

## Letter

**Smoking Cessation During the COVID-19 Epidemic**Sarah-Leah Eisenberg BSc<sup>1,✉</sup>, Mark J. Eisenberg MD, MPH<sup>2,3,4</sup>

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**Introduction**

The COVID-19 epidemic presents a unique public health opportunity for smoking cessation. Smokers are at a higher risk of developing COVID-19 and are also at a higher risk of developing severe COVID-19 complications.<sup>1</sup> Although there are no data available regarding the benefits of smoking cessation during the COVID-19 epidemic, there is evidence to suggest that smoking cessation for 4 weeks or more will lessen the risk of developing COVID-19 as well as the risk of developing severe COVID-19 complications.

**Smoking and COVID-19: Increased Risk and Increased Complications**

Both smoking and COVID-19 affect the respiratory system. Smoking is known to increase the risk of lung cancer (relative risk [RR] 10.92; 95% confidence interval [CI] 8.28–14.20), chronic obstructive pulmonary disease (RR 4.01; 95% CI 3.18–5.05), and asthma (RR 1.61; 95% CI 1.07–2.42).<sup>2</sup> In a study examining respiratory syncytial virus, a virus similar to SARS-CoV-2, it was shown that cigarette smoke causes necrosis of airway epithelial cells and prevents viral-induced apoptosis. Apoptosis usually limits viral replication and inflammation. However, when it is replaced with necrosis, both viral replication and inflammation are enhanced, leading to an increased susceptibility of acquiring viral infections.<sup>3</sup> Furthermore, smokers often have more hand-to-face movements (compared with nonsmokers), making viral transmission more probable.

Smokers also have an increased risk of developing severe complications once they become infected with SARS-CoV-2.<sup>1</sup> A recent systematic review examined five studies that analyzed the smoking status of patients during the COVID-19 epidemic in China. The size of the patient population in all of these studies ranged from 41 to 1099 and the studies only included patients who were

COVID-19 positive.<sup>1</sup> The authors concluded that smokers (compared with nonsmokers) were 1.4 (RR 1.4; 95% CI 0.98–2.00) times more likely to suffer from severe symptoms of COVID-19. They were also 2.4 (RR 2.4; 95% CI 1.43–4.04) times more likely to be placed in the intensive care unit, require mechanical ventilation, or die.<sup>1</sup> Another recent Chinese study published in the *Lancet*, compared the incidence of severe COVID-19 symptoms in 52 critically ill patients admitted to the intensive care unit. Comparing smokers to nonsmokers, 26 (81%) versus 9 (45%) had acute respiratory distress syndrome, 30 (94%) versus 7 (35%) required mechanical ventilation, 15 (29%) had heart failure, and 12 (23%) had kidney failure.<sup>4</sup> Smokers are therefore more likely to acquire SARS-CoV-2 and are more likely to have adverse outcomes once the infection is acquired.

**Immediate Benefits of Smoking Cessation**

Although there are limited data available, studies from the surgical literature suggest that even 4 weeks of smoking cessation may decrease the risk of adverse outcomes and intubation associated with COVID-19.<sup>5</sup> In a study published in the *Canadian Journal of Anesthesia* in 2012, the authors conducted a systematic review and meta-analysis of 25 studies on short-term preoperative smoking cessation and postoperative complications. The authors of this study identified that at least 4 weeks of smoking cessation lowers the risk of respiratory complications compared with current smokers (RR 0.77; 95% CI 0.61–0.96 and RR 0.53; 95% CI 0.37–0.76).<sup>5</sup> In another surgical study examining over 600 000 noncardiac surgical patients, current smokers had a higher likelihood of 30-day mortality (RR 1.38; 95% CI 1.11–1.72) and a higher incidence of postoperative complications such as surgical site infection (odds ratio [OR] 1.30; 95% CI 1.80–2.43), pneumonia (OR 2.09; 95% CI 1.80–2.43), unplanned intubation (OR

1.87; 95% CI 1.58–2.21), and septic shock (OR 1.55; 95% CI 1.29–1.87).<sup>6</sup> Thus, based on data from the surgical literature, there is reason to conclude that 4 weeks of smoking cessation will be associated with a lower incidence of adverse events and intubation among COVID-19 patients.

### Smoking Cessation

Physicians can play a crucial role in helping smokers quit smoking during the COVID-19 epidemic. Physicians can use telemedicine to advise their patients regarding smoking cessation and to recommend pharmacotherapy. In a study published in the *Lancet* in 2016, varenicline was shown to be the most effective pharmacotherapy for smoking cessation followed by bupropion and the nicotine patch.<sup>7</sup> In this 12-week study of 8144 participants, patients treated with varenicline had better abstinence rates compared with those on placebo (OR 3.61; 95% CI 3.07–4.24), those using the nicotine patch (OR 1.68; 95% CI 1.46–1.93), and those using bupropion (OR 1.75; 95% CI 1.52–2.01). In addition, participants placed on bupropion and the nicotine patch achieved higher smoking cessation rates compared with those on placebo (OR 2.07; 1.75–2.45 and OR 2.15; 95% CI 1.82–2.54).<sup>7</sup> The primary endpoint in the study was confirmed smoking cessation for weeks 9–12.<sup>7</sup> These medications can be prescribed by the patient's physician and can be delivered to their homes from the nearest pharmacy. Finally, physicians should also make their patients aware of behavioral therapy hotlines for smoking cessation. The National Cancer Institute offers these services on their website (smokefree.gov).

### Conclusion

Smoking cessation is likely to reduce the risk of developing COVID-19 as well as the likelihood of developing severe COVID-19 complications. For this reason, physicians should advise their patients to stop smoking immediately.

### Supplementary Material

A Contributorship Form detailing each author's specific involvement with this content, as well as any supplementary data, are available online at <https://academic.oup.com/ntr>.

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### Declaration of Interests

None declared.

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