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Editorial

COPD at the Time of COVID-19: A COPD Foundation Perspective

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Abbreviations: chronic obstructive pulmonary disease, **COPD**; coronavirus disease 2019, **COVID-19**; World Health Organization, **WHO**; Centers for Disease Control and Prevention, **CDC**; hazard ratio, **HR**; confidence interval, **CI**; inhaled corticosteroids, **ICSs**; Global initiative for chronic Lung Disease, **GOLD**; American Thoracic Society, **ATS**

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Introduction

Nearly 16 million Americans, and more than 250 million people around the world, live with chronic obstructive pulmonary disease (COPD) and millions more remain undiagnosed. The COPD Foundation has been monitoring the global pandemic of a disease caused by the recently identified coronavirus family member SARS-CoV-2 named coronavirus disease 2019 (COVID-19). On April 17th, 2020 the World Health Organization (WHO) reported 2,078,605 confirmed cases and 139,515 deaths globally.[1] The COVID-19 pandemic has put patients with COPD and other comorbidities at a high risk for poor outcomes as noted by the U.S. Centers for Disease Control and Prevention (CDC).[2] Although there is limited published data on COVID-19 in COPD individuals (only 15 out of > 4815 PubMed references on April 17th), a recent article in the *European Respiratory Journal* evaluated 1590 laboratory-confirmed hospitalized cases in China and highlighted a low incidence in COPD individuals (24 cases) and in overall comorbidities (25.1%).[3] However, COPD had a significant impact on risk for poor outcome (composite endpoint of admission to an intensive care unit, invasive ventilation, or death) reflected by a hazard ratio (HR) of 2.681 [95% confidence interval (CI) 1.424–5.0480] after adjusting for age and smoking status. COPD comorbidity as a risk factor was second only to malignancy (HR 3.50, 95% CI 1.60–7.64).

Although an initial publication from China suggested a statistically significant risk of poor outcome in active smokers,[4] a recent meta-analysis of several studies indicated[5] it was only a strong trend. However, another systematic review published on April 15th, confirmed the association of smoking with a risk for poor outcome in COVID-19.[6] Therefore, more epidemiological data on COPD, smoking and vaping is needed to fully understand the impact of nicotine exposure and development of COPD on COVID-19 outcomes. As nicotine has previously been associated with upregulation of ACE2,[7] the receptor for SARS-CoV-2,[8] research suggests the importance of emphasizing smoking and vaping cessation.

Inhaled corticosteroids (ICSs) are often prescribed to COPD patients at risk for exacerbations and a short course (5-10 days) of systemic steroids is commonly prescribed as standard of care for selected COPD exacerbations (notably, there is no evidence suggesting a role for chronic systemic steroid use in COPD). Current guidelines from the WHO[1] and the CDC[2] do not cover COPD specifically. On March 10th a working group of the Chinese Thoracic Society issued guidance on the treatment of COPD patients.[9]

On March 23rd, the Global initiative for chronic Obstructive Lung Disease (GOLD) issued guidance on keeping patients on their regular maintenance therapy[10] and this was supported by the American Thoracic Society (ATS) guidance on COVID-19 which was issued on March 30th.[11] However, the debate on treating COVID-19 with systemic steroids (regardless of underlying disease) continues. A small study in China demonstrated no benefit but also no harm[12] in contrast to guidance by the CDC[13] to avoid the use of systemic steroids when treating COVID-19 which is based on previous experience with SARS-CoV and Middle East respiratory syndrome.[14] Another post-hoc study suggested a survival benefit in treating patients with COVID-19 and advanced respiratory distress syndrome.[15] This adds to the confusion among physicians treating individuals with COVID-19, especially in the background of a respiratory comorbidity. Although 177 ongoing and planned global clinical trials are listed in ClinicalTrials.gov, none is specific for COPD.

