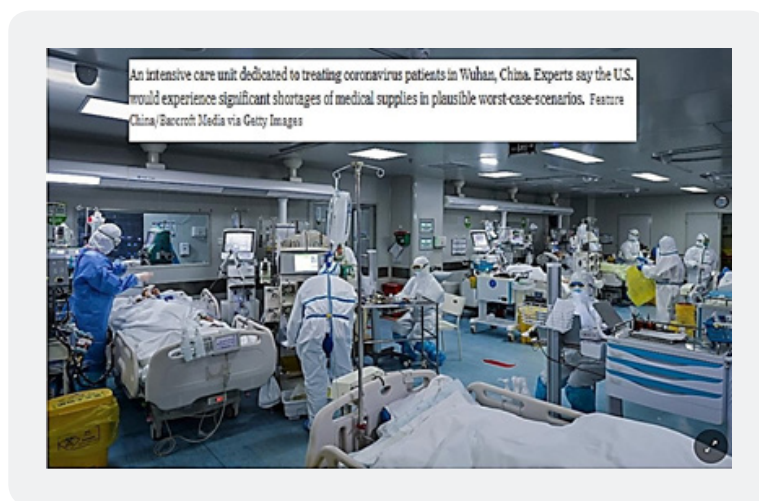
Received: 18 March 2020

Published: 20 April 2020

**Keywords:** *Virus; Hospital; WHO*

The special hospital site is preparing for the doomsday, but in the ER, more are still trying to get used to the quiet.

The eve of the holiday and the Corona epidemic changed the face of the Department of Emergency Medicine at Hospitals.

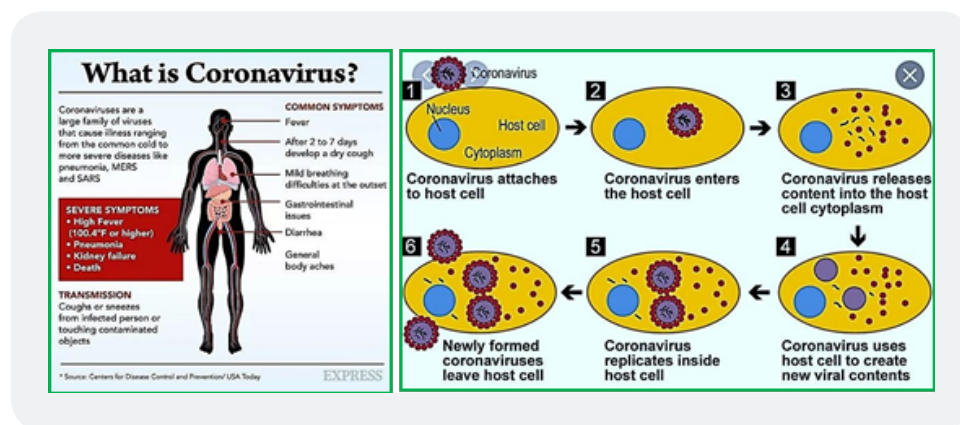


*Incubation period*

COVID-19 incubation period is 14 days, with a median time of 4-5 days from symptom exposure. One study reported that 97.5% of people with COVID-19 who develop symptoms will do so within 11.5 days of SARS- CoV-2 infection.

Seventy cases have been identified in the United States recently, most of them infected overseas. But officials at the C.D.C. College warned that the number would almost certainly rise and urge Americans to make major disruptions in their lives.

Health officials are working to limit outbreaks to small geographical clusters, limiting the impact on the state's health care system and giving time for vaccine development, an effort that could last a year or more. But faulty test kits distributed to states by the C.D.C. And stringent criteria first used to identify potential cases may slow down the identification of the virus that is spreading in localities around the country [1].



*How does the virus take over a human*

*How does the virus enter the living cell*

## Particularly Severe Virus

Around 85 studies on COVID-19 patients are currently listed on clinicaltrials.gov, an international study registry. They include substances such as thalidomide, notorious for birth defects that it caused after being prescribed to many in West Germany as sleep aids in the late 1950s, and esoteric-looking approaches such as internal stem cells of dentistry and traditional Chinese medicine. Reports have emerged that many studies have even begun to cope with each other to secure patients for their trials.

To help provide a specific structure in search of an effective remedy, the World Health Organization (WHO) has begun to assess which agents they consider most promising in January. British Wellcome Trust, Bill & Melinda Gates Foundation and Mastercard Impact Fund have now launched the COVID-19 Therapeutics Accelerator, with \$ 125 million in start-up funding. Its purpose is to support and coordinate research on promising drugs, support for approvals and make available the new drugs in impoverished countries, all in collaboration with the World Health Organization [2].

