



COVID-19 Diagnosis, Treatments and Prevention: A Review

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Authors' contributions

This work was carried out in collaboration between both authors. Author SC designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author SC managed the analyses of the study and managed the literature searches. Both authors read and approved the final manuscript.

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ABSTRACT

Novel Coronavirus are very harmful virus. This viruses have positive single stranded RNA genome and enveloped which is called nucleocapsid. The family of this virus is Coronaviridae. This virus originated from species of avian and mammalian. This virus effect on upper respiratory tract in humans. Many species of these novel coronaviruses (HCoV) are named as HCoV-HKU1, HCoV-NL63. Predominant species of this virus is Middle East respiratory syndrome (MERS-CoV) across the world. In both adults and childrens HCoV-HKU1 sp. is causes for chronic pulmonary disease and HCoV-NL63 species causes for upper and lower respiratory tract disease. Most recent species of this virus is MERS-CoV. This species caused for acute pneumonia and occasional renal failure. The new strain of novel Coronavirus is SARS-CoV-2. This strain causes for the Coronavirus Disease 2019 (COVID-19). This disease named by the World Health Organization. Now world fighting against COVID-19 and according to the recent statistics report of world about the COVID-19 cases approx 22.6M confirmed cases and 792K death cases appeared and recovered 14.5M.

COVID-19 disease starts to spread from December 2019 from china. Covid-19 disease is emerged in Wuhan seafood market at Wuhan of South China and then rapidly spread throughout the world. The corona virus outbreak has been declared a public health emergency of International concern by World Health Organization (WHO). In this article we summarize the current clinical characteristics of coronavirus and diagnosis, treatments and prevention of COVID-19 disease. In this review article, we analyze data from various Research Reports like WHO guidelines and other articles. It is very important to the readers that new data of COVID-19 updating nearly every hour of day regarding clinical characteristics, diagnosis, treatment strategies, and outcomes COVID-19 disease. The degree of COVID-19 disease varying throughout the world. COVID-19 affected patient shows various symptoms like fever, cough, sore throat, breathlessness, fatigue, and malaise among others. The COVID-19 disease is being treated through general treatment like symptomatic treatment, by using antiviral drugs, oxygen therapy and by the immune system. There is no vaccine or therapeutic strategies for deal with this disease yet. In this critical situation preventive measures must be require. A very important issue in preventing viral infection is hand hygiene. There are other entities that people can boosting the immune system and help in infection prevention.

Keywords: COVID-19; diagnosis; novel coronavirus.

1. INTRODUCTION

The novel Coronavirus are enveloped viruses with (+) ss-RNA genome and size is 22–32 kb in length. Coronavirus belong to the subfamily Orthocoronavirinae under the family of Coronaviridae. The order of corona virus is Nidovirales. Coronavirus are categorized into four genera: (1) Alpha-Coronaviruses (α), (2) Beta-Coronaviruses (β), (3) Gamma-Coronaviruses (γ), and (4) Delta-Coronaviruses (δ) [1].

Coronavirus (CoV) are infect humans and variety of avian and mammalian species in the world. According to considering of the clamp on 31 December China was reported that pneumonia cases are unknown etiology in Wuhan, Hubei Province diverse speedy epidemiological, clinical and virological research around the world is working for the genomic analysis. A novel Coronavirus (COVID-19) promoted by the agent of the pneumonia. The same progeny from the Coronavirus leads to severe as acute respiratory syndrome (SARS) [2]. Coronavirus originated from bat, in china and causing severe and fatal kind of pneumonia and bronchiolitis. It especially effect in adult, children and immunological weak patients as well. Actually this virus target respiratory and enteric tracts of both animal and human.

Historically it was proved that the novel coronavirus infect in upper respiratory tract sites of humans caused by the variety of HCoV-HCoV-229E and HCoV-OC43. However the HCoV was identification in 2003 as novel life-threatening CoV [3]. HCoV causing the

severe acute respiratory syndrome (SARSCoV) that redefined its historical existence. According to study it is reported that the three novels HCoVs viruses and all three were associated with respiratory diseases. The HCoV-HKU1 virus which was associated with chronic pulmonary disease and other was HCoV-NL63 that causes upper and lower respiratory tract disease in both children and adults in all over the world, and the recent one (April-2012) was CoV (MERS-CoV) arising in Middle East causes for respiratory syndrome and their symptoms is associated with acute pneumonia and occasional renal failure. These findings are suggested that the coronavirus (CoV) exists in nature as potential human pathogen. The impact of this virus is more among advance aged (60-70) people and it shows less impact among adults [4]. Luckily infants and children are rarely infected without any deaths but in the future knowledge of this virus is obscure. It is notice that most of the infected people are asymptomatic initially but it might advance stop pneumonia and people suffering with acute respiratory distress syndrome (ARDS) and multi organ dysfunction and its mortality rate of people is evaluated to go from 2 to 3%.

Diagnosis tests of COVID-19 involves exclusive molecular tests which were used to examine the respiratory secretions and usual or poor WBC count with more C-reactive protein (CRP) were observed in common laboratory findings. A COVID-19 symptomatic people or with mild infection shows abnormal CT chest scan. Basically for this COVID-19 disease steady and supportive treatment is required and the job of

anti-virals treatment is yet to be set up. In this situation strict infection control measures at hospitals and home separation of suspicious people with infection was done for the prevention for transmission of corona virus because this COVID-19 transmits more quickly than its other two progenitors SARS-CoV and MERS-CoV but has less mortality rate. The worldwide impact of this novel pandemic is yet unsure. The replication of HCoV which was regulated by variety of host factor [5]. Deaths for COVID-19 were common at least five times more among people with diabetes, high blood pressure and heart or breathing problems. Deaths are more common among men as compared to women.

2. ORIGIN AND TRANSMISSION OF COVID-19

According to study the first cases of coronaviruses found in human in 1965 by Tyrrell and Bynoe. They observed and named the virus B814. This virus was first observed in human embryonic tracheal organ cultures that is obtained from the respiratory tract of an adult. Common symptom was cold. The first cases of COVID-19 disease were seen in Wuhan City of China in December 2019. Then COVID-19 have been linked to the Wuhan Seafood Market of South China and then COVID-19 disease infection has been spread to several countries of the world. The source of novel coronavirus SARSCoV-2 was zoonotic but it is not confirmed [6].

According to recent study the sequence-based analysis of coronavirus genome suggested that bats as the main reservoir. In novel coronavirus has recombination of DNA that is involved in spike glycoprotein formation. This character was assorted SARS-CoV (CoVZXC21 or CoVZC45) with the RBD of another Beta CoV. This the reason for cross-species transmission and rapid infection of corona virus [7]. The novel coronavirus are highly transmittable and pathogenic virus that causes Coronavirus disease 19 (COVID-19) and mainly transmitted through contact with respiratory droplets. Coronavirus disease 19 (COVID-19) not transmitted through the air. Primarily people are infected by Coronavirus disease 19 (COVID-19) from others who are infected. A single cough of infected people can circulate up to 3,000 droplets. These droplets can be transmitted and land on other uninfected people. This virus can also transmit for extended in faecal matter. If any people who not washing their hands properly after visiting from the toilet and bathroom could contaminate anything they touch like many respiratory viruses including flu and Covid-19 can be transmitted by close contact with small droplets released from infected individuals [Fig. 1]. That is why keep distance more than 1 meter (3 feet) from a person who is sick. When droplets of infected person land on objects and surfaces around the person and then if other people touches those objects or surfaces and further touching their eyes, nose or mouth then those people can catch COVID-19 [8].

