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A review: Transmission of novel corona virus (Covid-19) disease effect on animals

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Abstract
Corona virus is causes respiratory infection which includes pneumonia, cold, sneezing and coughing and body temperature variation, digestion imbalance (diarrhea) and respiratory infection in humans. Corona virus transmitted human to human or human to animal via airborne droplets. Corona virus enters and affected in animals, some researchers have identified some specific types of cell in a nose that are the primary infection, and from mouth, sexually transmit contact through membrane and angiotensin converting enzyme-2(ACE)-2 exopeptidase receptor. WHO and European center for disease prevention and control (ECDC) advised to avoid public place and close contact to infected persons and pet animals. Initially, Corona virus (2019-nCoV) was isolated from Wuhan market China on 7th Jan 2020. While the majority of cases result in mild symptoms, some progress to pneumonia and multiorgan failure. The death per number of diagnosed cases is estimated at between 1% and 5%, but varies by age and other health conditions. The infection is spread from one person to others via respiratory droplets, often produced during coughing and sneezing. It takes 2–14 days to develop symptoms from the day of exposure. Reverse transcription-polymerase chain reaction (RT-PCR) from a nasopharyngeal swab or oropharyngeal swab is the standard method of diagnosis. The infection can also be diagnosed from a combination of symptoms, risk factors, and a chest computed tomography scan showing features of pneumonia. Measures recommended to prevent the disease include frequent hand washing, maintaining distance from other people, and not touching one's face. The use of masks is recommended for those who are suspected to have the virus and to their caregivers, but not the general public. As of still, there is no vaccine or specific antiviral treatment for COVID-19; management involves treatment of symptoms, supportive care, and experimental measures. The World Health Organization declared the 2019–2020 CoV outbreak a pandemic and a Public Health Emergency of International Concern.

Keywords: coronavirus, covid-19, mers-cov, sars-cov, wuhan, ecdc, ace-2 exopeptidase receptor.

Introduction

History and Origin

First case of corona virus was notified as cold in 1960. According to the Canadian study 2001, approximately 500 patients were identified as Flu-like system; 17-18 cases of them were confirmed as infected with corona virus strain by polymerase chain reaction. Corona was treated as simple non-fatal virus till 2002. In 2003, different reports published with the proofs of spreading the corona to many countries such as United States America, Hong Kong, Singapore, Thailand, Vietnam and in Taiwan. Several case of severe acute respiratory syndrome caused by corona and their mortally more than 1000 patient was reported in 2003. This was the black year for microbiologist. When microbiologist was started focus to understand these problems. After a deep exercise they conclude and understand the pathogenesis of disease and discovered as corona virus. But till total 8096 patient was confirmed as infected with corona virus. So, in 2004, World health organization and centres for disease control and prevention declared as "state emergency". Another study report of Hong Kong was confirmed 50 patients of severe acute respiratory syndrome while 30 of them where confirmed as corona virus infected. In 2012, Saudi Arabian reports were presented several infected patient and deaths. COVID-19 was first identified and isolated from pneumonia patent belongs to Wuhan, china.

Sample collection method

Selection of patient for testing: o Any Patient who satisfies the testing "Criteria for SARI/COVID-19" as prescribed by State or Central Government. o any patient identified by "As a suspected case of SARI/ COVID-19" the treating doctor

Steps to be followed for specimen collection using aseptic method

1. Nasal swab and/or throat swab specimens is to be collected as per GOI guidelines.
2. Sample collection area should be kept clean and table or work surface should be properly disinfected with surgical spirit.
3. Collect required details from the patient and fill the sample collection form.
4. Ensure that patient is seated in a comfortable seating position.
5. Clearly explain the sample collection procedure to ensure full cooperation from the patient.
6. Wear appropriate personal protective equipment (PPE)

such as gloves, apron, N95 mask, head cap, goggles before starting the procedure.

7. Label the specimen collection vial containing VTM with the unique participant/ sample ID. 8. Specimen should be collected under good illumination.

2. Throat/ oro-pharyngeal swab collection

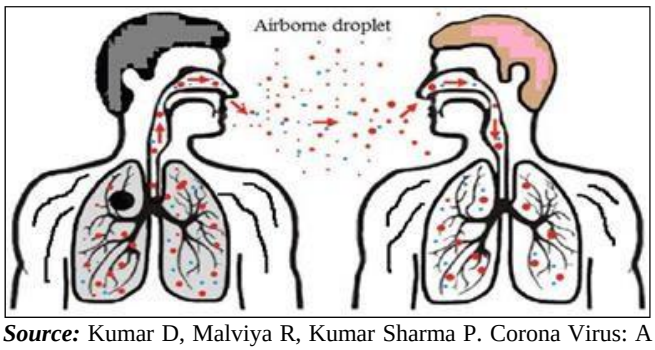
a. Gently tilt the patient's head back
b. Steady the chin
c. Ask the patient to open his/her mouth
d. Use a disposable tongue depressor to hold the tongue well
e. Insert a sterile swab
f. Swab both the tonsils and the posterior pharynx vigorously with a rotating motion, till the patient starts to gag
g. Remove the swab without touching the tongue.
h. The swab is then placed in the labelled tube containing VTM
i. The applicator stick is broken off at the indicated mark (if provided) or at below the level of the tube opening
j. Close and tightly screw cap the tube.

