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Anosmia and hyposmia in health-care workers with undiagnosed SARS-CoV-2 infection

On May 18 2020, Public Health England added new loss of taste or smell to the recognised symptoms associated with COVID-19, consistent with those listed by the Centers of Disease Control and Prevention (Atlanta, GA, USA) and WHO.^{1,2} The identification of loss of sense of smell as a symptom of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is particularly important for frontline health-care workers who are at high risk of both contracting and spreading SARS-CoV-2.³

Anonymous self-reported questionnaires were distributed to staff at Barts Health NHS Trust (London, UK). In total, 262 health-care workers from four hospitals completed the questionnaire between April 17 and 23, 2020, of whom, 59% were women, 58% were younger than 40 years, and 6% were older than 60 years, providing a representative sample of the patient-facing workforce. 73 (28%) of 262 participants had been tested for SARS-CoV-2; 56 of whom had a confirmed positive test by PCR. 168 (64%) of 262 responders reported losing their sense of smell or taste in the previous 2 months, with 94 (48%) reporting mild symptoms, 93 (48%) reporting moderate symptoms, and seven (4%) reporting severe symptoms.

Losing sense of smell or taste and developing COVID-19 were strongly associated. Participants who lost their sense of smell or taste were more likely to have a positive SARS-CoV-2 test than those who did not report these symptoms (odds ratio 4.9, 95% CI 1.4–17.1, $p=0.01$). 97 participants responded to a follow-up survey done between May 22 and 27, 2020; 45 (46%) reported that they had completely regained their sense of smell or taste, 41 (42%) had recovered partially, and seven (7%) had not recovered (not applicable for four [4%] responders). 71 (73%) of 97 responders had continued to work as normal. Around two-thirds of participants reported loss of sense of smell or taste in the previous 2 months, which is highly indicative of SARS-CoV-2 infection (appendix p 2). In comparison, the prevalence of self-reported smell loss varies between 1.4% and 15.3% across published studies.^{4,5}

To date, testing for health-care workers in the National Health Service has been scarce and only recently has been made more widely available. Thus, a large proportion of health-care workers might have already been infected with SARS-CoV-2 and had only mild symptoms, resulting in only a small number of health-care workers being tested. In conclusion, awareness and early recognition of anosmia and hyposmia is needed to identify, urgently test, and isolate affected health-care workers to prevent further spread of disease.

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- 1 Department of Health and Social Care. Statement from the UK Chief Medical Officers on an update to coronavirus symptoms: 18 May 2020. <https://www.gov.uk/government/news/statement-from-the-uk-chief-medical-officers-on-an-update-to-coronavirus-symptoms-18-may-2020> (accessed June 11, 2020).
- 2 Centers for Disease Control and Prevention. Coronavirus disease 2019. Symptoms. <https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html> (accessed April 21, 2020).
- 3 Lechner M, Chandrasekharan D, Jumani K, et al. Anosmia as a presenting symptom of SARS-CoV-2 infection in healthcare workers—a systematic review of the literature, case series, and recommendations for clinical assessment and management. *Rhinology* 2020; published online May 9. <https://doi.org/10.4193/Rhin20.189>.
- 4 Hummel T, Whitcroft KL, Andrews P, et al. Position paper on olfactory dysfunction. *Rhinol Suppl* 2017; **54**: 1–30.
- 5 Yang J, Pinto JM. The epidemiology of olfactory disorders. *Curr Otorhinolaryngol Rep* 2016; **4**: 130–41.



See Online for appendix