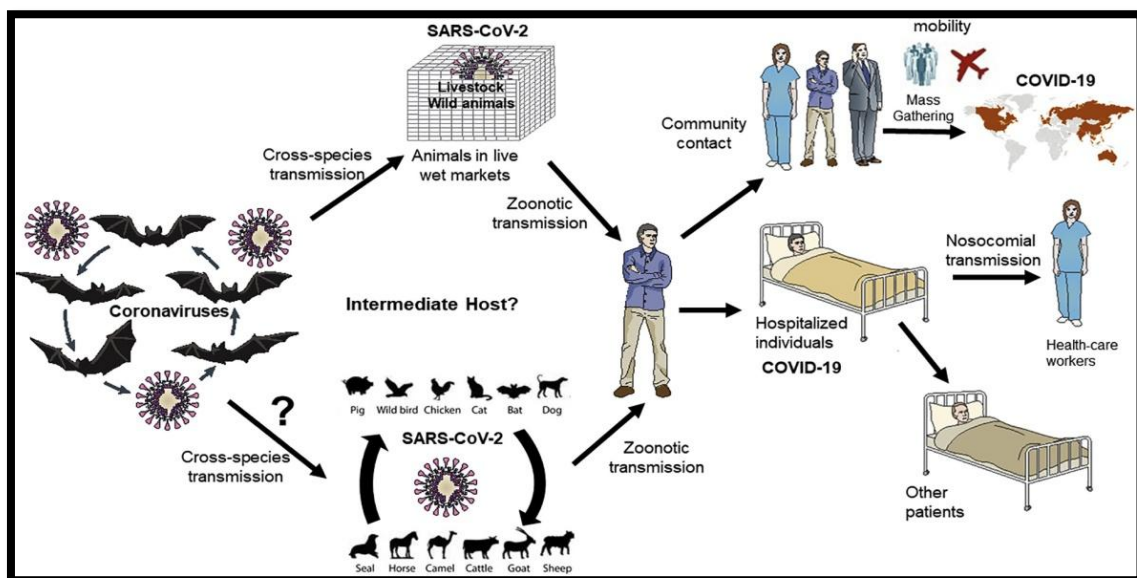


Fig. 1. Transmission of COVID-19 to human host
(Source: Research Gate)

3. TAXONOMY, GENOMIC STRUCTURE AND MORPHOLOGY

The novel Coronavirus are a group of enveloped RNA virus and belong to the family Coronaviridae under the order Nidovirales. The International Committee for Taxonomy of Viruses proposed that novel Coronavirus (CoVs) are further categorized into four main genera, (i) Alpha-, (2) Beta-, (3) Gamma- and (4) Delta Coronaviruses based on the sequence of entire viral genomes comparisons [Fig. 2]. These Coronavirus (CoVs) can infect avian, swine and humans. HCoV are include in the Alpha- or Beta Coronavirus genera. Alpha Corona viruses are HCoV-229E and HCoV-NL63 and Beta Coronaviruses are HCoV-HKU1, SARS-CoV, MERS-CoV and HCoV-OC43 [9]. The novel Coronavirus (CoV) virions appear as roughly spherical or moderately pleomorphic under the electron microscope. Distinct “club-like” projections which is formed by the spike (S) protein present on the surface [Figs. 3 and 4].

The novel coronavirus has a single-stranded and positive sense RNA viral genome within the virion. Which lies as a helically symmetrical nucleocapsid. This genome of an extraordinarily large size of about 26 to 32 kilobases. The positive sense RNA viral genomic acts like a messenger RNA (mRNA) by comprising with a 5' terminal cap structure and a 3' poly A tail [10]. This viral genomic RNA acts in three different way during their life cycle. The first one is as an initial RNA of the infectious cycle, second one

act as a template for replication and then transcription and third one act as a substrate for packaging into the progeny virus. The genome translated only replicase-transcriptase protein, and from sub genomic mRNAs the viral products of all down stream open reading frames are derived. All species of CoVs has replicase gene which makes up approximately 51 two-thirds of the genome. Genome is comprised of two overlapping open reading frames (ORFs) one is ORF1a and other is ORF1b, which are encodes of 16 non-structural proteins [Fig. 5] [11]. The CoV genomic RNA encodes CoV canonical set of four structural protein encoding genes for spike (S), envelope (E), membrane (M) and nucleocapsid (N). In addition, several accessory ORFs and their protein encoding gene present in various position of genome of different species of CoVs [12].

4. MECHANISM OF ACTION OF HCoV INFECTION CYCLE

The novel Coronavirus act as an intracellular obligate parasite. This virus enters into the host cell and by the use of host cell machinery for their viral copy makeup and spread. During the CoVs infection cycle follow some steps: 1. Attachment of virus to host cell surface and entry into the host cell; 2. translation of the replicase-transcriptase of viral genome; 3. Replication of viral genome and transcription of mRNAs; and 4. Assembly and budding of newly packaged virions [13].

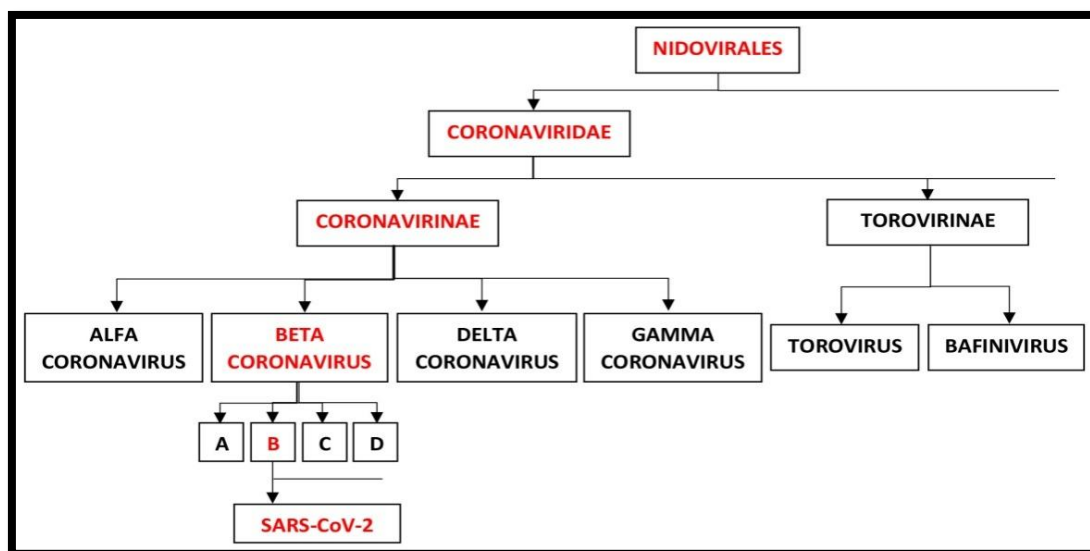


Fig. 2. Classification of novel Coronavirus
(Source: Airtechnics)

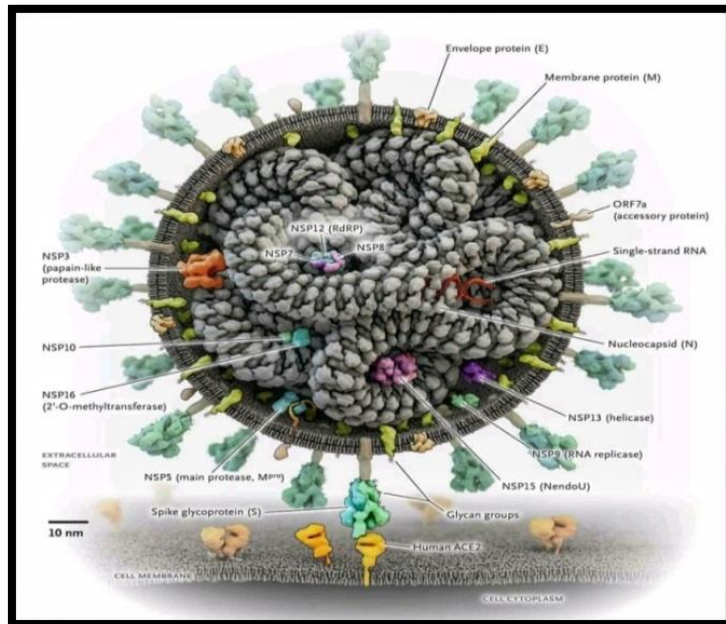


Fig. 3. Structural view of the Coronaviruses
(Source: nature.com)