Identified and structure of corona virus

Corona virus is spherical or pleomorphic, single stranded, enveloped RNA and covered with club shaped glycoprotein. Corona viruses are four sub types such as alpha, beta, gamma and delta corona virus. Each of sub type corona viruses has many serotypes. Some of them were affect human of other affected animals such as pigs, birds, cats, mice and dogs

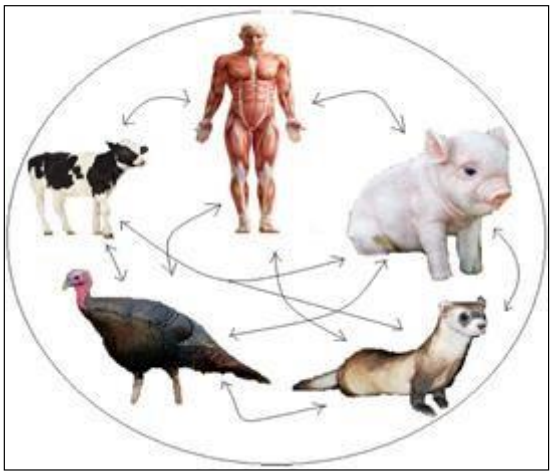
Mode of Spreading

Peoples can get the infection through close contact with a person who has symptoms from the virus includes cough and sneezing. Generally, corona virus was spread via airborne zoonotic droplets. Virus was replicated in ciliated epithelium layer that caused cellular damage and infection at infection site. According to a study published in 2019, Angiotensin converting enzyme 2 (ACE.2), a membrane exopeptidase in the receptor used by corona virus in entry to human cells. Virus Transmission routes were represented in figure 1 and 2.



Source: Kumar D, Malviya R, Kumar Sharma P. Corona Virus: A Review of COVID-19. EJMO 2020; 4(1):8–25.

Fig 1: Transmission of corona virus via airborne droplets.



Source: Kumar D, Malviya R, Kumar Sharma P. Corona Virus: A Review of COVID-19. EJMO 2020; 4(1):8–25.

Fig 2: Corona virus transfer human to another animal.

Prevention

There is nothing to provide complete guidance to prevent from corona virus but some guidelines were presented by WHO and ECDC. Basically, these guidelines are good profession to set during the caring of infected patient. Some studies evidences were presented by studies about human to human transmission of corona from Wuhan, china. Another study said airborne transmission of virus while no one was presenting the solid evidence. As the lack of transmission evidence health professionals were not able to present prevention guidelines. According to WHO, some general guidelines were published such as separate the infected patient from other family member to single room, implementation of contact and droplet precaution, airborne precaution etc. European Centre for Disease Prevention and Control (ECDC) also published the information leaflet to peoples i.e. Avoid contact with sick people, in particular those with a cough. Avoid visiting markets and places where live or dead animals are handled, wash your hands with soap and water or use an alcohol based disinfectant solution before eating, after using the toilet and after any contact with animals, avoid contact with animals, their excretions or droppings.

Pathogenesis and Clinical Features of Coronavirus Disease-19

All ages are susceptible. Infection is transmitted through large droplets generated during coughing and sneezing by symptomatic patients, but can also occurs from asymptomatic people and before the onset of symptoms. Studies have shown higher viral loads in the nasal cavity as compared to the throat, with no difference in viral burden between symptomatic and asymptomatic people. Patients can be infectious for long as the symptoms last and even on clinical recovery. These infected droplets can spread 1–2 m and deposit on surfaces. The virus can remain viable on surfaces for days in favorable atmospheric conditions, but are destroyed in less than a minute by common disinfectants

Such as sodium hypochlorite and hydrogen peroxide. Infection is acquired either by inhalation of these droplets or touching surfaces contaminated by them or then touching the nose, mouth, and eyes. The virus is also present in the stool, and contamination of the water supply and subsequent transmission via aerosolization/ fecooral route is also hypothesized. The incubation period varies from 2 to 14 days (median 5–7 days). Studies have identified angiotensin receptor 2 as the receptor through which the virus enters the respiratory mucosa. The basic case reproduction rate is estimated to range from 2 to 6.47 in various modeling studies. The clinical features of COVID-19 are varied, ranging from a symptomatic state to acute respiratory distress syndrome (ARDS) and multiorgan dysfunction. Fever, cough, sore throat, headache, fatigue, headache, myalgia, and breathlessness are the common clinical features of COVID-19. Conjunctivitis has also been described. In a subset of patients, by the end of the 1st week, the disease can progress to pneumonia, respiratory failure, and death. This progression is associated with extreme rise in inflammatory cytokines including interleukin (IL) IL-2, IL-7, IL-10, GCSF, IP10, MCP1, MIP1A, and tumor necrosis factor-alpha. The median time from the onset of symptoms to develop dyspnea was 5 days, hospitalization was 7 days, and ARDS was 8 days. The need for intensive care admission was in 15%–25% of the affected patients in the published literature. Complications included acute lung injury, ARDS, shock, and acute kidney injury. Recovery started in the 2nd or 3rd week. The median duration of hospital stays in those who recovered was 10 days. Adverse outcomes and death are more common in the elderly and those with underlying comorbidities (50%–75% of fatal cases). Fatality rate in hospitalized adult patients ranged from 4% to 11%. The overall case fatality rate is estimated to range between 2% and 3%.

