



Short Message to All Healthcare Providers about Coronavirus Infectious Disease-2019 (COVID 19)

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Coronaviruses are a group of related viruses, cause respiratory tract infections in human that can be mild as common cold and can be lethal, such as SARS, MERS, and COVID-19. Coronavirus disease 2019 (COVID-19) is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The disease was first identified in November 2019 in Wuhan, the capital of China's Hubei province, and has since spread globally, resulting in the ongoing 2019–20 coronavirus pandemic [1].

Worldwide, total numbers of cases have reached up to 1,188,486 with recovered cases 244,280 and deaths 64,091. To begin with China was having the most diagnosed cases but currently USA is leading by 302,919 and Spain following by 124,736. This data has been changing dramatically everyday [2].

Clinical features of COVID-19 may appear 2 to 14 days after exposure and can include fever 88%, dry cough 68%, fatigue 38%, coughing up sputum or thick phlegm from the lungs 33%, shortness of breath 19%, bone or joint pain 15%, sore throat 14%, headache 14%, chill 11%, nausea or vomiting 5%, stuffy nose 5%, diarrhea 4%, coughing up blood 1% and swollen eyes 1% [3].

Bat being the potential reservoir [4], there are 4 ways of human to human transmission including contact (direct or via a fomite), droplet infection, airborne e.g. during intubation and feco-oral route [5,6]. This transmission occurs both by symptomatic and asymptomatic patients [5,6]. Median incubation period is 4-5 days and 97% will experience symptoms within 11.5 days of exposure [7,8]. It remains stable for upto 3 hours in the aerosolized form, upto 24 hours on cardboard and upto 3 days on plastic/stainless steel [9].

A type of cell receptors named, ACE2 (Angiotensin Converting Enzyme 2) receptors are found in the lower respiratory tract of

humans, also known as cell receptor for SARS-CoV. Zhou., et al. have confirmed that the SARS-CoV-2 uses the same ACE2 receptors, as SARS-CoV. The virion releases its genome into the cells with the help of these receptors, resulting in viral replication and proliferation, ultimately leading to SARS [4]. Major cause of death in these patients is acute respiratory distress syndrome (ARDS). Other complications include arrhythmias, acute cardiac injury and shock leading to mortalities [10].

The current focus is all on preventing the spread of the disease. The two most effective measures to be taken are hand hygiene and social distancing [11]. Frequent hand washing with an alcohol-based hand rub (laboratory data suggests 60% ethanol and 70% isopropanol) or with soap and water for atleast 20 seconds remove the virus. Social distancing (maintaining distance of minimum of 1 metre) is designed to reduce interactions between people. Examples of social distancing include closing of schools or office buildings, suspension of public markets and cancellation of gatherings. This distancing helps in staying away from the asymptomatic infectious individuals which are not diagnosed yet [12].

Face masks are also emerging as an important preventive measure for this infection. A proper surgical mask, consisting of 3 layers, has the filtration efficiency up to 95%. This mask can be used to avoid infecting others or being infected in public settings. Respirator mask includes N95, N100, KN95, FFP3, FFP2, KF94 etc. with filtration efficacy in order of N100 (99.97%) = FFP3 (99.95%) > N95 (95%) = KN95 (95%) = FFP2 (94%) = KF94 (94%) > KN90 (90%). These respirator masks provide the barrier from direct contact with fluids [13]. As we know that a significant portion of individuals with coronavirus are asymptomatic and can transmit the virus to others before showing symptoms, CDC recommends wearing cloth face coverings in public settings where other social

distancing measures are difficult to maintain (e.g. grocery stores and pharmacies). Although cloth masks lack filtration property but it can prevent the spread of droplets from the asymptomatic infected person [14].

In order to screen the patients, CDC has prioritized the population for screening [15]:

- Priority 1 is given to hospitalized patients and symptomatic healthcare workers.
- Priority 2 is given to patients in long-term care facilities with symptoms, patients 65 years of age and older with symptoms, patients with underlying conditions (cardiovascular diseases, DM, COPD, HTN, cancer) with symptoms and first responders with symptoms.
- Priority 3 is given to Individuals who do not meet any of the above categories with symptoms, critical infrastructure workers with symptoms, health care workers and first responders and individuals with mild symptoms in communities experiencing high COVID-19 hospitalization.

For initial diagnostic testing of COVID-19, recommendation is to collect and test an upper respiratory specimen. Nasopharyngeal specimen is the preferred choice for swab-based SARS-CoV-2 testing. If collection of nasopharyngeal swab is impossible, oropharyngeal (OP), and nasal mid-turbinate (NMT) or anterior nares specimen are acceptable in alternative way. Lower respiratory tract specimens such as sputum or bronchoalveolar lavage (BAL) can also be tested, if available [16].