“Science is moving at a phenomenal rate against COVID-19,” says Jeremy Farrar, director of Wellcome. But, he adds, COVID-19 is a very challenging virus. “For this reason, he argues, it will be necessary to invest a lot of money to bring control of the plague.

## **Presentation**

The signs and symptoms of COVID-19 that are at the beginning of the disease vary, but during the disease most people with COVID-19 will experience the following: [3a-h].

- Shortness of breath (31-40%)
- Sputum production (28-33%)
- Myalgias (11-35%)
- Fever (83-99%)
- Cough (59-82%)
- Fatigue (44-70%)
- Anorexia (40-84%)

## **People with Diabetes II and Hypertension [4]**

A recent study in the JAMA scientific journal, based on data from the Chinese Center for Disease and Prevention, looked at data from 44.5,000 patients who were classified as corona patients (19-COVID). According to the findings, about 81% of patients had mild disease, 14% of patients had moderate or severe disease and about 5% of patients were in critical condition - they had respiratory failure, multi-systemic failure and the like [5]. Among all patients in the critical condition, high rates of background disease were found - mainly heart disease, diabetes, lung disease and cancer. In another study published in The Lancet, 191 patients from two hospitals in China were examined. 137 patients had mild illness and were released from the hospital and 54 had severe illness and passed away as a result of the virus. According to the findings, of all serious cases, 30% of patients had high blood pressure, 19% had diabetes and 8% had cardiovascular disease.

What happens to people's lungs when they get the Corona virus?

A respirator [6] John Wilson explains the range of effects of Covid-19, without symptoms and ending with a serious illness that includes pneumonia.

What came to be known as Covid-19, or the coronavirus, began in late 2019 as a pneumonia cluster with unknown cause. The cause of pneumonia was discovered as a new virus - acute respiratory syndrome Coronavirus 2, or Sars-CoV-2. The virus caused by the virus is Covid-19.

Now declared an epidemic by the World Health Organization (WHO), most people experiencing Covid-19 suffer from only mild and cold symptoms.

WHO says that about 80% of people with Covid-19 recover without needing any specialist treatment? Only about one person in six is seriously ill “and develops breathing difficulties.”

So how can Covid-19 develop into a more severe disease that includes pneumonia, and what does it do to our lungs and the rest of our bodies?

## **How Does COVID-19 Affect the Heart?**

The effects of COVID-19 on the lungs are known. As the COVID-19 epidemic continues, more information about the role the virus, called SARS-CoV-2, has on the heart is revealed [7]. Dr. Leslie Cooper, chair of the Mayo Clinic’s Department of Cardiology, says “people with known cardiovascular disease are at increased risk of more serious complications from respiratory viral diseases, including influenza and COVID-19.

“We know that in severe SARS-CoV-2 infection, heart function may decline. Sometimes this decline is a result of the systemic inflammatory response to the infection, and sometimes in some people due to direct viral infection in the heart.”

Dr. Cooper says there are two predominant heart issues related to COVID-19: heart failure, when the heart muscle is not pumping blood properly, and heart rate, or abnormal heart rhythm, that could be related to a drug infection or effect Used to treat the virus.

Heart failure can develop as a result of a systemic inflammatory response to infection, high lung pressure from lung damage, or appear as a result of a heart infection known as myocardium.

Dr. Cooper, “For many people who suffer from heart failure in the context of COVID-19 infection, we do not know if heart failure is associated with myocarditis or systemic inflammation as a result of COVID-19.

For older patients with pre-existing coronary artery disease or hypertension, heart failure is likely due to an increase in demand placed on the heart and, of course, a decrease in body reserve capacity, he said. Among younger patients, it is likely that this is a preliminary disease caused by the virus.

## **Blood Vessels**

People with pre-existing heart disease are more at risk for severe cardiovascular and respiratory complications from COVID-19.

Similarly, research has shown that influenza virus infection poses a more serious threat to people with heart disease than those without heart problems. Studies have also shown that heart attacks can actually be triggered by respiratory infections like the flu.

People with previously undiagnosed heart disease may present with quiet heart symptoms that were previously not obscured by the viral infection. In people with pre-existing cardiovascular obstruction, infection, fever, and inflammation can undermine the stability of asymptomatic lipid plaque that previously existed in the heart vessels. Heat and inflammation also make the blood more prone to blood clotting, interfering with

the body's ability to dissolve blood clots - a one-two punch similar to gasoline injection on the coals of the wind [8].

## **COVID-19: Kidney Risks to Kidney Disease Patients Services Challenges**

In conventional influenza infection, patients at increased risk of complications are considered: 65 years of age or older; Tenants in long- term residential care; And suffer from chronic respiratory illness; Chronic heart disease; Chronic kidney disease[9], Nephrotic syndrome and established renal failure; Chronic liver disease; Diabetes and immunocompromised patients.