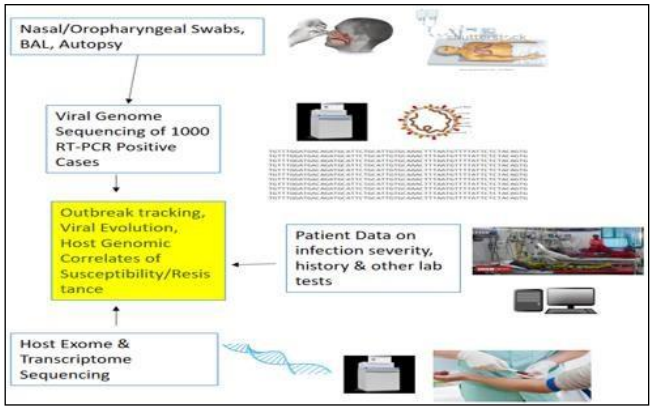
Diagnosis

A suspect case is defined as one with fever, sore throat, cough, and difficulty in breathing, who has a history of travel to China or other areas of persistent local transmission or contact with patients with similar travel history or those with confirmed COVID-19 infection. However, cases may be asymptomatic or even without fever. A confirmed case is a suspect case with a positive molecular test. Specific diagnosis is by specific molecular tests on respiratory samples (oropharyngeal swab/nasopharyngeal swab/sputum/endotracheal aspirates and bronchoalveolar lavage). Virus may also be detected in the stool and in severe cases, the blood. In a suspect case in India, the appropriate sample has to be sent to designated reference labs earmarked by the Government of India or the National Institute of Virology in Pune. The white cell count is usually low. There may be lymphopenia; a lymphocyte count <1000 has been associated with severe disease. The platelet count is usually normal or mildly low. The C-reactive protein and erythrocyte sedimentation rate is generally elevated, but procalcitonin levels are usually normal. A high procalcitonin level may indicate a bacterial co-infection. The alanine aminotransferase/aspartate aminotransferase, prothrombin time, creatinine, D-dimer, creatine phosphokinase, and lactic acid dehydrogenase may be elevated, and high levels are associated with severe disease. The chest X-ray usually shows bilateral infiltrates, but may be normal in early disease. Computed tomography (CT) is more sensitive and specific. CT imaging generally shows infiltrates, ground glass opacities, and subsegmental consolidation. It is also abnormal in asymptomatic patients/patients with no clinical evidence of lower respiratory tract involvement. In fact, abnormal CT scans have been used to diagnose COVID-19 in suspect cases with negative molecular diagnosis; many of these patients had positive molecular tests on repeat testing. Although the virus (SARS-Cov-2) nucleic acid reverse transcription-polymerase chain reaction (PCR) test has become the standard method for the diagnosis of SARS-CoV-2 infection, these real-time PCR kits have many limitations including accessibility and availability issues. There are various serological tests based on immunoglobulin M (IgM)/IgG antibody detection, suitable for the qualitative detection of CoV (SARS-CoV-2/COVID-19) these include ELISA tests, rapid Chromatographic tests and others. IgM antibody generally begins to rise within 1 week of initial infection. IgG appears about 14 days after infection. Validation process is under way in China, Europe, and the USA. The results have been very promising with the advantages of rapid results, accuracy (high sensitivity [~89%] and specificity [~93%]), low cost, ease of use, easy accessibility, fast screening of COVID-19 infections, etc.

Differential Diagnosis

All types of respiratory viral infections (influenza, parainfluenza, respiratory syncytial virus, adenovirus, human metapneumovirus, and non-COVID-19 CoV), atypical organisms (mycoplasma and chlamydia), and bacterial infections have been included in the differential diagnosis of COVID-19. it is not possible to differentiate COVID-19 from these infections clinically or through routine laboratory tests. Therefore, travel history becomes important.

