

The ill winds of COVID-19: How the pandemic improved respiratory health for some

It is said that ‘it is an ill wind that blows nobody any good’. For nearly 3 years, ill winds carrying the SARS-CoV-2 virus have blown around the world, killing millions and bringing poor health, social, and economic disruption to many millions more. Paradoxically however, the COVID-19 pandemic—or more specifically the public health measures used to control spread of the SARS-CoV-2 virus—also led to unexpected health benefits. Can these unexpected benefits provide clues on how to improve respiratory health during non-pandemic times?

It is no surprise that environmental measures designed to prevent transmission of COVID-19 benefited other aspects of respiratory health. The respiratory system is exposed to the environment like no other: every few seconds we inhale litres of air carrying infectious agents, chemical pollutants, and potential physical insults. All of the ‘Big 5’ respiratory diseases (asthma, chronic obstructive pulmonary disease (COPD), lower respiratory infections, lung cancer, and tuberculosis) have strong environmental determinants and a great deal of the disease burden is amenable to primary or secondary prevention strategies. The COVID pandemic highlighted just how much could be achieved if rigorous public health measures could be sustained.

A recent publication in *Respirology* by Ko and colleagues from Hong Kong illustrates this potential.¹ When COVID-19 was first identified in January 2020, measures were taken to prevent its spread. These measures led to 37%, 36%, and 12% reductions in hospitalizations for asthma, COPD, and non-COVID pneumonia, respectively, during 2020 compared with previous years. Similar substantial reductions in non-COVID respiratory illnesses following stringent pandemic restrictions have been reported from other parts of the world.^{2–5}

Where Ko et al. go further is in trying to identify what actually led to the reduction in these illnesses.¹ Pandemic restrictions resulted in reductions in air pollution due to less vehicle traffic, preventions of the spread of other viral infections (such as influenza), changes in health-seeking behaviour, and individual protective measures, such as mask wearing. Unfortunately, it was not possible to investigate all of these—the changes in mask wearing from before and after the pandemic were so profound that it was not possible to investigate the mediation effect. However, reductions in the air pollutants NO₂, SO₂, and PM₁₀ each appeared to explain between 4% and 11% of the reduction in COPD admissions while PM₁₀ reductions accounted for 11% fewer pneumonia admissions (none of the potential mediators convincingly

explained the reduction in asthma admissions). More profoundly, the reduction in influenza accounted for 52% of the reduction in pneumonia and 4% of the reduction in COPD admissions. The prevalence of other respiratory viruses is not reported, but is plausible that these followed the pattern for influenza and their elimination may also have contributed to fewer hospital admissions.

Of course, as an ecologic study, we cannot be certain of cause and effect: there may be other reasons for the reduction in hospital admissions including changes in health-seeking behaviour, other hygiene measures, and perhaps a reluctance among health professionals to admit less severe cases of respiratory illness during the pandemic. It is notable that the proportion of those admitted who died from COPD and pneumonia was higher during 2020, indicating that while there were fewer admissions overall, those with a worse prognosis continued to be admitted. Nevertheless, the findings provide compelling evidence that the response to the pandemic prevented many hospital admissions for acute severe respiratory illness. Together with evidence that effective pandemic restrictions in other countries were also associated with fewer respiratory admissions, the study by Ko et al. highlight the benefits to respiratory health that can be achieved by public health measures.

The challenge now is to understand how these benefits may be realized in non-pandemic times. Stringent pandemic restrictions have societal, personal, and economic consequences and populations will not tolerate them indefinitely. A concern is that temporary pandemic measures may have only delayed infections. For example, a rebound in respiratory syncytial virus infections was observed in New Zealand children when pandemic restrictions were eased, leading to a much higher than usual winter hospitalization rate.⁶ Targeted immunization may play a role in preventing such rebound infections in the future.

What other measures are useful that could be continued after the pandemic is over and what alternative approaches might work? Wearing masks may be one solution: Ko and colleagues were unable to estimate the effect of masks or hand hygiene in their study, but these appear to reduce the transmission of respiratory viruses.⁷ Should we encourage those with chronic respiratory diseases to wear masks during winter and when they are likely to be exposed to viruses? Healthcare workers should consider wearing masks when treating respiratory patients, and of course should practice careful hand hygiene. This would reduce the risk of contracting infections from patients and transmitting them to others.

The WHO has identified air pollution as the greatest environmental threat to human health.⁸ The COVID-19 pandemic has shown us the immediate benefits of avoiding this. Hong Kong saw moderate reductions (18%–31%) in several pollutants during the pandemic, which led to measurable benefits in reducing respiratory admissions. On a global scale, the potential health gains that could be achieved through reductions in air pollutants are immense and deserve our advocacy.

While the ill wind of COVID-19 has caused a great deal of harm, it has also shown us what can be done to improve respiratory health on a population level. It is now up to us to harness this wind.

KEYWORDS


asthma, COPD, COVID-19, pandemic restrictions, pneumonia, respiratory infection

CONFLICT OF INTEREST

None declared.

ORCID

Robert J. Hancox  <https://orcid.org/0000-0002-3922-7144>

Catherina L. Chang  <https://orcid.org/0000-0002-8390-670X>

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Robert J. Hancox MD^{1,2} 
Catherina L. Chang MD¹ 

¹*Department of Respiratory Medicine, Waikato Hospital, Hamilton, New Zealand*

²*Department of Preventive and Social Medicine, Dunedin School of Medicine, University of Otago, Dunedin, New Zealand*

Correspondence

Robert J. Hancox

Email: bob.hancox@otago.ac.nz

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How to cite this article: Hancox RJ, Chang CL. The ill winds of COVID-19: How the pandemic improved respiratory health for some. *Respirology*. 2022. <https://doi.org/10.1111/resp.14376>