The specific complications associated with high morbidity and mortality are pneumonia and secondary bacterial pneumonia. COVID- 19 virus infection may also be associated with worsening of the clinical condition of patients with a variety of pre-existing medical conditions, such as heart failure, diabetes, coronary heart disease, asthma, and chronic obstructive pulmonary disease (COPD).

Patients with pre-existing CKD will be at increased risk of AKI through pyrexia, anorexia and sore throat fluids, diarrhea and NSAID used by patients with myalgia and headaches. Thus, kidney disease patients, many of whom suffer from the above listed stages or risk factors, may be at higher risk for morbidity and severe mortality during an epidemic. This will result in additional and perhaps disproportionate pressure on the kidney units where the skills to treat these patients are concentrated.

A review of COVID-19 and kidney disease can be read here.

## **COVID-19 And Endocrinology - A Two-Way Relationship**

Endocrine Investigations[10]. COVID-19 medical professionals and management teams around the world must be aware of the subtleties of endocrine screening and diagnosis. Asymptomatic people with COVID-19 should be surveyed if they have diabetes and other uncompromising conditions. In the absence of other guidelines, standard American Diabetes Diagnostic Association criteria must be applied. Because healthcare professionals need to limit the frequency of menstruation in infected people, random blood glucose levels may be sufficient for diagnosis when hemoglobin is elevated (HbA1c) if present. It seems impractical to advise 75g oral glucose tolerance testing in those infected with COVID-19, especially in resource-limited settings.

For those with symptoms, one abnormal glucose value can be sufficient to diagnose diabetes. You should be aware of the possibility of hypertension, 5 and distinguish it from existing diabetes. Thyroid function tests, if ordered routinely, should be interpreted with clinical and pragmatic aesthetics. COVID-19 management teams should rule out thyroid deficiency syndrome prior to diagnosing thyroid disease. In people with a known history of pre-existing thyroid disease, appropriate regimen and dose disinfection should be performed with caution.

Among people with hemodynamic failure, the management team may want to order serum cortisol, with or without stimulation, to rule out adrenal insufficiency or 'Koala Bear Syndrome'. It is worth noting that prednisolone, methylprednisolone and hydrocortisone all show cross- reactivity with serum cortisol assays.

## In Some Cases, COVID-19 May Damage the Brain

Early in 2002 and 2003, studies on the samples from patients with SARS have demonstrated the presence of SARS-CoV particles in the brain, where they were located almost exclusively in the neurons [11]. Experimental studies using transgenic mice further revealed that either SARS-CoV or MERS-CoV, when given intranasally, could enter the brain, possibly via the olfactory nerves, and thereafter rapidly spread to some specific brain areas including thalamus and brainstem. It is noteworthy that in the mice infected with low inoculum doses of MERS-CoV virus particles were detected only in the brain, but not in the lung, which indicates that the infection in the CNS was more important for the high mortality observed in the infected mice. Among the involved brain areas, the brainstem has been demonstrated to be heavily infected by SARS-CoV [12] or MERS-CoV [13].

He believed that the brain could be affected by a viral infection every time the patient's immune system responds to the virus [14]. This immune system's hyperactivity triggers a "cytokine storm" - an overproduction of immune cells and their activation compounds, called cytokines.

In the case of the woman from Detroit, it is customary to think that an "intracranial" cytokine storm has occurred. This led to a breakdown of the blood-brain barrier that would normally protect the brain.

In an interview with *The New York Times*, Henry Ford neurologist Dr. Alyssa Puri said the rapid progression of a woman's disease "may indicate that the virus can invade the brain directly under rare circumstances." She added that the woman remained in a human condition in the hospital.

Dr. Anthony Geraci directs neurosurgical medicine in Northwell Health in Great Neck, N.Y. In reading about the woman's case, he argued that the cytokine storm theory seemed to be correct.

"Cytokines are chemicals that, among other functions, can cause small blood vessels to leak, which can lead to small bleeding in many organs including the brain. It is known to occur as a result of several viral infections, including the flu," said Jarra.

