

## COVID-19 Pandemic – An Uncertain Future

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Since late 2019, the world has rapidly faced an unprecedented crisis, high levels of morbidity and mortality, and economic challenges related to the COVID-19 pandemic. The number of cases continues to surge in the United States and other countries. Research and development is still ongoing for effective therapeutics and vaccines for the disease.

The majority of cases of COVID-19 demonstrate no symptoms or only mild symptoms similar to a common cold. However, individuals of older age and patients with pre-existing health conditions are at higher risk for hospitalization and unfavorable outcomes [1, 2]. Although children tend to be less affected by the virus, recent reports describe a rare but serious condition in this age group. Named multisystem inflammatory syndrome in children (MIS-C), it is characterized by inflammatory changes, which may simultaneously affect multiple organ systems such as the heart, brain, kidneys, digestive system, eyes, blood vessels, and skin [3].

Transmission of COVID-19 occurs mainly through droplets by an infected person. Recently, scientists have raised concerns that the disease may also be transmitted by aerosols [4]. Such aerosols may be generated during certain medical procedures in health facilities. The fact that asymptomatic and pre-symptomatic individuals may spread the virus makes disease prevention especially challenging.

Molecular testing for viral RNA with reverse transcription polymerase chain reaction (RT-PCR) remains the primary diagnostic modality in order to identify individuals who have been infected. Medical imaging in the form of chest radiography or computed tomography (CT) of the chest is typically reserved for confirmation and monitoring of the disease, guidance of treatment including triage, evaluation of the severity of pulmonary changes, and possibly follow-up to assess long-term damage [5]. Currently, most professional medical and imaging societies advise against CT screening as a first-line test for the diagnosis of COVID-19. For complicated courses of the disease, imaging of other body regions such as the heart, brain or abdomen may be indicated [6-9].

The typical findings on chest CT imaging include ground glass opacities, often with round morphology or a crazy-paving pattern and patchy consolidations, typically in a multifocal and peripheral distribution [5, 10]. Artificial intelligence algorithms currently under development have been proposed to aid in the diagnosis and follow-up of patients with COVID-19 [11].

Since the beginning of the COVID-19 pandemic, imaging facilities have faced a variety of challenges. These include the training of personnel regarding the appropriate use of personal protective equipment (PPE), as well as the implementation of adequate infection control measures such as when scanning subsequent patients. In some circumstances, the deployment of mobile radiography or CT systems in isolated ambulatory or makeshift care facilities has been necessary. In order to ensure the delivery of diagnostic and interventional services over the entire health system throughout the pandemic, the creation of crisis

management teams, extended operational capacities and the implementation of contingency plans has been instrumental in many facilities, particularly in regions most severely affected by the pandemic.

For example, amid rising numbers of COVID-19 hospitalizations in the Los Angeles region over recent weeks, active duty military medical teams have been deployed to assist two Los Angeles County hospitals, Harbor-UCLA Medical Center and University of California (USC) Medical Center, in order to help scale up their operations in light of hospital staffing shortages.

Today, there is still uncertainty regarding the virus's epidemiology and questions surrounding further virus mutation and the long-term sequelae of infection. However, many hospitals and health care organizations, including our own, are better prepared to confront this virus than just a few weeks ago. Many hospitals have been able to ramp up critical care capacities by repurposing existing space and adding intensive care unit beds, thereby maintaining essential services without becoming overwhelmed by the surge of patients.

Various pharmaceutical and biotech companies have aggressively shifted towards the improvement of testing kits and the development of therapeutics as well as potential vaccines. Transformative effects of the pandemic are increasingly visible and include the scaling up of telehealth and virtual care.

As we continue to face many unforeseen challenges while battling COVID-19, we should not forget about the psychological impact of social distancing during the ongoing pandemic. Healthcare leaders should actively pursue the implementation of inclusive wellness strategies in hospitals and ambulatory care settings in order to promote team spirit and mental well-being [12], which will result in long-term benefits beyond the current crisis.

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