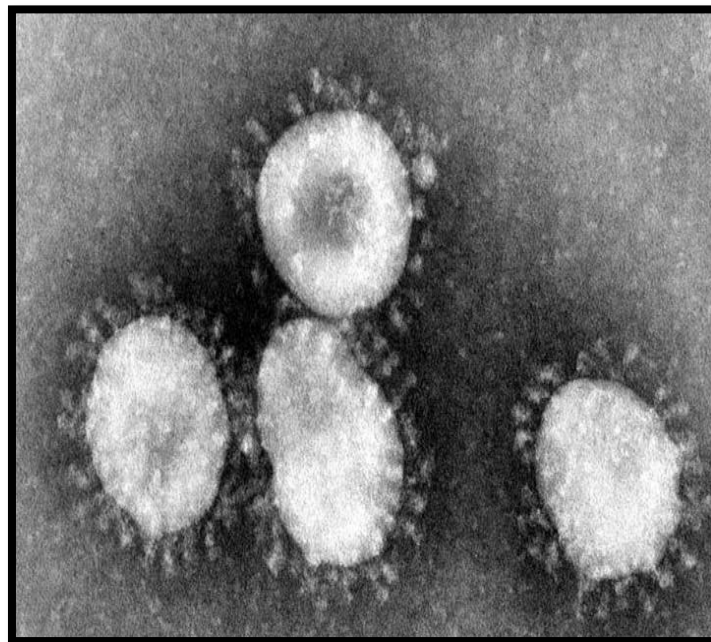


Fig. 4. Structural view of the Coronavirus under electron microscope
(Source: en.wikipedia.org)

5. REPLICATION

At first the infection of coronavirus attaches to cell surface receptor ACE2 via spike protein. After attachment between coronavirus and host cell proteolytic enzyme of the host cell cleaves and activates the attached spike glycoprotein

macromolecule. Viruses are entry into host cell through either endocytosis or through fusion of viral membrane to host cell membrane it's depend on nature of proteolytic enzyme. RNA of novel Coronavirus consists of 5' methylated head and a 3' polyadenylated tail by which the RNA attaches to the free ribosomes of the host cell for

required protein synthesis. Novel Coronaviruses (CoVs) have glycoprotein spikes that project from their surface. These glycoproteins are degraded by protease enzyme into several nanometer. They are enveloped RNA viruses, and have positive single stranded RNA and have a unique replicating process of this RNA [Fig. 6] [14]. These viruses are the cause of upper respiratory infection in humans. In the study we try to

discuss a brief introduction on corona viruses detailing its replication process and pathogenic activity, prevention and treatment strategies. We will also try to elaborate the discussion on the outbreaks of the COVID 19 and highly pathogenic Severe about Acute Respiratory Syndrome Coronavirus (SARS-CoV) and Middle Eastern Respiratory Syndrome Coronavirus (MERS-CoV) which was recently discovered [15].

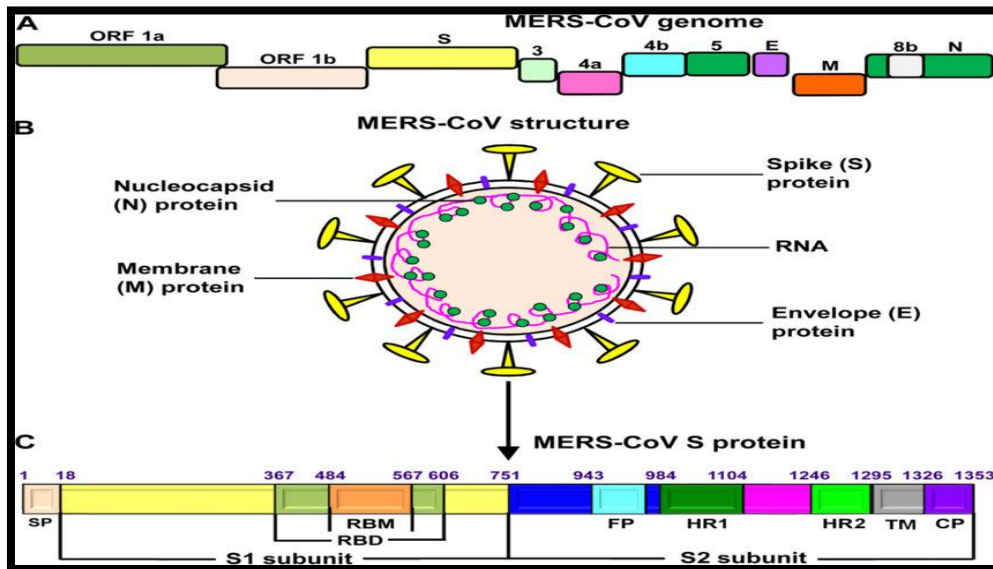


Fig. 5. Genomic structure of Coronavirus
(Source: en.wikipedia.org)

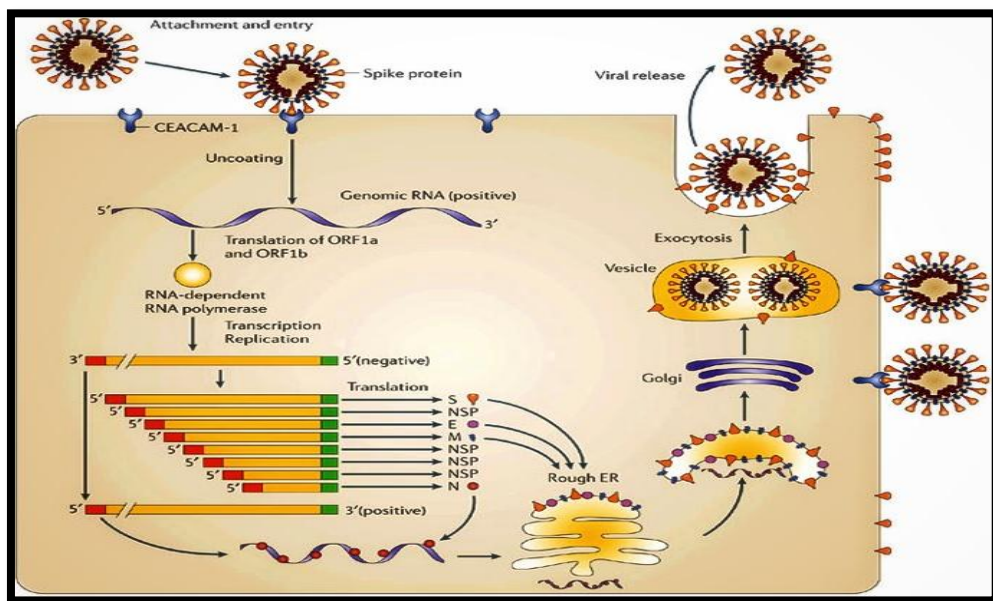


Fig. 6. Replication process Corona viruses
(Source: sinobiological.com)

6. SYMPTOMS

Maximum of the infected patients with this virus will experience with common cold and flu, while few of the people remain asymptomatic. 80% of the COVID 19 patient will show mild symptoms after infection. Adult people have the best immunity power to fight against the COVID 19 infection but the negative point is that they are more likely to spread the infection among people. Zhongnan Hospital of Wuhan University identified on the base of recent study in 140 patients showed different types of symptom, which lead to COVID-19 disease. All most 99% of the patients suffering fever with extremely high temperature and more than half of patients suffering dry cough and breathing problem during this viral infection. According to the Chinese CDC researcher around 80% of corona virus infected cases are mild and 15% of patients have infected severe cases and 5% infected patients become critically ill. After COVID 19 day by day breakdown of corona virus symptoms are shows and symptoms are progress among patients and shows that how the COVID-19 disease goes from bad to worse [16].