SARS-Cov-2 Genome Sequencing Procedure



Source: WHO guidelines

Fig: 3 SARS-Cov-2 Genome Sequencing

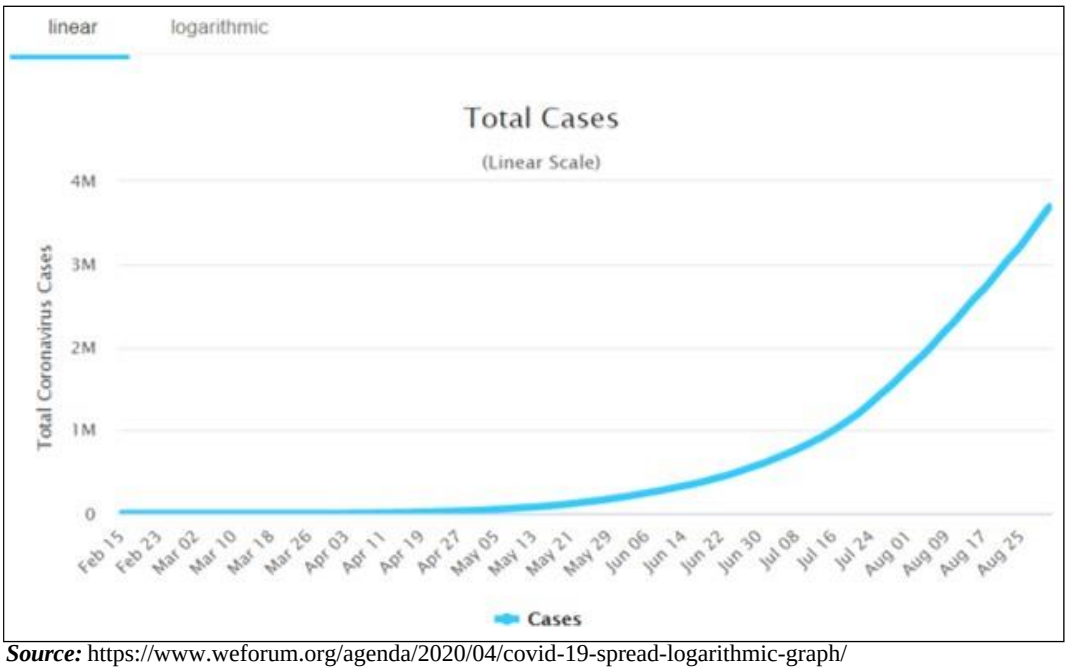
Treatment

Till date, no confirmed or approved treatment and vaccination is available and hence the treatment is essentially supportive and symptomatic. The first step is to ensure adequate isolation to prevent transmission to other contacts, patients, and healthcare workers. Mild illness should be managed at home with counseling about danger signs. The usual principles are maintaining hydration and nutrition and controlling fever and cough. In hypoxic

patients, provision of oxygen through nasal prongs, face mask, high flow nasal cannula, or noninvasive ventilation is indicated. Mechanical ventilation and even extracorporeal membrane oxygen support may be needed. Renal replacement therapy may be needed in some cases. Antibiotics and antifungals are required if co-infections are suspected or proven. Multiple trials are ongoing on the use of various drugs including hydroxychloroquine, oseltamivir, ritonavir, and lopinavir. Detailed guidelines for critical care management for COVID-19 have been published by the WHO.

In the case series of 99 hospitalized patients with COVID-19 infection from Wuhan, oxygen was given to 76%, noninvasive ventilation in 13%, mechanical ventilation in 4%, extracorporeal membrane oxygenation in 3%, continuous renal replacement therapy in 9%, antibiotics in 71%, antifungals in 15%, glucocorticoids in 19%, and intravenous immunoglobulin therapy in 27%. Antiviral therapy consisting of oseltamivir, ganciclovir, lopinavir, and ritonavir was given to 75% of the patients. The duration of noninvasive ventilation was 4–22 days (median 9 days) and mechanical ventilation for 3–20 days (median 17 days). In the case series of children discussed earlier, all children recovered with basic treatment and did not need intensive care. There is anecdotal experience with the use of remdesvir, a broad-spectrum anti-RNA drug developed for Ebola in the management of COVID-19. More evidence is needed before these drugs are recommended. Other drugs proposed for therapy are arbidol (an antiviral drug available in Russia and China), intravenous immunoglobulin, interferons, chloroquine, and plasma of patients recovered from COVID-19.

CoV-2019 Confirmed Cases Report (Date wise in India)



Source: https://www.weforum.org/agenda/2020/04/covid-19-spread-logarithmic-graph/

Fig 3: It shows the how to identify the corona virus genome sequencing

Spreading History of 2019-nCoV in India and Karnataka

On 31 Dec. 2019, China, East Asia, most populated country in world was informed to WHO regarding pneumonia cases with unknown etiology. Till 3 Jan. 2020 a total of 44 pneumonia cases were detected. On 7 Jan2020, Chinese research authorities were announced that they were isolated new virus from sea food market in Wuhan city; Named as 2019-nCoV. 30 Jan. 2020 (Philippines, India, Finland), and in first case is reported in Kerala state in India He is also have a travel history. **On 24 February,** IT professional who worked at a tech park in the outskirts of Bengaluru and stayed in a PG accommodation. He travelled to Dubai on an assignment on 15 February and returned to Bengaluru on 20 February. He attended office for two days 20 and 21 February before taking the bus to Hyderabad in neighbouring Telangana. His samples had tested positive on 24 February in Hyderabad.

Table 1: Covid-19 cases in Karnataka, India

COVID-19 cases in Karnataka, India		
Deaths	**Recoveries**	**Active cases**
Date	**# of cases**	**# of deaths**
2020-03-10	2(n.a.)	1(n.a.)
2020-03-11	2(=)	1(=)
2020-03-12	2(=)	1(=)
2020-03-13	2(=)	1(=)
2020-03-14	2(=)	1(=)
2020-03-15	2(=)	1(=)
2020-03-16	2(=)	1(=)