Healthcare workers (HCWs) are the first line of defence against this pandemic. Screening starts from the screening/triage rooms which should be located outside the emergency room. At triage, all HCWs must apply standard precautions for all patients including use of appropriate personal protective equipment (PPE) according to a risk assessment, environmental surfaces cleaning with water and detergent or chlorinated disinfectant and sterilization of patient-care equipment (stethoscopes, thermometers, BP cuffs, Pulse oximeters etc.). Ensure that all patients cover their nose and mouth with a tissue or elbow when coughing or sneezing. Don't touch your face, eyes or mouth (this is how the virus initially gets into the body). Use face mask or Cough/sneeze into your elbow. Offer a medical mask to patients with suspected COVID-19 while they are in waiting/public areas [17].

HCWs should apply WHO's My 5 Moments for Hand Hygiene approach before touching a patient, before any clean or aseptic procedure is performed, after exposure to body fluid, after touching a patient, and after touching a patient's surroundings [18].

In cases where quarantine at home is advised, a trained HCW should assess residential setting and educate patients and their families, wherever is feasible. Recommendations include placing the patient in a well-ventilated single room, limit the movement in the house, limit the number of caregivers and minimize shared space (e.g. kitchen, bathroom). Maintain hand hygiene and social distancing. Patient should wear medical mask and change daily. Caregivers should wear a medical mask when in the same room as the patient. Use gloves and protective clothing (plastic aprons) for daily cleaning and disinfecting surfaces that are frequently touched in the room where the patient is being cared for. Clean the patient's clothes, bed linen, and bath and hand towels using regular laundry soap and water or machine wash at 60 - 90°C (140 - 194°F) with common household detergent. For mild laboratory confirmed patients who are cared for at home, to be released from home isolation, cases must test negative using PCR testing twice from samples collected at least 24 hours apart [17].

HCWs working in the isolation room of patient with known or suspected COVID-19 must wear dedicated PPE. Such PPE include respirators, apron, head cover, gloves, eye protection and shoe cover. They must know how to properly don, use, and doff PPE in a manner to prevent self-contamination, how to properly dispose of or disinfect and maintain PPE and the limitations of PPE. Cleaners working should also wear medical mask, apron, gloves, eye protection (if risk of splash from organic material or chemicals) and shoe covers. In order to limit exposure duty hours must be minimized to 6 - 8 hours [19].

HCWs working in cath lab should don PPE (preferably for aerosolized precautions given the risk of emergent intubation/suctioning/CPR) and must be skilled in doffing and donning PPE. All the elective procedures including PCI for stable ischemic heart disease must be delayed after weighing risk vs benefit. For patients with STEMI, fibrinolysis should be considered for stable patients with active COVID-19 but for unstable patients, where primary PCI is essential, appropriate PPE should be worn before the intervention. The patient must wear a surgical mask. For NSTEMI-ACS patients, conservative therapy may be sufficient based on the patient's risk. Approximately 7% of patients with COVID-19 may represent either type 2 MI or myocarditis. Some procedures (pulmonary artery catheter placement, pericardiocentesis and intra-aortic balloon pump insertion) should be considered to be performed at bedside, to avoid transport of patients. Restriction of suspected of known COVID-19 cases to a dedicated laboratory may be beneficial. The use of Powered Air Purifying Respirator (PAPR) systems may also be reasonable, especially for patients who may be vomiting, or

those who may require CPR and/or intubation. Cath labs will require a terminal clean following the procedure leading to delays for subsequent procedures [20].

Regarding the hospital discharge of a COVID-19 positive case or discontinuation of quarantine following criteria has been recommended [21]:

1. Normal temperature lasting longer than 3 days,
2. Resolved respiratory symptoms,
3. Substantially improved acute exudative lesions on chest computed tomography (CT) images, and
4. 2 consecutively negative RT-PCR test results separated by at least 1 day.

Where testing is not possible, WHO recommends that confirmed patients remain isolated for an additional two weeks after symptoms resolve?

Currently extensive work has been done on numerous antimicrobials, antiviral agents, immunotherapies, and scientists from different countries are playing their part in developing vaccine. The FDA issued an emergency use authorization to allow use of Chloroquine/hydroxychloroquine, hydroxychloroquine 800 mg on day 1 then 400 mg daily or chloroquine 1g on day 1 then 500 mg daily, each for four to seven days total depending on clinical response. QTc monitoring is required [22]. Recent data of Remdesivir [23], Lopinavir-ritonavir [24], Favipiravir [25], IL-6 pathway inhibitors: Tocilizumab, azithromycin does not show convincing evidence for their use yet. Plasma collected from persons who have recovered from COVID-19 that may contain antibodies to SARS-Cov2 and can be administered into the patients with severe or life-threatening COVID-19. COVID-19 convalescent plasma is not intended for prevention of the infection.

Take home message is that every individual has to fight this war at his/her own level. Lessons should be learned from countries like China, Taiwan, Singapore and South Korea where they adopted early lockdown, closing of schools, parks and other public areas with severe restrictions on international and domestic travel. Work from home for offices was encouraged and Public gatherings were banned. Active, free and massive screening for symptomatic individuals, case contacts and travelers was done. Strict quarantine of suspected cases was ensured. Only people with severe symptoms were hospitalized, the rest being sent home. Mask wearing, hand hygiene and thermal screening were encouraged. The public was educated about the coronavirus-associated risks and precautions via dedicated websites, mass media, phone messages and mobile apps.

Conflict of Interest

None to declare.

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