Based on a recent report (in press) from the COPD Group of the Chinese Thoracic Society and the COPD Working Committee of the Chinese Association of Chest Physicians,[9] differential diagnosis of COVID-19 is challenging, due to the ongoing symptomatology of COPD, and often leads to delayed diagnosis as patients present with fever, fatigue and other systemic symptoms, and respiratory symptoms are relatively light. After 6 to 7 days, rapid deterioration of lung function may occur. Once infected with SARS-CoV-2 pneumonia, lung function in COPD patients can deteriorate rapidly leading to respiratory failure. In a small number of patients with COVID-19 pneumonitis (especially in the elderly) COVID-19 may initially present with delirium. The finding of delayed diagnosis of COPD patients infected with COVID-19 due to misdiagnosis as a COPD exacerbation was confirmed in a recent podcast from a physician on the frontlines interviewed by Steven Q. Simpson, MD, FCCP, American College of Chest Physicians President-Elect.[16] Moreover, in an recently completed COPD Foundation patient and caregiver survey, we observed that out of 177 COPD individuals who reported exacerbations in 2020, 16 were suspected for COVID-19 but only 5 were tested (unpublished data, March/April 2020). Considering the high incidence of COVID-19, it seems imperative to test COPD patients presenting with symptoms of an exacerbation to prevent further dissemination.

The COPD Foundation focuses on empowering and engaging the community to show that there is hope and that individuals with COPD and their families can take positive steps to lead meaningful and productive lives with COPD during this challenging global crisis. As the COVID-19 pandemic has put patients with COPD and other comorbidities at a high risk for poor outcomes, *the COPD Foundation is keeping our community informed* on emerging developments through a dedicated website which is updated regularly.[17] Members of our Medical and Scientific Advisory Committee and other expert partners help ensure that accurate information is shared with our COPD community through blogs, webinars and Q&A posted on our website and on social media.

Access to pulmonary rehabilitation (PR) is a key issue for patients with COPD. On March 26th the COPD Foundation, in collaboration with the ATS and the American Lung Association,[18] published a guidance on what to do when PR is unavailable. In addition, we provided links to our *exercise website*[19] and the *free COPD Pocket Consultant Guide App* which helps patients exercise at home.[20] However, this crisis highlights a need for improved, remotely supervised physical therapy programs that utilize telehealth technology to advise patients on appropriate at home exercise that is tailored to their specific needs.

Our global online community, *COPD360social* includes over 47,000 members from 151 countries and is currently serving a critically important role in communicating with the COPD community about COVID-19 by addressing the specific needs and risks that the individual with COPD may face.[21] On March 29th we launched the first of a series of global surveys[22] on COVID-19 which includes analysis of free text responses (funded by our industry partners) to ensure that the COPD Foundation programs will address all of the specific needs of the community. Combined with surveys to clinicians addressing questions on the use of ICSs, nebulizers and airway clearance devices for patients with COPD and experiencing COVID-19 infection, we aim to continue to support our community through this global crisis.

References

1. World Health Organization. Coronavirus disease (COVID-19) pandemic. Updated April 7, 2020. Accessed April 8, 2020. https://www.who.int/emergencies/diseases/novel-coronavirus-2019

2. Centers for Disease Control and Prevention, National Center for Immunization and Respiratory Diseases, Division of Viral Diseases. Coronavirus disease 2019 (COVID-19). Are you at higher risk for severe illness? Updated April 2, 2020. Accessed April 13, 2020. https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/groups-at-higher-risk.html

3. Guan W-J, Liang W-H, Zhao Y, et al on behalf of China Medical Treatment Expert Group for COVID-19. Comorbidity and its impact on 1590 patients with COVID-19 in China: a nationwide analysis. *Eur Respir J*. 2020; In press. doi: https://doi.org/10.1183/13993003.00547-2020

4. Lui W, Tao Z-W, Lei W, et al. Analysis of factors associated with disease outcomes in hospitalized patients with 2019 novel coronavirus disease. *Chinese Med J (Engl)*. 2020 Feb 28; In press. doi: https://doi.org/10.1097/CM9.0000000000000775

5. Lippi G, Henry BM. Active smoking is not associated with severity of coronavirus disease 2019 (COVID-19). *Eur J Intern Med*. 2020; In press. doi: https://doi.org/10.1016/j.ejim.2020.03.014

6. Zhao Q, Meng M, Kumar R, et al. The impact of COPD and smoking history on the severity of COVID-19: a systemic review and meta-analysis. *J Med Virol*. 2020 Apr 15; online ahead of print. doi: https://doi.org/10.1002/jmv.25889

