



**Fig. 1.** Main transitions of the hospital model of care and response capacity to the spread of COVID-19.

health is achieved with cross cutting and coordinated interventions that go beyond medical treatment. The COVID-19 compelled us to run, and now we need to focus the coordinates in the right direction.

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# Saliva and its potential in coronavirus disease 2019 (COVID-19) cannot be ignored: A point of view

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*To the Editor*—Recent research has shown that  $\sim 1.2 \times 10^8$  infective copies/mL of severe acute respiratory coronavirus virus 2 (SARS-CoV-2) virus can be found in the salivary samples of coronavirus disease 2019 (COVID-19)-positive patients.<sup>1</sup> The saliva and

salivary glands have very high potential for the spread of the SARS-CoV-2 virus by virtue of its secretory nature and rich blood supply. The virus can even be transmitted through the saliva of the patients who are asymptomatic carriers.<sup>2</sup>

Research has demonstrated that ACE-2-positive cells and keratin epithelial cells of the salivary gland duct could be infected initially by the SARS-CoV virus, like the ACE-2-positive cells of the lung, indicating that the salivary gland's epithelial cells might be the source of infection after the entry of virus into the body. Therefore, during the early infection, the saliva can become an important source for the transmission of the virus.<sup>3</sup>

The mechanism involved in the entry of SARS-CoV-2 into the cells has demonstrated that it enters the human cells through ACE-2 cell receptors. Thus, the salivary glands might also be a potential source for transmitting the SARS-CoV-2, which is important to consider.<sup>4</sup>

Virus-infected droplets generated from the saliva can lead to the spread of the virus.<sup>2</sup> Aerosols are liquid or solid particles <5 µm remain suspended in the air for long periods and evaporate faster and usually fall out. The larger droplets of >5 µm are heavier. They have the potential to fall out faster than they evaporate, and they do not remain suspended in the air for long.<sup>5</sup>

The aerosols carrying the virus penetrate the healthy human body and lungs via inhalation through nose or mouth. SARS-CoV-2 can be transported 1 m during normal breathing, and the exhalation can lead to the diffusion of SARS-CoV-2 beyond 2 m. Sneezing and coughing, or having contact with either mouth, nose, and eye mucosa, can lead to the rapid transmission of the disease in the society.<sup>5</sup>

Many previous studies have shown that dental clinics are a potential source of SARS-CoV-2 transmission. Dental treatment requires the use of ultrasonic scalers with slow-speed and high-speed hand pieces. These procedures produce and release aerosols and droplets<sup>6</sup> that are pushed into the air for ~1 m and then fall to the ground. Aerosols might be in the air for a very long time, which can lead to the dissemination of the virus and contaminate the environment of the dental clinic, further contributing to community transmission.<sup>7</sup>

The detection of throat and saliva samples via real-time reverse-transcriptase polymerase chain reaction (RT-PCR) has shown that the salivary count of SARS-CoV RNA was much more than the throat samples, supporting the idea of oral droplet

transmission of SARS-CoV. Therefore, the virus can lead to the disease transmission via short as well as long-distance travel, putting the people who are in close and unprotected contact with SARS-CoV-2-infected patients at high risk.<sup>8</sup>

The characteristics of COVID-19 and dental procedures have posed unprecedented challenges for dental practitioners. The dental profession is involved with exposure to droplets and aerosols from saliva and other body fluids, so the chances of cross infection between dental practitioners and patients are very high. Every dental practitioner must fully understand the characteristics of COVID-19 and must strictly implement the most appropriate protective measures to reduce and control the risk of cross infection in dental procedures. Infection prevention and control practices during dental treatment are urgently needed.

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