Day 1: First day after infection the patient suffers fever along with fatigue, muscle pain, and a dry cough. Few of the patients may experience nausea and diarrhea.

Day 5: COVID 19 infected Patients suffer breathing problem especially if patients are elderly or have some pre-existing health condition.

Day 8: During 8th day, COVID 19 infected patients suffering acute respiratory distress syndrome (ARDS). In this situation the fluid fills up in the lungs and this is mostly fatal condition.

Day 10: COVID 19 infected patients' leads to worsening of the symptom and patient is shifted to ICU. Patients suffering with abdominal pain and loss of appetite. During this situation only a small fraction will die and the current mortality rate is around 2%.

Day 17: During 17th day on average patients after two-and-a-half weeks who recover are discharged from the hospital. It is very difficult to identify the symptoms in the earlier days of the COVID 19 infection. Symptoms are usually seen after 5-6 days.

Continuous pain in the chest includes trouble in breathing and confusion and bluish lips or face

are emergency warning signs of COVID-19 patients' needs for medical treatment immediately. Sometime the progressed condition leads to Pneumonia [17]. The recent new information is that symptoms could be appearing as soon as three days after exposure to as long as 13 days later. According to recent study found that on average the incubation period is about five days [Fig. 7].

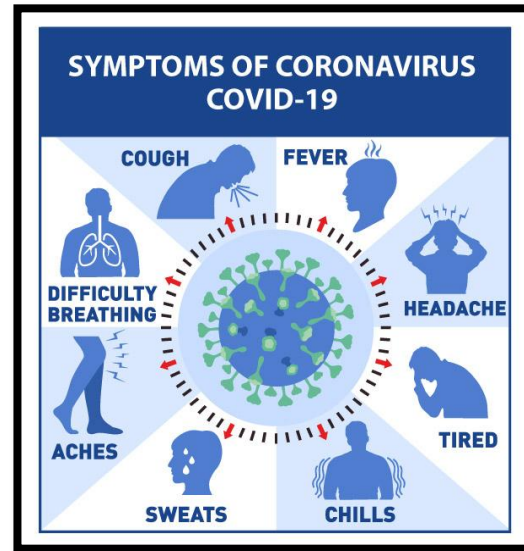


Fig. 7. Symptoms of Coronavirus infected patients

(Source: swgeneral.com)

7. DIAGNOSIS OF COVID-19

Diagnosis allows understanding that suspected people are COVID 19 infected or not. Diagnosis can help patients receive the proper care and it can help them prevent the probability of infecting others. People who don't know that they are COVID 19 infected try to not occupy at home and thereby risk infecting others. Based on individual signs and symptoms doctor may decide that whether to conduct tests for COVID-19 or not. The doctor may also consider within last 14 days whether an infected patient had close contact with someone who diagnosed with COVID-19 or travelled in any areas with ongoing community spread of COVID-19. Diagnostic testing and tracking of COVID 19 are critical and also critical to understanding epidemiology, management and to suppressing the transmission. It is very typical to prevent virus community transmission of COVID 19 and for this reason its outbreak. When lack of testing kit or testing capacity the COVID 19 might be rationalized [18]. Doctor or health practitioner may take samples from

individual including a sample of saliva, a nasal swab and a throat swab than send to a lab for COVID 19 test.

8. PAPER-BASED TEST COVID-19

Covid-19 cases increase day by day all over the world so that the fast diagnoses require. Paper-based test for COVID 19 under Startup Company spun out from MIT that may deliver results of COVID 19 in less than half an hour. Early detection of COVID 19 in patients is extremely useful to prevent spreading COVID 19 from those persons. In this test a paper (strip paper) is required which is coated with antibodies this is capable to bind with particular (COVID19) protein [19]. Then the patient's sample is added to a solution in which a second antibody is attached to gold nanoparticles. If in the patients sample viral protein is present it will be attaches to the antibodies on the paper strip and also the colored spot appears on the paper strip within 20 minutes. Another type of test for COVID 19 looks for viral DNA in a sputum sample. It can detect the virus in sample but they require polymerase chain reaction (PCR) and it is time taken method. It is taken more times (several hours) than screens patient blood test method for COVID 19 [20].

9. EPIDEMIOLOGY

According to the medical journal hosted by Johns Hopkins University as of 23rd July 2020, 210 Countries and Territories around the world have 22.6M reported over confirmed cases and 792K deaths of COVID-19 and 14.5 M recovered [Fig. 12]. Outside China confirmed cases are steadily increasing. Most infected countries data of COVID-19 upto 23rd July are summarised in the below chart [Figs. 8,9,10,11] [21].

10. DEATH RATE INFLUENCED BY AGE, HEALTH AND SEX

According to general director of World Health Organizations (WHO) Tedros Adhanom Ghebreyesus said that about 3.4% of Covid-19 cases have been died globally. Health Secretary of UK governments Matt Hancock said that a very best assessment was that the fatality rate of COVID cases was "2% or, likely, lower". It is depend on range of factors such as general health, age, sex, and the health system of people. In the first huge analysis reported that more than 44.000 confirm cases from China. The death rate of COVID 19 was ten times higher in

the very elderly as compared to the middle-aged. The death rates were lowest under the 30s age and deaths rate were at least five times more common among individuals with diabetes, high blood pressure or heart or breathing problems. According to study higher number of deaths among men as compared to women [22].

10.1 COVID-19 Death Rate by Age Group

According to studies it is clear that death rate increases with age. Children under 9 years of age seem to be largely unaffected, either with no or mild symptoms or none have died due to COVID-19 infection [Fig. 14] [23]. Those infected people cross 80, approximately high chance of those infected dies. 50 years of age COVID 19 infected patients have high fatality rate. Those individual have below 50 years who are infected have a death rate of 0.40 [Fig. 13] [23].

10.2 COVID-19 Death Rate by Sex Ratio

According to recent study men are becoming seriously ill or dying from the coronavirus than women. It is slightly vary numbers in different country. It is not completely sure but maybe men more involve in health-damaging habits such as drinking and smoking than women [24].

10.3 COVID-19 Death Rate by Health Conditions

According to Centres for Disease Control and Prevention (CDC) it is clear that risk of severe illness and death of COVID patients increases with age. People who are both older and not have good medical conditions have a greater risk to infect by corona virus. Age of individual between 60 to 80 have high chance of death because there immunity power are very low. Younger adults individual those have serious illness such as diabetes, heart disease, and lungs disease have high risk of suffering ill if they get infected with the corona virus. The death rate of those people is 1% who not has those pre-existing conditions. Death rate is 10.5% For those infected people who suffering with cardiovascular (heart) disease and death rate is 7.3% for diabetes patients and for death rate is 6.3% for Chronic respiratory disease (asthma and pulmonary disease) suffering people, for hypertension (high blood pressure) and death rate it's 6.0% and 5.6% for the hypertension (high blood pressure) and cancer affected COVID 19 patients [Figs. 15,16] [25].

