Smoking and epidemics of respiratory infections
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The causative role of smoking in respiratory infectious disease has been well documented in reports of the United States Surgeon General, 1 but remains underappreciated because the main focus of the health community is on the long-term effects of smoking on chronic diseases. Global estimates from 2017 suggest that among adults aged 35–74 years, there were about 490 million incident cases and 1.34 million deaths due to infectious respiratory diseases. 2 Of these, 22.5% (approximately 300,000 deaths) were attributed to smoking.

This century we have seen pandemics of Middle East respiratory syndrome (MERS), severe acute respiratory syndrome (SARS), H1N1 influenza virus and now coronavirus disease 2019 (COVID-19). By October 2020, COVID-19 had caused over a million deaths, already accounting for 2% of all-cause global mortality. These respiratory pandemics will add to the burden of chronic infectious respiratory disease in general. Seasonal infectious respiratory diseases and other respiratory pandemics may present opportunities for smoking cessation. General practitioners or health staff can use the opportunity of a seasonal or pandemic respiratory disease to identify and advise patients who smoke to quit. There may also be opportunities to embed smoking cessation information and interventions into testing procedures and hospital discharge planning processes, which would have a range of health co-benefits.

First, messaging: rather than focusing on debates about causality of a new agent, governments and health authorities can make definitive statements now on the impact of smoking on infectious respiratory disease in general. Seasonal infectious respiratory diseases and other respiratory pandemics may present opportunities for smoking cessation. General practitioners or health staff can use the opportunity of a seasonal or pandemic respiratory disease to identify and advise patients who smoke to quit. There may also be opportunities to embed smoking cessation information and interventions into testing procedures and hospital discharge planning processes, which would have a range of health co-benefits.

Second, data infrastructure: recording of smoking status at hospital admission is already poor. 12 Collecting accurate epidemiological information on smoking (or any lifestyle and/or environmental information) from acutely ill patients, especially in pandemic situations, is therefore not ideal. While smoking status collection in health

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records needs to be enhanced, smoking status in this context needs cautious interpretation. Smokers may cease smoking during respiratory incidents and inadvertently report themselves as non-smokers. Because of real or perceived stigma, smokers attending a health service with acute respiratory symptoms may well report themselves as non-smokers if they feel they may be triaged out of treatment. Large cohort studies could yield sufficient COVID-19 cases (notifications, hospitalizations, deaths) to achieve statistical power, so these should be used to provide information about risk and environmental factors increasing incidence of COVID-19 disease and death. Countries with good mortality statistics can monitor their causes of death to understand the complex ways in which COVID-19 can cause excess deaths. Countries such as China (Tianjin) and South Africa that adopted questions on smoking on their death notification forms can benefit from a cost-effective and enduring source of information on risks of smoking for specific causes of death, for this and future pandemics. Retrospective surveys of next-of-kin of recently deceased individuals can enquire about tobacco use status of their deceased relative—a limited number of modest lifestyle questions can be asked with robust results.

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References

1. Smoking cessation: a report of the Surgeon General. Washington, DC: US Department of Health and Human Services; 2020. Available from: https://www.hhs.gov/sites/default/files/2020-cessation-sgr-full-report.pdf [cited 2020 Jul 10].
2. Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2017 results. Seattle: Institute for Health Metrics and Evaluation (IHME); 2018. Available from: http://ghdx.healthdata.org/gbd-results-tool [cited 2020 Jul 10].
3. Petro R, Lopez AD. The future worldwide health effects of current smoking patterns. In: Koop EC, Pearson CE, Schwarz MR, editors. Critical issues in global health. New York: Jossey-Bass; 2001.
4. Baskaran V, Murray RL, Hunter A, Lim WS, McKeever TM. Effect of tobacco smoking on the risk of developing community acquired pneumonia: a systematic review and meta-analysis. PLoS One. 2019 07 18;14(7):e0220204. doi: http://dx.doi.org/10.1371/journal.pone.0220204 PMID: 31318967
5. Lin HH, Ezzati M, Murray M. Tobacco smoke, indoor air pollution and tuberculosis: a systematic review and meta-analysis. PLoS Med. 2007 Jan;4(1):e20. doi: http://dx.doi.org/10.1371/journal.pmed.0040020 PMID: 17227135
6. Muscatello DJ, Barr M, Thackway SV, Macintyre CR. Epidemiology of influenza-like illness during Pandemic (H1N1) 2009, New South Wales, Australia. Emerg Infect Dis. 2011 Jul;17(7):1240–7. doi: http://dx.doi.org/10.3201/eid1707.110173 PMID: 21762578
7. Alraddadi BM, Watson JT, Almarshi A, Abedi GR, Turkiastani A, Sadran M, et al. Risk factors for primary Middle East respiratory syndrome coronavirus illness in humans, Saudi Arabia, 2014. Emerg Infect Dis. 2016 Jan;22(1):49–55. doi: http://dx.doi.org/10.3201/eid2201.151340 PMID: 26692185
8. Tattan-Birch H, Perski O, Jackson S, Shahab L, West R, Brown J. COVID-19, smoking, vaping and quitting: a representative population survey in England. Addiction. 2020 Sep 11 add.15251. doi: http://dx.doi.org/10.1111/ add.15251 PMID: 32918300
9. Gaiha SM, Cheng J, Halpern-Felsher B. Association between youth smoking, electronic cigarette use, and COVID-19. J Adolesc Health. 2020 10;67(4):519–23. doi: http://dx.doi.org/10.1016/j.jadohealth.2020.07.002 PMID: 32798097
10. Sitas F, Bradshaw D, Egger S, Jiang G, Petro R. Smoking counts: experience of implementing questions on smoking on official death certification systems. Int J Epidemiol. 2019 04 1;48(2):633–9. doi: http://dx.doi.org/10.1093/ije/dyy226 PMID: 30462250
11. Karanasos A, Azmaouridis K, Latsios G, Synetos A, Plitasia S, Tousoulis D, et al. Impact of smoking status on disease severity and mortality of hospitalized patients with COVID-19 infection: a systematic review and meta-analysis. Nicotine Tob Res. 2020 08 24;22(9):1657–9. doi: http://dx.doi.org/10.1093/ntr/ntaa107 PMID: 32564072
12. Lujic S, Watson DE, Randall DA, Simpson JM, Jorm LR. Variation in the recording of common health conditions in routine hospital data: study using linked survey and administrative data in New South Wales, Australia. BMJ Open. 2014 09 3;4(9):e005768. doi: http://dx.doi.org/10.1136/bmjopen-2014-005768 PMID: 25186157
