



Editorial

COVID-19 and Tobacco: More Questions Than Answers

This month's journal features a collection—largely letters and commentaries—on COVID-19 and smoking. We made a decision to rapidly publish these, acknowledging that publishing work rapidly carries risks in terms of the degree of scrutiny that can be afforded. This has to be balanced against the need for evidence in the context of a rapidly evolving pandemic involving a poorly understood virus. These should therefore be considered preliminary, and in many cases hypothesis-generating. They serve to provide an overview of key questions in this rapidly evolving area.

The commentaries address smoking and its impact on COVID-19,^{1,2} smokeless tobacco and areca nut use and COVID-19,³ smoking cessation and COVID-19,⁴ vaping and COVID-19,⁵ and even the potential therapeutic value of nicotine for the prevention and treatment of COVID-19.⁶ The articles report on studies investigating the impact of the pandemic on smoking and vaping and quitting,^{7,8} and an ecological study of the association between smoking prevalence and COVID-19 prevalence and mortality in Europe.⁹ There are also two systematic reviews of the association between smoking and COVID-19 severity in hospitalized patients.^{10,11} Notably, the two reviews differ somewhat in the studies included, their methods and their findings.

Many of these studies are (necessarily) very preliminary, or speculative. As a result, there are currently more questions than answers, and more hypotheses and uncertainty than established evidence. This issue therefore represents a challenge to the research community—what are these questions and hypotheses, and what are the implications for the tobacco control research and practice community now and in the future?

One area of uncertainty is the impact of the use of smoked and smokeless tobacco products on COVID-19 at individual and population levels. Are individuals who smoke or use smokeless tobacco products more or less likely to develop COVID-19, experience more severe COVID-19 or die from the disease, or transmit COVID-19 to others? Do individuals who stop using tobacco products reduce their risk of developing COVID-19 or severe COVID-19? Are there variations in the impact of tobacco product use on COVID-19 by demographic factors such as age, gender, ethnicity, socioeconomic or by presence or absence of comorbidities? Do populations with higher tobacco use prevalence experience greater incidence of COVID-19 and increased case severity or case mortality?

There are also questions about the impact of the pandemic and COVID-19 itself on tobacco use. Are smokers who develop COVID-19, or smokers in general, more likely to try to quit or to succeed in quitting? Have smokers increased or decreased their consumption of tobacco during the pandemic? Does this vary between high-, middle-, and low-income countries, by the degree of implementation of Framework Convention on Tobacco Control measures, or across different populations (eg, marginalized vs. affluent) and demographic factors? If there is increased cessation during the pandemic, will these

successes endure? Or will there be increased relapse because the motivation to remain abstinent reduces as the pandemic subsides?

And what about vaping? Does vaping increase or decrease the risk of transmitting or developing COVID-19, and of being severely affected? Are smokers more likely to use vaping as a cessation method or switch to vaping as a complete substitute for smoking during the pandemic? Do most switchers persist with vaping as the pandemic subsides? Does the impact of vaping vary among different population groups and demographics, and in more and less permissive regulatory environments for vaping products?

Along with these epidemiological questions are a host of questions about mechanisms. Plausible hypotheses have been proposed as to why smoking could be protective or have adverse impacts on COVID-19—for example through the increased or decreased expression of Angiotensin Converting-Enzyme 2 receptors¹ and a possible protective effect of nicotine.^{6,12} Hypotheses for the possible increase in risk of transmission among vapers include through sharing of vape devices and exposure to the virus through vape clouds.⁵ The stress of the pandemic might decrease smokers' ability to quit, whilst fear of an increased risk of developing COVID-19 may motivate quitting.⁷

Finally, there are intervention questions—how effective are clinical and public health measures to maximize positive and minimize negative impacts of the pandemic on smoking and vice versa. Should smokers and vapers be prioritized for testing for the SARS-CoV-2 virus?⁵ Are social marketing campaigns effective at encouraging behaviors that reduce transmission risk or encourage quitting among smokers and vapers? Could nicotine be protective or an effective treatment intervention for COVID-19? Which tobacco control policy measures and smoking cessation interventions are most cost-effective, equitable, and feasible? These questions may be informed by natural experiments such as varying restrictions placed on the availability and sale of tobacco and vaping products in different jurisdictions, and differences in the provision of cessation support.

The COVID-19 experience has also exposed limitations in our ability to conduct research during a rapidly evolving health event. Much of the epidemiological research has been based on large databases and hospital-based clinical data, which has exposed limitations in these data, and the risk of various biases (eg, selection bias) leading to misleading results.¹³ We need to ask what we can pragmatically do in order to improve the available data in future events—perhaps through more standardization and better recording of key exposures and outcomes in routine clinical data, or through additional development of enhanced data collection and surveillance in representative subsets of primary and secondary care providers.

Ultimately, we must not only understand the current experience, but also learn from it, to be better prepared in the future and to create a better post-COVID world. Will the pandemic increase the willingness

of politicians and decision-makers to prioritize population health protection measures? These could include specific measures such as improving pandemic preparedness, as well as broader evidence-based interventions to tackle other major global and local public health priorities. Perhaps the final question should be: What evidence and advocacy approaches will ensure that the COVID-19 pandemic experience results in greater political priority for implementing effective public health interventions to address long-standing global health priorities and causes of health disparities, such as reducing and eventually virtually eliminating the use of tobacco products?

Richard Edwards MD¹, Marcus Munafò PhD²

¹Department of Public Health, University of Otago, Wellington, New Zealand; ²School of Experimental Psychology, University of Bristol, Bristol, UK

Corresponding Author: Richard Edwards, Department of Public Health, University of Otago, 23a Mein St, 6021, Wellington, PO Box 7343, New Zealand. Telephone: 64 4 918 5089; E-mail: richard.edwards@otago.ac.nz

Declaration of Interests

None declared.

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