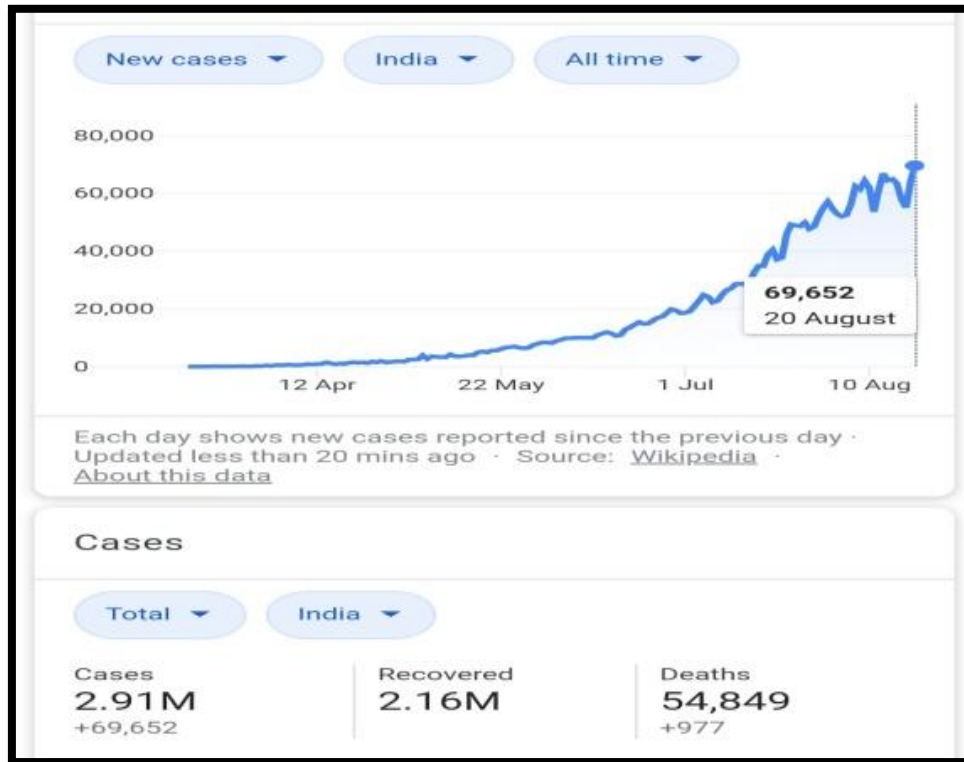


Fig. 8. COVID-19 confirm cases in India
(Source: en.wikipedia.org)



Fig. 9. Covid-19 confirm cases in world
(Source: en.wikipedia.org)

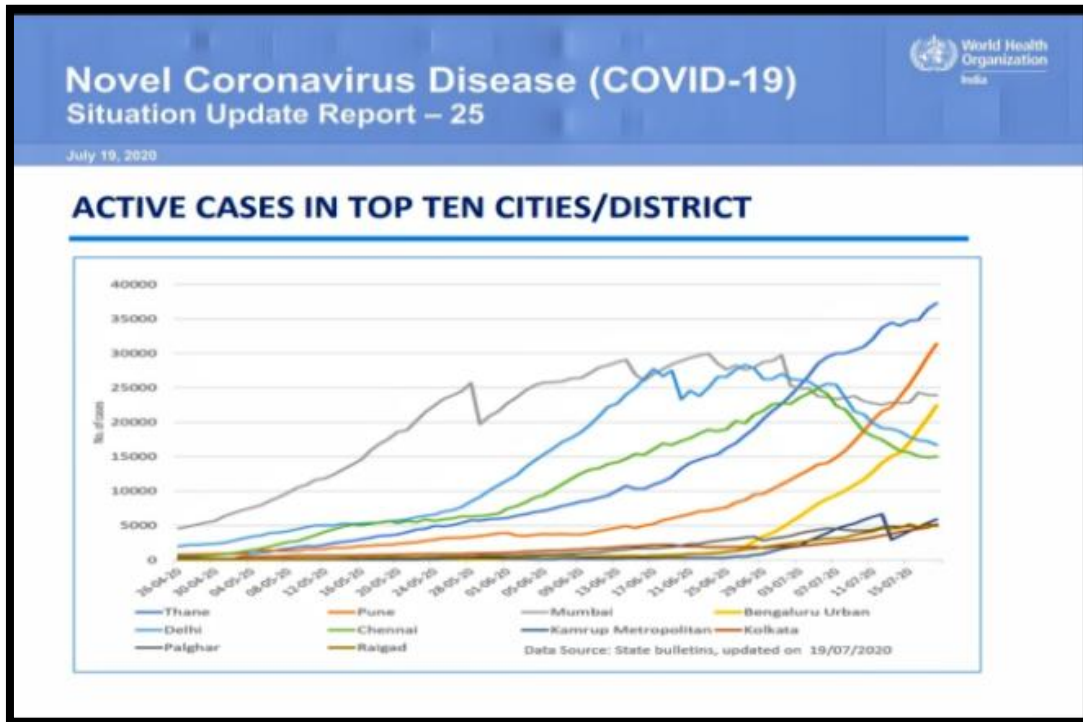


Fig. 10. COVID-19 confirm cases in top ten cities & district
 (source:en.wikipedia.org)

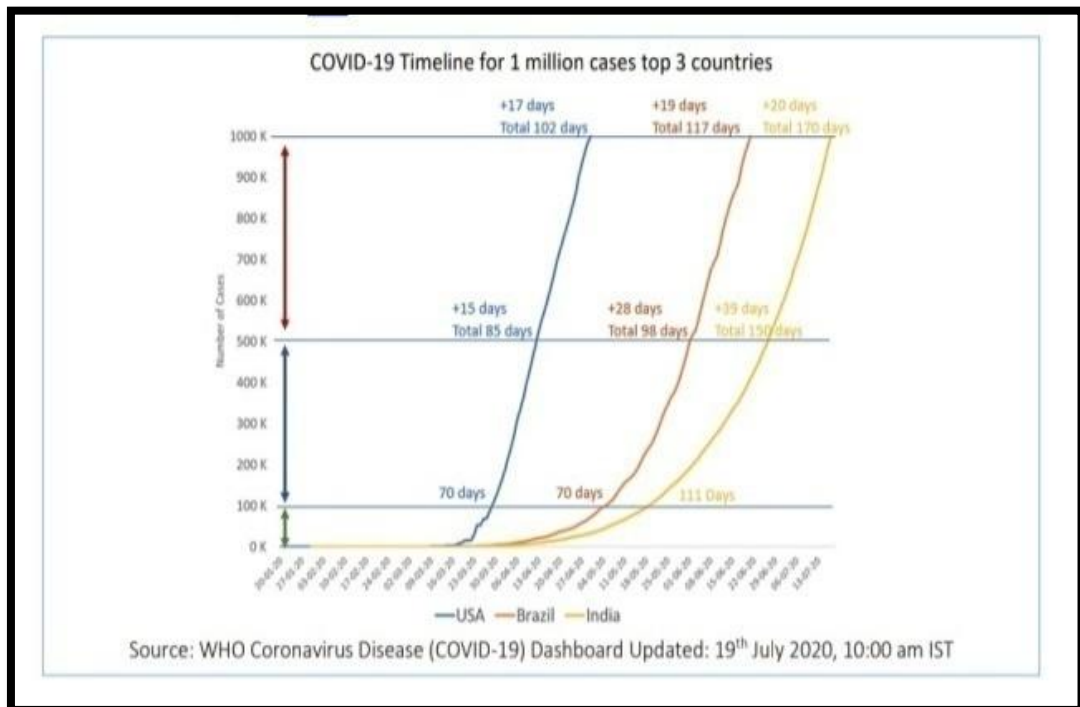


Fig. 11. COVID-19 confirms cases in top 3 countries
 (source:en.wikipedia.org)