2020-03-17	2(=)	1(=)
2020-03-18	3(+50%)	1(=)
2020-03-19	3(=)	1(=)
2020-03-20	3(=)	1(=)
2020-03-21	3(=)	1(=)
2020-03-22	3(=)	1(=)
2020-03-23	6(+100%)	1(=)
2020-03-24	6(=)	1(=)
2020-03-25	7(+17%)	2(+100%)
2020-03-26	9(+29%)	2(=)
2020-03-27	10(+11%)	3(+50%)
2020-03-28	10(=)	3(=)
2020-03-29	12(+20%)	3(=)
2020-03-30	14(+17%)	3(=)
2020-03-31	15(+7.1%)	3(=)
2020-04-01	16(+6.7%)	3(=)
2020-04-02	17(+6.2%)	3(=)
2020-04-03	19(+12%)	4(+33%)
2020-04-04	20(+5.3%)	4(=)
2020-04-05	27(+35%)	4(=)
2020-04-06	35(+30%)	4(=)
2020-04-07	41(+17%)	5(+25%)
2020-04-08	41(=)	5(=)
2020-04-09	46(+12%)	6(+20%)
2020-04-10	49(+6.5%)	6(=)
2020-04-11	55(+12%)	6(=)
2020-04-12	72(+31%)	7(+17%)
2020-04-13	80(+11%)	10(+43%)
2020-04-14	91(+14%)	11(+10%)
2020-04-15	101(+11%)	13(+18%)
2020-04-16	107(+5.9%)	14(+7.7%)
2020-04-17	114(+6.5%)	14(=)
2020-04-18	126(+11%)	14(=)
2020-04-19	134(+6.3%)	16(+14%)
2020-04-20	136(+1.5%)	17(+6.2%)
2020-04-21	151(+11%)	17(=)
2020-04-22	166(+9.9%)	18(+5.9%)
2020-04-23	175(+5.4%)	18(=)
2020-04-24	192(+9.7%)	18(=)
2020-04-25	207(+7.8%)	18(=)
2020-04-26	216(+4.3%)	20(+11%)
2020-04-27	228(+5.6%)	21(+5%)
2020-04-28	241(+5.7%)	22(+4.8%)
2020-04-29	250(+3.7%)	22(=)
2020-04-30	269(+7.6%)	23(+4.5%)
2020-05-01	296(+10%)	24(+4.3%)
2020-05-02	315(+6.4%)	25(+4.2%)
2020-05-03	341(+8.3%)	26(+4%)
2020-05-04	361(+5.9%)	27(+3.8%)
2020-05-05	375(+3.9%)	29(+7.4%)
2020-05-06	403(+7.5%)	29(=)
2020-05-07	417(+3.5%)	30(+3.4%)
2020-05-08	427(+2.4%)	30(=)
2020-05-09	441(+3.3%)	30(=)
2020-05-10	486(+10%)	31(+3.3%)
2020-05-11	489(+0.62%)	31(=)
2020-05-12	502(+2.7%)	32(+3.2%)
2020-05-13	534(+6.4%)	33(+3.1%)
2020-05-14	556(+4.1%)	35(+6.1%)
2020-05-15	599(+7.7%)	36(+2.9%)
2020-05-16	619(+3.3%)	36(=)
2020-05-17	647(+4.5%)	37(+2.8%)
2020-05-18	694(+7.3%)	37(=)
2020-05-19	747(+7.6%)	40(+8.1%)
2020-05-20	795(+6.4%)	41(+2.5%)
2020-05-21	834(+4.9%)	41(=)
2020-05-22	910(+9.1%)	41(=)
2020-05-23	1,050(+15%)	42(+2.4%)

