

# COVID-19 and 'basal' exacerbation frequency in COPD

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The 2020 coronavirus pandemic has been particularly difficult for people living with chronic respiratory diseases, including chronic obstructive pulmonary disease (COPD). COPD is associated with greater severity of COVID-19 infection and increased mortality.<sup>1</sup> Interventions such as social distancing, face coverings, hand hygiene and closure of public spaces have been implemented across the world, although with significant local variations. It remains unclear whether patients with COPD have altered risk of acquiring COVID-19, and 'shielding' (maximum avoidance of interpersonal interaction for those at highest risk) was intended to limit this risk. However, shielding also significantly limits physical activity, social interactions and access to healthcare, all of which may adversely impact physical and mental health.<sup>2</sup>

Much of the morbidity, mortality and healthcare costs in COPD are related to exacerbations, and these events (especially hospitalisations) are considered by patients to be the most disruptive aspect of their disease.<sup>3</sup> Most exacerbations are caused by respiratory viruses, especially rhinovirus. The widespread adoption of the interventions described above might, therefore, be expected to reduce the transmission of such viruses, not just coronavirus, and thereby reduce the incidence of COPD exacerbations (and the proportion of any remaining exacerbations that are attributable to viruses).

In this issue of *Thorax*, Tan and colleagues address this question<sup>4</sup>—and in the process offer bright hope for the future of COPD care. The authors studied the number of patients admitted to a large tertiary referral hospital in Singapore with COPD exacerbations over the 'pandemic' period February–July 2020, and compared this to the 'pre-pandemic' period January 2018 through January 2020. They also report the proportion of exacerbations testing positive for common respiratory viruses using a 16-target multiplex PCR. The

pandemic period was associated with a greater than 50% reduction in COPD exacerbation admissions per month, and a reduction in the proportion of exacerbations testing positive for respiratory viruses from 49% to 11% (despite the testing rate increasing). If these findings truly represent the effect of coronavirus prevention interventions in reducing COPD exacerbations, what lessons can be learnt? First, institution of simple hygiene measures may help reduce the risk of COPD exacerbations outside of pandemic periods by more than the magnitude of any current combination of exacerbation reduction strategies. Such interventions are likely cost effective, yet they are not currently discussed in national and international guidelines. Second, given that most exacerbations are caused by respiratory virus infections, the absence of vaccines and drugs to prevent and treat such infections—especially rhinovirus—is highlighted as a glaring omission in our therapeutic armamentarium. Finally, and most provocatively, while acknowledging the devastating impact of coronavirus and restrictions on people living with COPD, we are left with hope that more than 50% of hospitalisations due to COPD exacerbations could be avoided.

The authors acknowledge that the reduction in hospital admissions could be due to increased treatment of exacerbations in the community, which may or may not be appropriate. The excess mortality seen globally during the pandemic is likely part of a complex web of health seeking behaviours, economic and societal factors. This represents the most significant weakness of the study. Nevertheless, Tan *et al*'s data are concordant with similar findings in Hong Kong<sup>5</sup> and Germany.<sup>6</sup> The latter study noted a greater reduction in COPD admissions compared with admissions for myocardial infarction, leading the authors to conclude that the reduction in COPD exacerbation admissions was due to a real reduction in exacerbation incidence and not merely a change in healthcare seeking behaviour. In contrast, a UK study using primary care prescription records as a proxy for exacerbation treatment courses reported a higher number of community-treated exacerbations during the initial

period of social restrictions compared with the same period in a previous year.<sup>7</sup> This was driven by an increased number of exacerbations in people having multiple events, rather than an increased proportion of people experiencing an exacerbation.

The difference in the rate of coronavirus infection, mortality and differences in government policy between Asian and European countries continues to be the subject of study.<sup>8</sup> Singapore implemented one of the world's most comprehensive contact tracing programmes for COVID-19. The differences in health infrastructure, fiscal policy and geography should give us pause regarding the generalisability of these findings outside of this exceptional city-state.

To the best of our knowledge, Tan *et al* have, therefore, provided the first description of 'basal' exacerbation frequency in COPD, at least for the most severe exacerbations requiring hospitalisation. However, we know that COPD exacerbations are diverse, adding heterogeneity to the existing heterogeneity of COPD itself. Like all good research, this study raises more questions than it answers. What were the characteristics of the patients who still had exacerbations? What was the cause or phenotype of the exacerbations that still occurred? What preventative strategies can move us from a 50% reduction of hospitalised exacerbations to a 'zero tolerance' approach to exacerbations if we are to truly revolutionise quality of life for those living with COPD? And while it would be unreasonable to ask people living with COPD to live a life of complete isolation, what would be the benefit of asking their loved ones to wear a mask, wash their hands and perhaps not to visit when they are unwell? How many exacerbations might we prevent? Answering these questions could have a more profound effect on reducing COPD exacerbation hospitalisations and exacerbations than the best we have achieved through effective pharmacotherapy over recent decades.

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#### REFERENCES

- Alqahtani JS, Oyelade T, Aldhahir AM, *et al*. Prevalence, severity and mortality associated with COPD and smoking in patients with COVID-19: a rapid systematic review and meta-analysis. *PLoS One* 2020;15:e0233147.
- Pfefferbaum B, North CS. Mental health and the Covid-19 pandemic. *N Engl J Med* 2020;383:510–2.
- Zhang Y, Morgan RL, Alonso-Coello P, *et al*. A systematic review of how patients value COPD outcomes. *Eur Respir J* 2018;52:1800222.
- Tan JY, Conceicao EP, Wee LE, *et al*. COVID-19 public health measures: a reduction in hospital admissions for COPD exacerbations. *Thorax* 2021;76:512–3.
- Chan KPF, Ma TF, Kwok WC, *et al*. Significant reduction in hospital admissions for acute exacerbation of chronic obstructive pulmonary disease in Hong Kong during coronavirus disease 2019 pandemic. *Respir Med* 2020;171:106085.
- Berghaus TM, Karschnia P, Haberl S, *et al*. Disproportionate decline in admissions for exacerbated COPD during the COVID-19 pandemic. *Respir Med* 2020;14:106120.
- McAuley H, Hadley K, Elneima O, *et al*. COPD in the time of COVID-19: an analysis of acute exacerbations and reported behavioural changes in patients with COPD. *ERJ Open Res* 2020:00718–2020.
- Han E, Tan MMJ, Turk E, *et al*. Lessons learnt from easing COVID-19 restrictions: an analysis of countries and regions in Asia Pacific and Europe. *Lancet* 2020;396:1525–34.