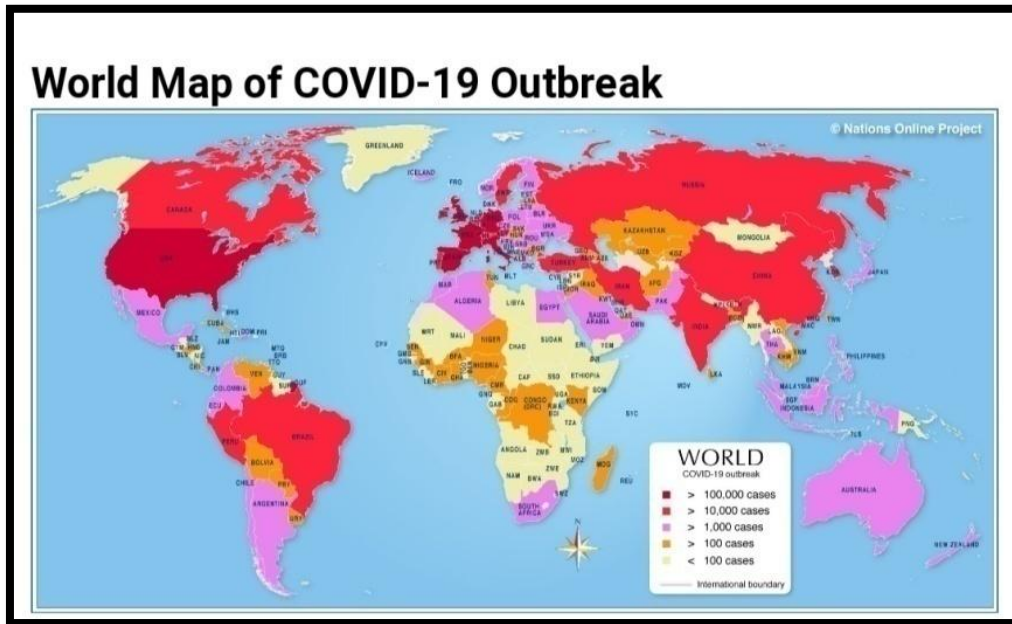


Fig. 12. COVID-19 Real time worldwide graphical representation with the country wise status (Source: dnaindia.com)

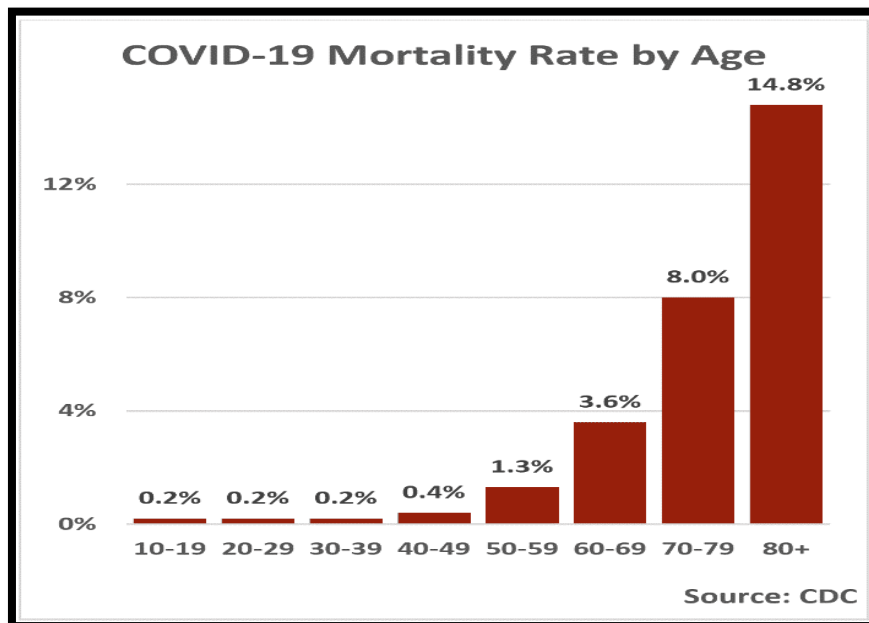


Fig. 13. Covid-19 death Rate by different age group (Source: sciencealert.com)

11. TREATMENT

11.1 RNA Vaccines

According to MIT professor of chemical engineering Daniel Anderson a key advantage of the messenger RNA or mRNA by which you can

identify a new sequence and use it to utilize a new vaccine. Inactivated form of a viral protein present in traditional vaccines that induces an immune response. Although these vaccines can take a longer time to manufacture and they are too risky for a few diseases. These vaccines consist of messenger RNA they induce host cells

to produce many copies of the proteins which they encode and promoting a stronger immune response in the body. mRNA encode the viral antigens, we seek out the simplest way to deliver these antigens to a particular part of the

body for immune response. RNA vaccines can target to different viral proteins. The recent study showed that lipid nanoparticles can enhance the immune response if present in vaccines [26].

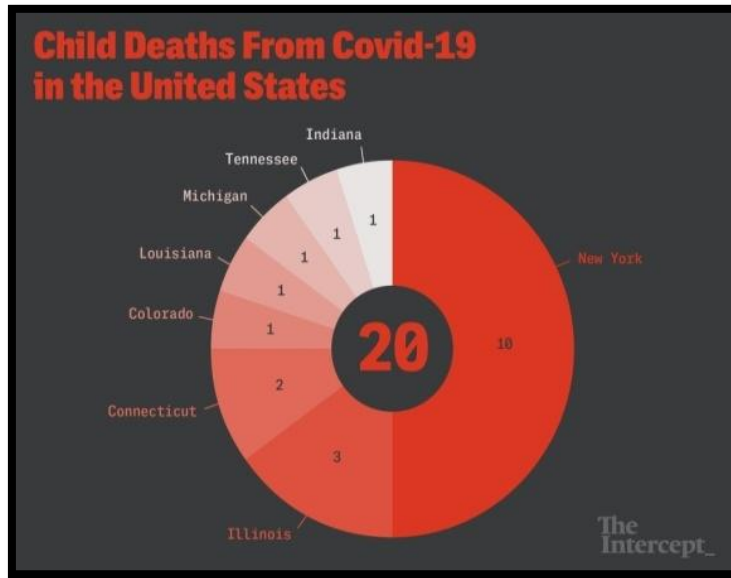


Fig. 14. Covid-19 death Rate of child
(Source: sciencealert.com)

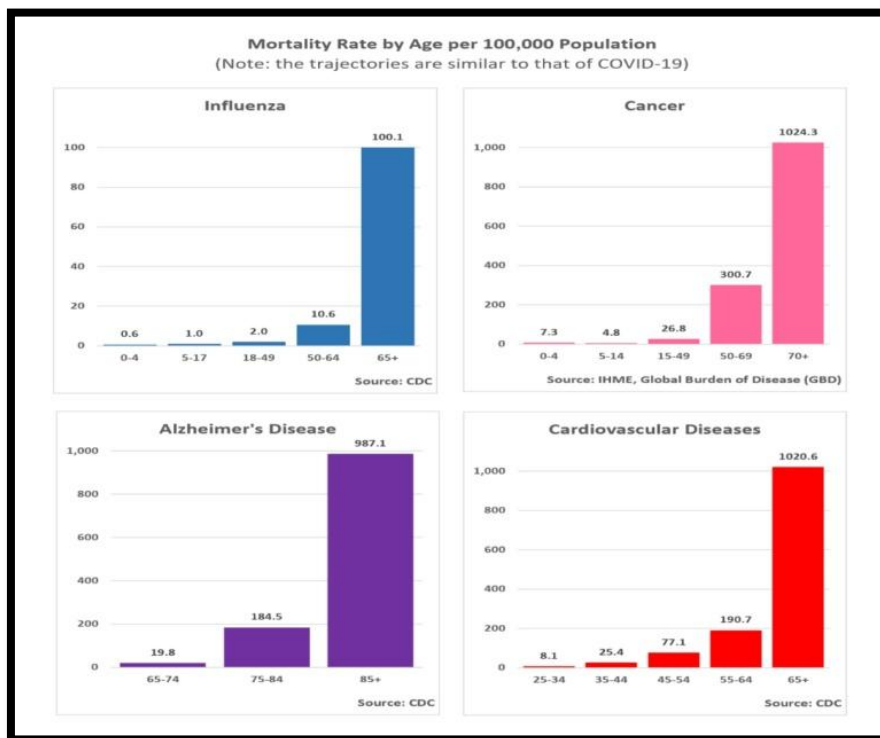


Fig. 15. Covid-19 death Rate by Pre-Existing disease conditions
(Source: statista.com)