7. Oakes JM, Fuchs RM, Gardner JD, Lazartigues E, Yue X. Nicotine and the renin-angiotensin system. *Am J Physiol Regul Integr Comp Physiol*. 2018;315(5):R895-R906. doi: https://doi.org/10.1152/ajpregu.00099.2018

8. Brake SJ, Barnsly K, Lu W, McAlinden KD, Eapen MS, Sohal SS. Smoking upregulates angiotensin-converting enzyme-2 receptor: a potential adhesion site for novel coronavirus SARS-CoV-2 (COVID-19). *J Clin Med*. 2020; 9(3): 841. doi: https://doi.org/10.3390/jcm9030841

9. Chinese Thoracic Society, Chronic Obstructive Pulmonary Disease Group. Medical and preventive information on chronic obstructive pulmonary disease during the outbreak of new coronary virus pneumonia [in Chinese]. *Chinese J Tuber Respir Dis (Engl)*. 2020;43:E034. doi: https://doi.org/10.3760/cma.j.cn112147-20200227-00201

10. Global Initiative for Chronic Lung Disease (GOLD). GOLD COVID-10 guidance. Published 2020. Accessed April 8, 2020. https://goldcopd.org/gold-covid-19-guidance/

11. Jamil S, Mark N, Carlos G, Dela Cruz CS, Gross JE, Pasnick S. Public health information series: diagnosis and management of COVID-19 disease. *Am J Respir Crit Care Med*. 2020 Mar 30. In press. doi: https://doi.org/10.1164/rccm.2020c1

12. Global Biodefense. Xi'an Jiaotong-Liverpool University research indicates no clinical benefit for corticosteroid treatment of COVID-19. Published March 13, 2020. Accessed March 21, 2020. https://globalbiodefense.com/2020/03/13/xjtlu-research-indicates-no-clinical-benefit-for-corticosteroid-treatment-of-covid-19/

13. Centers for Disease Control and Prevention. Interim clinical guidance for management of patients with confirmed coronavirus disease (COVID-19). Updated March 7, 2020. Accessed March 21, 2020. https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-guidance-management-patients.html

14. Russell CD, Millar JE, Baillie JK. Clinical evidence does not support corticosteroid treatment for 2019-nCoV lung injury. *Lancet*. 2020 Feb15;395. doi: https://doi.org/10.1016/S0140-6736(20)30317-2

15. Wu C, Chen X, Cai X, Risk factors associated with acute respiratory distress syndrome and death in patients with coronavirus disease 2019 pneumonia in Wuhan, China. *JAMA Intern Med*. 2020 Mar 13. In press. doi: https://doi.org/10.1001/jamainternmed.2020.0994

16. Simpson SQ. Managing patients with respiratory conditions in the time of COVID-19 [podcast]. Recorded April 2020. Accessed April 13, 2020. https://www.chestnet.org/Guidelines-and-Resources/COVID-19/Advice-From-the-Front-Lines#ManagingPatientsRespiratorySimpson

17. COPD Foundation. Coronavirus information for the COPD community. Updated April 8, 2020. Accessed April 17, 2020. https://www.copdfoundation.org/Learn-More/I-am-a-Person-with-COPD/Coronavirus-Information.aspx

18. Corn J, Malanga E, Pruitt K. Public health information series: what to do when pulmonary rehabilitation (PR) is unavailable. *Am J Respir Crit Care*. 2020 Apr 2. In press. doi: https://doi.org/10.1164/rccm.2020C4

19. COPD Foundation. Exercise for someone with COPD. Published 2020. Accessed April 8, 2020. https://www.copdfoundation.org/Learn-More/I-am-a-Person-with-COPD/Exercise.aspx

20. COPD Foundation. New. Our free COPD Pocket Consultant Guide. App track. For people with COPD and their families. Updated February 28, 2020. Accessed April 8, 2020. https://www.copdfoundation.org/Learn-More/The-COPD-Pocket-Consultant-Guide/Patient-Caregiver-Track.aspx

21. COPD Foundation. COPD 360social. Updated April 8, 2020. Accessed April 8, 2020. https://www.copdfoundation.org/COPD360social/Community/Activity-Feed.aspx

22. COPD Foundation. Our research framework. Updated April 2, 2020. Accessed April 8, 2020. https://www.copdfoundation.org/Research/About-COPD360/Our-Research-Framework.aspx