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Links Between Smoking and COVID-19

On April 27, 2020, STOP researchers based in the [Tobacco Control Research Group](#) at the University of Bath have provided the most recent evidence linking smoking to COVID-19.

1. The best evidence to date on smoking and coronavirus suggests smokers are at greater risk of poor outcomes:

- Early in the pandemic, Chinese case series showed that current smoking is associated with more severe disease: For example, amongst [1,099 patients from 552 hospitals in China](#), smokers were 2.4 times more likely to have adverse outcomes than non-smokers.ⁱ
- One early [systematic review](#) of the evidence found that smoking is likely associated with negative progression and adverse outcomes, [another described "a trend towards higher risk but no significant association,"](#) and [a third found that "smokers had 2.23 times the odds of severe COVID-19 outcomes than never smokers."](#)
- A more recent and [regularly updated "living" review](#), currently including 28 studies, reaches similar conclusions—that the evidence suggests current and former smoking are associated with greater disease severity in hospitalized patients.

2. There is evidence to suggest that active and former smoking and possibly nicotine use can increase the risk of infection with SARS-CoV-2, including neuroinfection:

- It is known that SARS-CoV-2 enters the cells via the [ACE-2 receptor](#). There is evidence that [smoking, former smoking, COPD](#) (a smoking-caused disease), and [nicotine](#) can [increase expression](#) of the ACE-2 receptors through which infection occurs thus providing a hypothesis for why current and former smoking, as well as nicotine users, could in fact be at greater risk.
- It has also been proposed that nicotine might [increase the risk](#) of neuroinfection.
- The WHO has also suggested that behavioural factors such as the hand-to-mouth action during smoking may also put smokers at greater risk of infection.
- Although some studies suggest smoking rates amongst those with coronavirus infection are lower than expected, continued careful analysis of these studies is required and their interpretation must take into account the broader evidence base as it develops.

3. More broadly, smoking is highly damaging to health and experts are urging smokers to quit:

- Smoking kills at least one in two, and likely [two in three](#), long-term users. It damages the [immune system, increasing susceptibility to infections including](#) viral infection and pneumonia, and causes diseases such as lung and heart disease which are [linked to poor outcomes](#) from coronavirus. Smokers therefore have more reasons than ever to quit.

ⁱ This is based on a relative risk of adverse outcomes in this study: Smokers had a relative risk of 2.4 (95% Confidence Interval: 1.43–4.04) compared to non-smokers, this was not calculated in the original study but was derived by Vardavas et al in their systematic review using data provided in the tables of the article (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7083240/>)