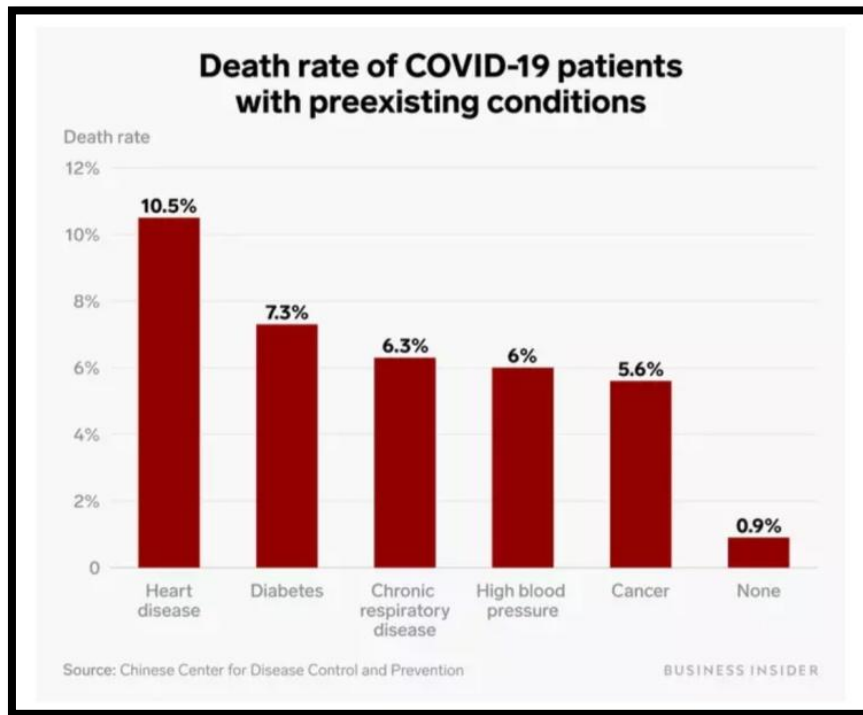


Fig. 16. Covid-19 death Rate by Pre-Existing health conditions
(Source: *statista.com*)

11.2 Treatment Strategy of COVID 19

It is important that regarding to clinical characteristics, diagnose, treatment options, and outcomes for COVID-19 new data updating nearly in every hour. Optimized supportive care is require to remains in the backbone of therapy. Efficacy of clinical treatment for the subsequent agents is still under clinical trials.

11.3 General Treatment

Complete bed rest and supportive treatment are need for a confirmed patient of COVID 19 patients that ensuring the adequate calorie and water intake to reduce the risk of dehydration during infection. In this situation need for water electrolyte balance and homeostasis for maintain It is require to keeping respiratory tract unobstructed and inhaling oxygen in more severe condition. After infection blood count measure, C reactive protein measure, urine test should be require and other blood biochemical indexes including liver and kidney function, myocardial enzyme spectrum, and coagulation function according to COVID 19 patient's conditions. Chest imaging also should be requiring continuously [27].

11.4 Symptomatic Treatment

If the infected person suffering with high fever and body temperature of patients exceeds 38.5 °C antipyretic drug treatment should be. Warm water bath and antipyretic patches should be preferred for lower the body temperature [28]. Common drugs like ibuprofen orally 5–10 mg/kg and acetaminophen orally 10– 15 mg/kg use every time during infection.

11.5 Oxygen Therapy

The novel Coronavirus targets the lungs so there are high chances of hypoxia. Mask of oxygen and Nasal catheter should be immediately provided to the COVID 19 infected patient. When conditions are very critical this time non-invasive or invasive mechanical ventilation should be provided to the infected patient [29].

11.6 Antiviral Drugs

According to the National Health Commission (NHC) some antiviral drugs like interferon α (IFN- α), lopinavir/ritonavir, chloroquine phosphate, ribavirin, and arbidol are used as therapeutically for the Prevention, Diagnosis, and Treatment of Novel Coronavirus-induced Pneumonia. In the

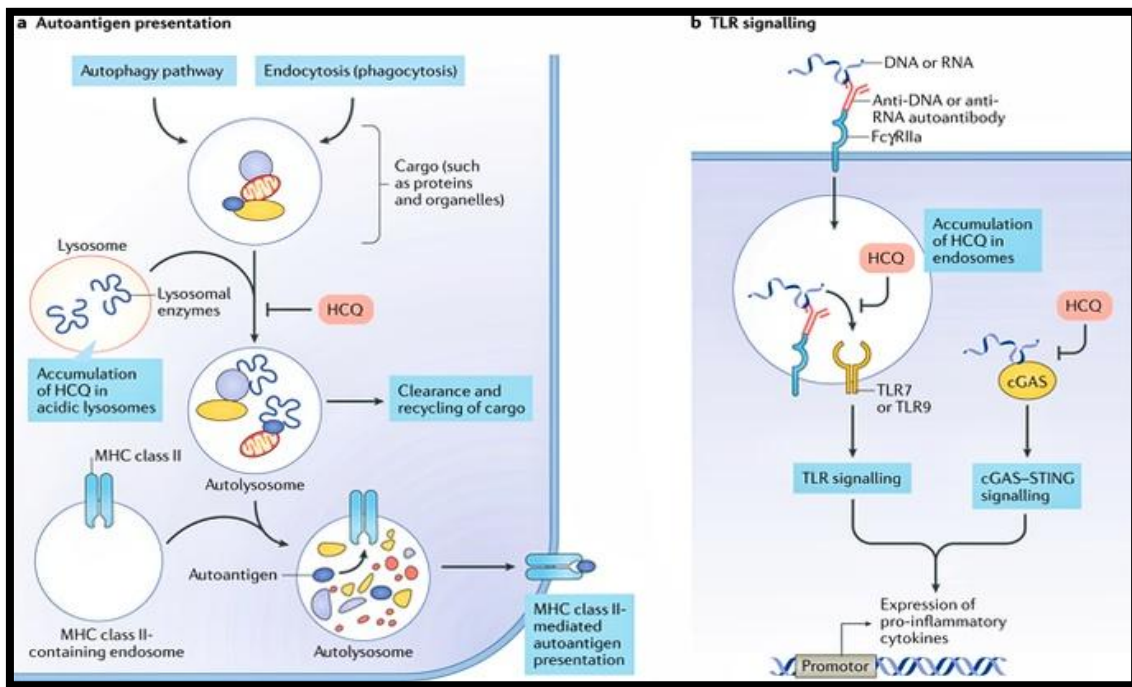


Fig. 17. Mechanism of action of Hydroxychloroquine
(Source: nature.com)

form of vapour inhalation IFN- α is administered (dose of 5 million U and 2 mL of sterile water for injection) for adults person 2 times/day. Lopinavir/ritonavir (dosage is 400 mg/100 mg) for adults person 2 times/day. Ribavirin should be use via intravenous infusion combination with IFN- α or lopinavir/ritonavir (dose of 500 mg) for adult person 2 to 3 times/day. Chloroquine phosphate is use (dose of 500 mg and 300 mg for only chloroquine) for adults infected person 2 times/day [Fig. 17] [30]. Arbidol is also use (dose of 200 mg) for adults COVID 19 patients 3 times/day. The duration of treatment for COVID 19 patients is no more than 10 days. According to recent study new drug favipiravir is under clinical trial for treating COVID-19. China approved that it is useful drug for treating Novel Influenza virus, on February 15, 2020. This drug acts as inhibitor and inhibiting the enzyme RNA dependent RNA Polymerase. This drug is also capable of blocking the replication of flavi-, alpha-, filo-, bunya-, arena-, noro-, and other RNA viruses.