2020-05-24	1,182(+13%)	42(=)
2020-05-25	1,296(+9.6%)	44(+4.8%)
2020-05-26	1,414(+9.1%)	44(=)
2020-05-27	1,525(+7.9%)	47(+6.8%)
2020-05-28	1,655(+8.5%)	47(=)
2020-05-29	1,925(+16%)	48(+2.1%)
2020-05-30	2,075(+7.8%)	49(+2.1%)
2020-05-31	2,538(+22%)	51(+4.1%)
2020-06-01	2,769(+9.1%)	52(+2%)
2020-06-02	3,195(+15%)	53(+1.9%)
2020-06-03	3,593(+12%)	53(=)
2020-06-04	3,954(+10%)	57(+7.5%)
2020-06-05	4,833(+22%)	57(=)
2020-06-06	5,211(+7.8%)	59(+3.5%)
2020-06-07	5,450(+4.6%)	61(+3.4%)
2020-06-08	5,758(+5.7%)	64(+4.9%)
2020-06-09	5,919(+2.8%)	66(+3.1%)
2020-06-10	6,039(+2%)	69(+4.5%)
2020-06-11	6,243(+3.4%)	72(+4.3%)
2020-06-12	6,514(+4.3%)	79(+9.7%)
2020-06-13	6,821(+4.7%)	81(+2.5%)
2020-06-14	7,000(+2.6%)	86(+6.2%)
2020-06-15	7,213(+3%)	88(+2.3%)
2020-06-16	7,530(+4.4%)	94(+6.8%)
2020-06-17	7,734(+2.7%)	102(+8.5%)
2020-06-18	7,944(+2.7%)	114(+12%)
2020-06-19	8,281(+4.2%)	124(+8.8%)
2020-06-20	8,697(+5%)	132(+6.5%)
2020-06-21	9,150(+5.2%)	137(+3.8%)
2020-06-22	9,399(+2.7%)	142(+3.6%)
2020-06-23	9,721(+3.4%)	150(+5.6%)
2020-06-24	10,118(+4.1%)	164(+9.3%)
2020-06-25	10,560(+4.4%)	170(+3.7%)
2020-06-26	11,005(+4.2%)	180(+5.9%)
2020-06-27	11,923(+8.3%)	191(+6.1%)
2020-06-28	13,190(+11%)	207(+8.4%)
2020-06-29	14,295(+8.4%)	226(+9.2%)
2020-06-30	15,242(+6.6%)	246(+8.8%)
2020-07-01	16,514(+8.3%)	253(+2.8%)
2020-07-02	18,016(+9.1%)	272(+7.5%)
2020-07-03	19,710(+9.4%)	293(+7.7%)
2020-07-04	21,549(+9.3%)	335(+14%)
2020-07-05	23,474(+8.9%)	372(+11%)
2020-07-06	25,317(+7.9%)	401(+7.8%)
2020-07-07	26,815(+5.9%)	416(+3.7%)
2020-07-08	28,877(+7.7%)	470(+13%)
2020-07-09	31,105(+7.7%)	486(+3.4%)
2020-07-10	33,418(+7.4%)	543(+12%)
2020-07-11	36,216(+8.4%)	613(+13%)
2020-07-12	38,843(+7.3%)	684(+12%)
2020-07-13	41,581(+7%)	757(+11%)
2020-07-14	44,077(+6%)	842(+11%)
2020-07-15	47,253(+7.2%)	928(+10%)
2020-07-16	51,422(+8.8%)	1,032(+11%)
2020-07-17	55,115(+7.2%)	1,147(+11%)
2020-07-18	59,652(+8.2%)	1,240(+8.1%)
2020-07-19	63,772(+6.9%)	1,331(+7.3%)
2020-07-21	67,420(+5.7%)	1,403(+5.4%)
2020-07-22	75,833(+12%)	1,519(+8.3%)
2020-07-23	80,863(+6.6%)	1,616(+6.4%)
2020-07-24	85,870(+6.2%)	1,724(+6.7%)
2020-07-25	90,942(+5.9%)	1,796(+4.2%)
2020-07-26	96,141(+5.7%)	1,878(+4.6%)
2020-07-28	107,001(+11%)	2,055(+9.4%)
2020-07-29	112,504(+5.1%)	2,147(+4.5%)
2020-07-30	118,632(+5.4%)	2,230(+3.9%)
2020-07-31	124,115(+4.6%)	2,314(+3.8%)
2020-08-01	129,287(+4.2%)	2,412(+4.2%)

2020-08-02	134,819(+4.3%)	2,496(+3.5%)
2020-08-03	139,571(+3.5%)	2,594(+3.9%)
2020-08-04	145,830(+4.5%)	2,704(+4.2%)
2020-08-05	151,449(+3.9%)	2,804(+3.7%)
2020-08-06	158,254(+4.5%)	2,897(+3.3%)
2020-08-07	164,924(+4.2%)	3,010(+3.9%)
2020-08-08	172,102(+4.4%)	3,103(+3.1%)
2020-08-09	178,087(+3.5%)	3,210(+3.4%)
2020-08-10	182,354(+2.4%)	3,324(+3.6%)
2020-08-11	188,611(+3.4%)	3,410(+2.6%)

Source: https://en.m.wikipedia.org/wiki/COVID-19_pandemic_in_Karnataka

Prevention

As of now, no approved treatments are available for this infection, hence prevention is crucial. Several properties of this virus make prevention difficult such as non-specific features of the disease, the infectivity even before the onset of symptoms in the incubation period, transmission from asymptomatic people, long incubation period, tropism for mucosal surfaces such as the conjunctiva, prolonged duration of the illness, and transmission even after clinical recovery. Isolation of confirmed or suspected cases with mild illness at home is recommended. The ventilation at home should be good with sunlight to allow for the destruction of virus. Patients should be asked to wear a simple surgical mask and practice cough hygiene. Caregivers should be asked to wear a surgical mask when in the same room with the patient and use frequent hand hygiene. The greatest risk in COVID-19 is transmission to the health-care workers involved in the care of COVID-19 patients, and those who are elderly and/or with the underlying health conditions (e.g., hypertension, diabetes, cardiovascular disease, chronic respiratory disease, and cancer) are considered to be more at risk of developing the severe symptoms of COVID-19. In the SARS outbreak of 2002, 21% of those affected were health-care workers. It is important to protect health-care workers to ensure continuity of care and to prevent transmission of infection to other patients. While COVID-19 transmits as a droplet pathogen and is placed in Category B of infectious agents (highly pathogenic H5N1 and SARS), by the China National Health Commission, infection control measures recommended are those for Category A agents (cholera and plague). Patients should be placed in separate rooms or cohorted together. The rooms, surfaces, and equipment should undergo regular decontamination, preferably with sodium hypochlorite. Health-care workers should be provided with fit tested N95 respirators and protective suits and goggles. Airborne transmission precautions should be taken during aerosol-generating procedures such as intubation, suction, and tracheostomies. All contacts including health-care workers should be monitored for the development of symptoms of COVID-19. Patients can be discharged from isolation once they are afebrile for at least 3 days and have two consecutive negative molecular tests at 1-day sampling interval. Negative molecular tests are not a prerequisite for discharge. At the community level, people should be asked to avoid crowded areas and postpone nonessential travel to places with ongoing transmission. They should be asked to practice cough hygiene by coughing in sleeve/tissue rather than hands and practice hand hygiene frequently. Patients with respiratory symptoms should be asked to use surgical masks. The use of mask by healthy people in public places has not shown to protect against respiratory viral infections and is currently not recommended by the WHO. The international response has been dramatic. Initially, there were massive travel restrictions to China, and people returning from China/evacuated from China are being evaluated for clinical symptoms, isolated, and tested for COVID-19 for 2 weeks even if asymptomatic. However, now with the rapid worldwide spread of the virus, these travel restrictions have extended to other countries. Whether these efforts will lead to slowing of the viral spread is not known. A vaccine is under development.

