

# COVID-19: an Alarm to Move Faster towards “Smart Hospitals”

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While our lifestyle is now influenced by novel technologies, we are challenged by the burden of a mysterious disease called COVID-19. It began from Wuhan, China, in late 2019 and spread rapidly around the world and has caused unprecedented health, social and economic challenges worldwide so far [1]. This virus is mostly transmitted through person-to-person contact; due to the fact that it is mostly transmitted through respiration, it is very contagious and can spread quickly in society [2]. This is why all researchers around the world are trying to find an appropriate solution to control this pandemic and reduce the losses and damages caused by it until a suitable therapeutic solution is reached.

The most important source of the disease are infected people who can easily transmit the disease to other people in the community [3]. It seems that excessive admission of infected patients in hospitals, in addition to infecting the health and medical staff, increases their workload and exhaustion among the staff. The movement of infected people in the community as well as their visits to the hospitals increases the possibility of spreading this disease and may cause other sections of the hospital to be infected. All of these will delay the end of this pandemic.

This pandemic appeared in a time called the digital age in which we have seen great advances in ICT. So we must use all the existing potentials based on digital and smart technologies in order to help control this disease. We are today experiencing the Fourth Industrial Revolution which has combined physical, digital and biological worlds and caused many improvement in healthcare [4].

The role of Artificial Intelligence (AI) as a major catalyst in the healthcare revolution is undoubtable. It has actually changed caregiving by making it smart. It also has caused the creation of an interesting novel concept called “Smart Hospital” [5].

A smart hospital is a hospital that focuses on optimized automated processes in an ICT-based interconnected environment with the aim of improving patient care. Of course, different definitions have been provided for smart hospital, but creating an effective connection between patients, health care providers and the machine has been emphasized in them. According to the literature, four key areas should be considered while developing a Smart Hospital including patient services and interfaces, care processes and orchestration, logistics and support services and also organization and capability design [6]. In a smart hospital, many technologies and tools such as the Internet of Things(IOT), big data, cloud computing, artificial intelligence (AI), robotics, 3D printing, mobile health (MHealth), RFID, biosensors, integration platforms, wearable devices, dashboards and many others are used [5,7,8]. Smart hospital would help to reduce the workload of the staff and increase their efficiency, facilitate hospital activities, improve the quality of processes and increase patient safety [9]. Of course, achieving such goals is very difficult and complex and requires the cooperation of experts in various fields.

Considering the existing pandemic and the way it is transmitted, smart hospital can provide many services for patients at the point of care and reduce hospital visits including tele-medicine services, real-time monitoring of patients and online processing of the big data produced to improve healthcare quality. Also, automatic tasks such as deliveries and transports can be provided by robots to lessen the close contacts, and better resource management can be provided using artificial intelligence in order to improve the quality of care and reduce costs. In addition, other technologies such as 3D printing to produce needed instruments for operations, virtual reality for rehabilitation and also entertainment in order to strengthen the spirit alongside with augmented reality which is very useful during operations, RFID to better control of the resources, devices and patients and so many others which can be provided in smart hospitals using novel technologies [10]. As a result, the implementation of a smart hospital will help to manage and control such diseases better.

It seems that, unfortunately, we have to deal with this disease for a long time, and facing such dangerous diseases in the future seems totally possible. Therefore, it is a filip for healthcare providers, managers, policy makers and also the public. Given the acceptance of using new technologies, especially in the current situation, countries that have the appropriate infrastructure to implement smart hospitals should use it to make processes smarter and move faster towards the establishment of smart hospitals. It is important for nations to develop this infrastructure so that they can implement smart hospitals as soon as possible.

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