11.7 Boost Your Immune System

Strong immune system is responsible for basic illness and real defense against disease. People body is capable to fight against disease when the immune system is strong. According to Dr. Tom

Moorcroft an osteopathic doctor who specializes in infectious disease it is time to focus on all the health habits of people and they start daily activities and food choices that support people's health. In his pandemic critical situation people get sleep, fresh air and sunlight daily [31] [Fig. 18].

12. PREVENTION & PRECAUTION OF COVID-19

According to WHO latest information on the COVID 19 outbreak people should stay aware and Follow the directions of your local health authority, avoid close contacts, prevent secondary infections, health care workers and prevent further international spread. Most of the individuals who infected with COVID 19 suffering with mild illness and recover it but if its infection can be more severe for other individuals [32]. To take care of personal hygiene some steps should be followed [Fig. 19]:

1. At least 20 seconds should be wash our hands regularly with soap and water or with an alcohol based hand rub (hand sanitizer that contains at least 60% alcohol) after visited a public place or after blowing nose and sneezing or coughing.

2. Virus to take entere through our nose, eyes or mouth so try to avoid touching these organs with unwashed hands when came from outside.
3. Social distancing should be maintain (at least 1 meter or 3 feet distance between each other) and avoid close contact and who is coughing or sneezing. When infected individuals cough or sneeze, they spread small droplets from their nose and mouth which may contain COVID-19 virus and infected to other.
4. To avoid large mass gatherings and take steps to protect others and avoid public transportation
5. If feeling unwell stay at home and immediately going to get medical care and consult online to doctor.
6. Cover mouth and nose with tissue paper when cough or sneeze and wash hands immediately with antiseptic soap and water.
7. When visited around other place if possible to stay isolated in a separate room from family and pets and try to wear a facemask.
8. If suffering sick and try to avoid sharing bedding, dishes, glasses to other family items and try use a separate bathroom and toilets from the family.
9. Use detergent or antiseptic soap & water for clean surface.
10. Apply disinfectant daily for cleaning of desks, phones, keyboards, toilets, faucets, tables, doorknobs, light switches, countertops, handles, and sinks.

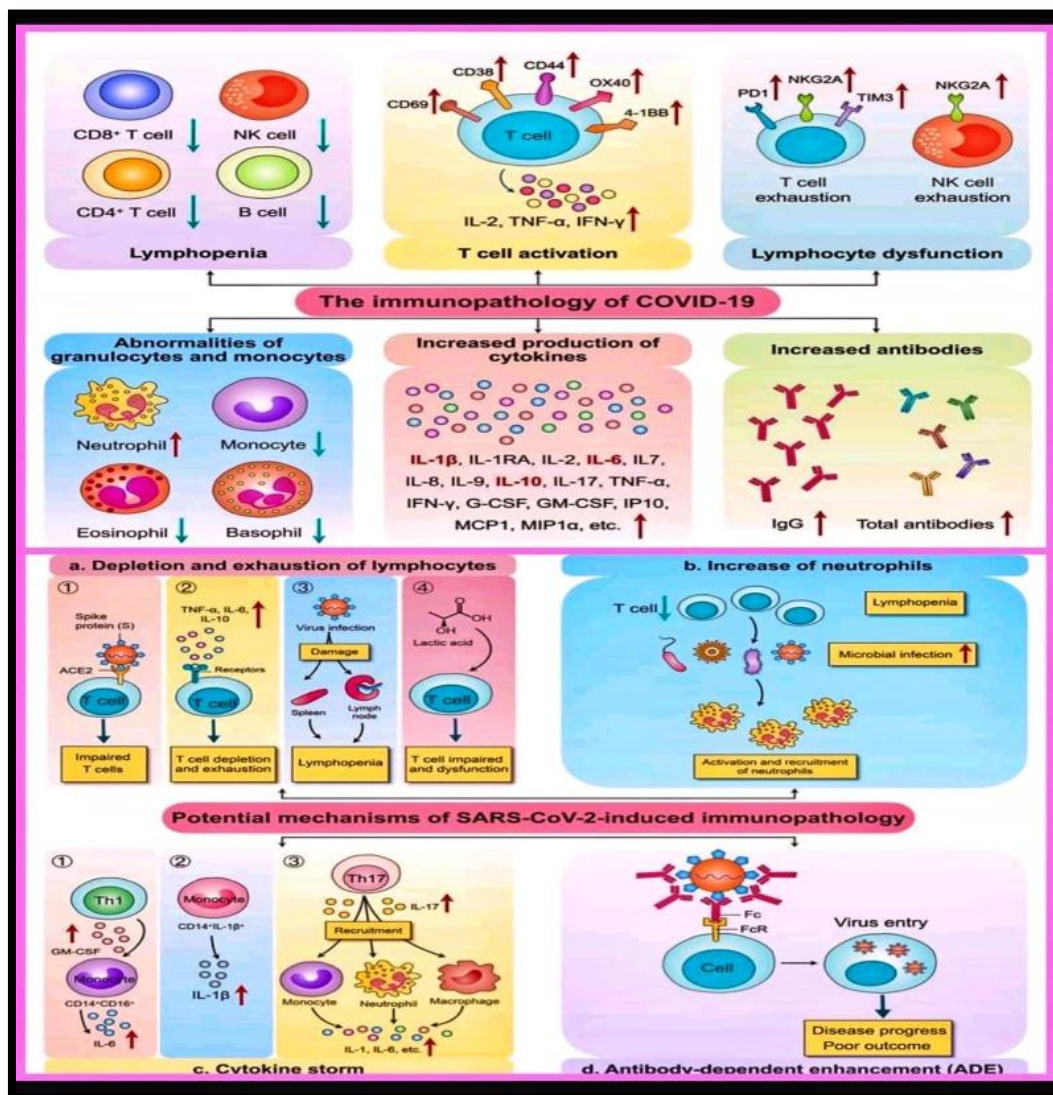


Fig. 18. Immune system against corona virus

(Source: nature.com)



Fig. 19. Prevention & Precaution of COVID-19
(Source: twitter.com)

13. CONCLUSION

In this review we conclude that the COVID-19 disease is dynamic and continues to rapidly evolve. About COVID-19 there are still many open questions. Through our literature survey it is evidence that there are many cases where patients confirmed with COVID-19 infection have no chest CT abnormalities. It is very crucial that screening asymptomatic COVID 19 patients with chest CT be determined. Crisis chance of RT-PCR kits may also be increased because cases of COVID 19 infection arises. In the absence of RT-PCR chest CT being utilized to aid diagnosis. This recent case reported from China and all over world. Because of the progression of the lung changes of COVID-19 on CT imaging is also similar to SARS. It is thought this two infectious virus agents are part of the Coronavirus family. Based on the number of confirmed cases and

deaths SARS virus had a mortality rate of 9.5% while current novel coronavirus had a mortality rate around 2%. The role of imaging in guiding or monitoring medical therapy it does not address in the infected individuals. COVID 19 disease has a vast effect on world where only proper medication sanitization and also social distancing will help us.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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