Conclusion

Corona virus was spreading human to human to transmission by close contact via airborne droplets generating by coughing, sneezing, kissing and smooching. So, avoid these activities with infected partners and family members. Corona virus may transmit through pet animals such as dog, cat, pig, cow, turkeys so avoid contact and separate them if observed any infection activities like diarrhoea, cold, fever. As per WHO and ECDC guideline avoid the contact with sick person and also avoid the market or public place as per possible. There is no anti corona virus vaccine to prevent.

Reference

1. Centers for Disease Control and Prevention (CDC). Update: Outbreak of severe acute respiratory syndrome--worldwide, 2003. MMWR Morb Mortal Wkly Rep. 2003; 52(12):241-6.
2. World Health Organization. Coronavirus never before seen in humans is the cause of SARS–update 31. Geneva: The Organi- zation, 2003.
3. World Health Organization. Summary of probable SARS cases with onset of illness from, 2003. Available athttp://www.who.int/csr/sars/country/ta-ble2004_04_21/en/index.html. Accessed 14 Feb 2020.
4. Peiris JS, Lai ST, Poon LL, Guan Y, Yam LY, Lim W, *et al.* Coronavi- rus as a possible cause of severe acute respiratory syndrome. Lancet. 2003; 361:1319-25.
5. World Health Organization. WHO Statement Regarding Clus- ter of Pneumonia Cases in Wuhan, China Geneva 2020 [up- dated 9 January 2020 and 14 January 2020]. Available from: https://www.who.int/china/news/detail/09-01-2020-who-statement-regarding-cluster-of pneumoniacases-in-wuhan- china.
6. Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, *et al.* A Novel Coronavirus from Patients
7. With Pneumonia in China, 2019. 24 January 2020. New England Journal of Medicine.
8. Mailles A, Blanckaert K, Chaud P, van der Werf S, Lina B, Caro V, *et al.* First cases of Mid-East respiratory syndrome Corona virus (MERS-CoV) infections in France, investigations and implications for the prevention of human-to-human trans- mission, Euro Surveill. 2013; 18:20502.