## Concluding Remarks

Israelis face a reality they are no longer used to. They must deal with the truth with reality as it is and without bluffs and eyes. The scientists at universities and research institutes are people whose entire lives are confronted with the truth. The scientific truth. No false and fake bluffs. Admittedly, the lesion is sometimes spread, but rarely. Well, the corona virus hits the world. And those who know English or another scientific language can look at the publications and findings. And the assumption that "the Coronavirus is going to attack again in a second wave" is the opinion of many scientists throughout the globe. The British and Japanese are convinced that a second wave will come, and those who have recovered will be able to get sick again. German research proved that 14% of recovered patient from COVID 19 carry the viruses in their blood, but are not sick with the disease. This may show that the antibodies that the patients created during their COVID 19 sickness are retarding the second wave. But the recovery is not complete, and you have a different story than our leaders tell us. One can only hope that the second wave, as it was in the 1918

Spanish Influenza epidemic, will not come. Then the second and third waves caused most deaths: about 50 million. The gamble here is dramatic.

It's too early to celebrate with the barbarians on the Sea of Galilee. Really early.

The Ministry of Health continues to choose the “good” numbers it presents to the public, whereby life expectancy here is relatively long for most countries of the world, the minimum mortality rate for women and neonates, and advanced drugs since entering the drug basket. But the results of some of the many failures of the health system, we have all experienced now: a severe shortage of lab equipment, respirators, and health teams that will not withstand the tide of hundreds of difficult patients.

## Bibliography

1. Kun Li, Christine Wohlford-Lenane, Stanley Perlman, Jincun Zhao, Alexander Jewell, K., Leah Reznikov, R., *et al.* (2016). Middle East Respiratory Syndrome Coronavirus Causes Multiple Organ Damage and Lethal Disease in Mice Transgenic for Human Dipeptidyl Peptidase. *The Journal of Infectious Diseases*, 213(5), 712-722.
2. <https://www.spiegel.de/international/world/coronavirus-the-urgent-search-for-a-cure-for-covid-19-a-fd4c9a3a-ab4e-4590-b95b-a1c01d8b9d61>
- 3a. Li, Q., Guan, X., Wu, P., *et al.* (2020). Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus-Infected Pneumonia. *The New England journal of medicine*.
- b. Lauer, S. A., Grantz, K. H., Bi, Q., *et al.* (2019). The Incubation Period of Coronavirus Disease 2019 (COVID-19) From Publicly Reported Confirmed Cases: Estimation and Application. *Annals of internal medicine*. 2020.
- c. Chen, N., Zhou, M., Dong, X., *et al.* (2020). Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *Lancet (London, England)*, 395(10223), 507-513.
- d. Huang, C., Wang, Y., Li, X., *et al.* (2020). Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet (London, England)*, 395(10223), 497-506.
- e. Wang, D., Hu, B., Hu, C., *et al.* (2020). Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coronavirus-Infected Pneumonia in Wuhan, China. *Jama*.
- f. Xu, X. W., Wu, X. X., Jiang, X. G., *et al.* (2020). Clinical findings in a group of patients infected with the 2019 novel coronavirus (SARS- Cov-2) outside of Wuhan, China: retrospective case series. *BMJ (Clinical research ed)*., 368, m606.
- g. Wu, C., Chen, X., Cai, Y., *et al.* (2020). Risk Factors Associated With Acute Respiratory Distress Syndrome and Death in Patients With Coronavirus Disease 2019 Pneumonia in Wuhan, China. *JAMA Intern Med*. 2020.
- h. Pan, L., Mu, M., Ren, H. G., *et al.* (2020). Clinical characteristics of COVID-19 patients with digestive symptoms in Hubei, China: a descriptive, cross-sectional, multicenter study. *Am J Gastroenterol*.

4. <https://www.ynet.co.il/articles/0,7340,L-5705228,00.html>
5. CDC report. <https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-guidance-management-patients.html>
6. <https://www.theguardian.com/world/2020/apr/07/what-happens-to-lungs-coronavirus-covid-19>
7. <https://newsnetwork.mayoclinic.org/discussion/how-does-covid-19-affect-the-heart/>
8. <https://news.harvard.edu/gazette/story/2020/04/covid-19s-consequences-for-the-heart/>
9. COVID-19: challenges for renal services.
10. COVID-19 and Endocrinology - A Bidirectional Relationship.
11. Gu, J., Gong, E., Zhang, B., *et al.* (2005). Multiple organ infection and the pathogenesis of SARS. *J Exp Med.*, 202(3), 415-424.
12. Netland, J., Meyerholz, D. K., Moore, S., Cassell, M. & Perlman, S. (2008). Severe acute respiratory syndrome coronavirus infection causes neuronal death in the absence of encephalitis in mice transgenic for human ACE2. *J Virol.*, 82, 7264-7275.
13. Li, K., Wohlford-Lenane, C., Perlman, S., *et al.* (2016). Middle East respiratory syndrome coronavirus causes multiple organ damage and lethal disease in mice transgenic for human dipeptidyl peptidase 4. *J Infect Dis.*, 213(5), 712-722.
14. In Some Cases, COVID-19 May Harm the Brain.