9. Buchholz U, Müller MA, Nitsche A, Sanewski A, Wevering N, Bauer-Balci T, *et al.* Contact investigation of a case of human novel coronavirus infection treated in a German hospital, Oc- tober-November 2012. Euro Surveill. 2013; 18:20406.
10. Saif LJ. Animal coronaviruses: what can they teach us about the severe acute respiratory syndrome? Rev Sci Tech. 2004; 23:643-60.
11. Gwaltney JM Jr. Virology and immunology of the common cold. Rhinology. 1985; 23:265.
12. Tyrrell DAJ and Myint SH. Chapter 60: Coronaviruses. In Barson 1 S, editor. Medical microbiology. 4th edition. Galveston: University of Texas Medical Branch at Galveston, 1996.
13. Woo PC, Lau SK, Huang Y, Yuen KY. Coronavirus diversity, phylogeny and interspecies jumping. Exp Biol Med (Maywood). 2009; 234:1117-27.
14. Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y, *et al*. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: A descriptive study. Lancet. 2020; 395:507-13.
15. Xu XW, Wu XX, Jiang XG, Xu KJ, Ying LJ, Ma CL, *et al*. Clinical findings in a group of patients infected with the 2019 novel coronavirus (SARS-Cov-2) outside of Wuhan, China: retrospective case series. BMJ 2020; 368:606.
16. Huang P, Liu T, Huang L, Liu H, Lei M, Xu W, *et al*. Use of chest CT in combination with negative RT-PCR assay for the 2019 novel coronavirus but high clinical suspicion. Radiology. 2020; 295:22-3.
17. Jin YH, Cai L, Cheng ZS, Cheng H, Deng T, Fan YP, *et al*. A rapid advice guideline for the diagnosis and treatment of 2019 novel coronavirus (2019-nCoV) infected pneumonia (standard version). Mil Med Res. 2020; 7:4.
18. Li Z, Yi Y, Luo X, Xiong N, Liu Y, Li S, *et al*. development and clinical application of a rapid IgM-IgG combined antibody test for SARS-CoV-2 infection diagnosis. J Med Virol 2020 Feb 27. Doi: 10.1002/jmv.25727. [Epub ahead of print].
19. Chen ZM, Fu JF, Shu Q, Chen YH, Hua CZ, Li FB, *et al*. Diagnosis and treatment recommendations for pediatric respiratory infection caused by the 2019 novel coronavirus. World J Pediatr 2020 Feb 5. Doi: 10.1007/s12519-020-00345-5. [Epub ahead of print].
20. WHO. Clinical Management of Severe Acute Respiratory Infection When Novel Coronavirus [nCoV] Infection is suspected. Available from: https://www.who.int/publications-detail/clinical-manag ement of-severe-acute-respirat ory-infection-when-nove lcoronavirus- [ncov] -infection-is-suspect ed. [Last accessed on 2020 Mar 20].
21. Xu XW, Wu XX, Jiang XG, Xu KJ, Ying LJ, Ma CL, *et al*. Clinical findings in a group of patients infected with the 2019 novel coronavirus (SARS-Cov-2) outside of Wuhan, China: Retrospective case series. BMJ. 2020; 368:606.
22. Holshue ML, DeBolt C, Lindquist S, Lofy KH, Wiesman J, Bruce H, *et al*. First case of 2019 novel coronavirus in the United States. N Engl J Med. 2020; 382:929-36.
23. Zhang L and Liu Y. Potential interventions for novel coronavirus in China: A systematic review. J Med Virol. 2020; 92:479-90.
24. Jin YH, Cai L, Cheng ZS, Cheng H, Deng T, Fan YP, *et al*. A rapid advice guideline for the diagnosis and treatment of 2019 novel coronavirus (2019-nCoV) infected pneumonia (standard version). Mil Med Res. 2020; 7:4.
25. Chang, Xu H, Rebaza A, Sharma L, Dela Cruz CS. Protecting health-care workers from subclinical coronavirus infection. Lancet Respir Med. 2020; 8:13.
26. https://www.who.int/docs/default-source/coronavi-ruse/ situation-reports/20200121-sitrep-1-2019-ncov. pdf?sfvrsn=20a99c10_4 accessed at 18/02/2020
27. https://www.who.int/docs/default-source/coronavi-ruse/ situation-reports/20200122-sitrep-2-2019-ncov.pdf? sfvrsn=4d5bcbca_2 accessed at 18/02/2020
28. https://www.who.int/docs/default-source/coronavi- ruse/situation-reports/20200123-sitrep-3-2019-ncov. pdf?sfvrsn=d6d23643_8 accessed at 18/02/2020
29. https://www.who.int/docs/default-source/coronavi-ruse/ situation-reports/20200124-sitrep-4-2019-ncov.pdf? sfvrsn=9272d086_8 accessed at 18/02/2020
30. https://www.who.int/docs/default-source/coronavi-ruse/ situation-reports/20200125-sitrep-5-2019-ncov.pdf? sfvrsn=429b143d_8 accessed at 18/02/2020
31. https://www.who.int/docs/default-source/coronavi-ruse/ situation-reports/20200126-sitrep-6-2019--ncov.pdf? sfvrsn=beaeee0c_4 accessed at 18/02/2020
32. https://www.who.int/docs/default-source/coronavi-ruse/ situation-reports/20200127-sitrep-7-2019--ncov.pdf? sfvrsn=98ef79f5_2 accessed at 18/02/2020
33. https://www.who.int/docs/default-source/coronavi-ruse/ situation-reports/20200128-sitrep-8-ncov-cleared.pdf? sfvrsn=8b671ce5_2 accessed at 18/02/2020
34. https://www.who.int/docs/default-source/coronavi-ruse/ situation-reports/20200129-sitrep-9-ncov-v2.pdf? sfvrsn=e2c8915_2 accessed at 18/02/2020
35. https://www.who.int/docs/default-source/corona-viruse/ situation-reports/20200130-sitrep-10-ncov.pdf? sfvrsn =d0b2e480_2 accessed at 18/02/2020
36. https://www.who.int/docs/default-source/corona-viruse/ situation-reports/20200131-sitrep-11-ncov.pdf? sfvrsn =de7c0f7_4 accessed at 18/02/2020
37. https://www.who.int/docs/default-source/corona-viruse/ situation-reports/20200201-sitrep-12-ncov.pdf?sfvrsn =273c5d35_2 accessed at 18/02/2020
38. https://www.who.int/docs/default-source/coronavi-ruse/ situation-reports/20200202-sitrep-13-ncov-v3.pdf? sfvrsn=195f4010_6 accessed at 18/02/2020
39. https://www.who.int/docs/default-source/corona-viruse/ situation-reports/20200203-sitrep-14-ncov.pdf? sfvrsn =f7347413_4 accessed at 18/02/2020
40. https://www.who.int/docs/default-source/corona-viruse/ situation-reports/20200204-sitrep-15-ncov.pdf? sfvrsn =88fe8ad6_4 accessed at 18/02/2020
41. https://www.who.int/docs/default-source/corona-viruse/ situation-reports/20200205-sitrep-16-ncov.pdf? sfvrsn =23af287f_4 accessed at 18/02/2020
42. https://pib.gov.in/PressReleasePage.aspx?PRID=1642869
43. https://www.who.int/docs/default-source/wrindia/india-situation-report-1.pdf?sfvrsn=5ca2a672_0
44. https://en.m.wikipedia.org/wiki/COVID-19_ pandemic_ in_Karnataka
45. The Economic Times. 4 March 2020. Archived from the original on 5 April 2020. Retrieved 18 March 2020.
46. Swapnil Mawal. Novel Corona Virus Outbreak (Covid-19): Its Genomic Structure and Treatments. International Journal of Biology Research,2020;5(2):09-11.