

## EDITORIAL

# Risks posed by COVID-19 to healthcare workers

Healthcare workers (HCWs) have been on the front line of the fight against Coronavirus-19 (COVID-19). Nonetheless, the exact nature of the risks posed by the virus to HCWs is not widely understood. This article summarizes the state of the current literature, including consideration of broader biopsychosocial morbidities at the time of writing (September 2020).

Over the past months, as testing has become more widely available and testing regimes have expanded to include antibody testing of asymptomatic staff, evidence has accumulated to suggest that HCWs have been infected at a disproportionately higher rate compared with the general population. The largest scale research project conducted thus far collected data via a smartphone app of over 2 million participants, including nearly 100 000 health and social care workers. The study concluded that health and social care workers had a more than 3-fold increased risk of reporting a previous positive test for the disease, after adjustment for confounders including likelihood of receiving a test. This risk was similar between HCWs of both sexes and almost twice as high for Black, Asian and Minority Ethnic (BAME) health and social care workers. The research found elevated infection rates among those without access to adequate personal protective equipment (PPE), although these were still disproportionately high among HCWs with sufficient protective equipment. The study did not find a causal explanation for this, but the authors emphasized the importance of appropriate application and disposal of PPE [1].

Early results from another research project which tested a random sample of 100 000 individuals for presence of SARS-CoV-2 antibodies, produced similar results, finding that HCWs with patient contact had double the odds of infection compared to non-essential workers. This figure rose to triple for social care workers working in residential care homes [2]. These data imply an increased risk of disease transmission due to occupational and workplace exposures, especially as PPE was introduced to care homes relatively late in the pandemic [3]. However, it is frequently challenging to identify specific nosocomial transmission events due to the prevalence of the disease within the community.

Unfortunately, HCW infection data disaggregated by occupational group are unavailable on a national level at the time of writing. The largest scale local study, conducted on 10 000 staff members in Oxford University

Hospitals National Health Service (NHS) Foundation Trust, found that porters and cleaners were most likely to have been infected, and that junior doctors were at higher risk than their senior colleagues. Positivity rates were also higher in staff working in COVID-19-facing areas and among BAME staff. The researchers noted that infection rates in staff working in intensive care units, where more robust infection control measures, including distribution of PPE, had been established, were almost three times as low as in those working in the acute medical wards, where PPE use was more sporadic [4].

Although the data only represent one NHS trust, there have been widespread reports of PPE shortages across the UK during the early months of the pandemic. A survey from the British Medical Association (BMA), for example, found a majority of doctors working in high-risk areas reporting shortages of face masks, as well as being pressured to carry out aerosol-generating procedures, which pose a particularly acute risk of nosocomial transmission, without adequate PPE [5]. As such, similar patterns of infection to those observed in Oxford may well have occurred at other NHS trusts.

Data recording disease severity and disease progression from onset among HCWs remain somewhat scarce. Provisional analysis from Office of National Statistics (ONS) found that 313 HCWs succumbed to the virus up to July 2020 [6]. The ONS also found that age-adjusted mortality rates from COVID-19 for male HCWs have been 50% higher than men in the general population, with particularly high death rates among male nurses and nursing assistants. For women, the ONS found that mortality rates among HCWs taken as a group have not experienced a significantly higher mortality rate when compared to those of the same age in the general population, although female nurses have suffered a higher death rate [7]. In many cases, the sample sizes used in these analyses may be too small to reach statistical significance, and the data were not adjusted for other confounders, so some caution is advised when interpreting these results. Data detailing admission rates to either intensive care units or lower levels of hospital care are not, as yet, publicly available.

In addition to the direct risks posed by contracting the disease, the pandemic is known to have exacted a substantial toll on the mental well-being of HCWs. Healthcare staff have often had to contend with significant disruptions to an already-strained working environment including longer hours, possible redeployment to

unfamiliar clinical and non-clinical roles, PPE shortages, new protocols and ways of working, staff shortages and the risk of infecting family members.

Research from China found those HCWs working directly with COVID-19 patients to be at particularly elevated risk of reporting symptoms of depression, anxiety, insomnia and distress [8]. This is consistent with the more abundant epidemiological data from previous viral outbreaks, which showed that HCWs who work in close contact with infected patients were at significantly greater risk of both acute or post-traumatic stress and psychological distress. Adverse psychological outcomes in response to viral outbreaks are also frequently associated with inadequate access to effective PPE and more prevalent among those with a history of mental illness or substance abuse, nurses and those with less clinical experience [9].

A recent BMA survey of over 5000 doctors in July 2020 found that 43% of respondents self-reported suffering from depression, anxiety, stress, burnout, emotional distress or any other mental health condition relating to, or made worse by work. Of these, nearly 70% reported a worsening of their condition during the pandemic [10]. This is particularly concerning given the high pressures exerted on HCWs that predate the pandemic. Indeed, a recent review of the mental health of HCWs prior to the COVID-19 outbreak revealed high levels of stress, burnout and work-related mental illness [11].

With winter approaching, and the infection rates rising, the priority for occupational health (OH) providers is to ensure HCWs and their managers have timely access to the evidence-based advice and support necessary to safeguard and protect staff health and well-being, including hierarchy of infection control measures. Actions should include taking a lead role in the development and roll-out of COVID-19 risk assessments and management plans for all workers, and overseeing the provision of a suite of physical and psychological staff support and well-being initiatives so staff and teams can access during in the months ahead. For example, access to one-to-one counselling or team huddles, promotion of practical self-care strategies such as healthy diet, exercise and good sleep hygiene including fatigue risk management systems, as well as ensuring short breaks are regularly taken at work. Meditation and mindfulness techniques can also be beneficial for mental well-being.

It is of particular importance that HCWs are encouraged to seek mental health support where necessary. Doctors in particular have been shown to be reluctant to seek support for mental health conditions for fear of stigma and damage to future career prospects [11]. Psychological support should continue after the pandemic subsides, as psychological morbidities can persist for many months after the conclusion of an outbreak.

Given the substantial evidence that the virus presents asymptotically in a proportion of those it infects, and to further minimize the risk of infection, HCWs should be

equipped with as comprehensive PPE as supplies allow, regardless of whether they are coming into contact with suspected or confirmed COVID-19-positive patients.

There is also emerging evidence that in some patients, COVID-19 has debilitating effects which can last for many months after infection, known as long covid. Symptoms vary, but can include persistent and fluctuating fatigue, breathlessness, cognitive blunting, pain and cardiac complications. The cause is currently unknown, but it is likely to be due at least in part to an inflammatory reaction. Occupational health management includes ensuring that the diagnosis has been confirmed and other serious complications have been excluded, then supporting the management of symptoms through graded respiratory and physical exercises, as well as providing psychological support where necessary.

In addition to the direct challenges posed by COVID-19, NHS OH providers will have to contend with seasonal influenza and likely a backlog in work as a result of the 'first wave' of the pandemic. In order to lessen the impact during winter months it will be of critical importance that HCWs are immunized against the seasonal influenza as comprehensively and early as possible.

The coming months may be some of the most challenging that NHS OH services have ever faced. NHS OH providers have played an indispensable role in protecting the health and well-being of HCWs during the tumultuous first months of the pandemic; however, it is vital that they remain agile and flexible in the face of evidence which is developing at pace.

#### **Rupert Muiry**

Occupational Health Service, Guy's and St Thomas' NHS Foundation Trust London, London SE1 7NJ, UK

#### **Vaughan Parsons**

Occupational Health Service, Guy's and St Thomas NHS Foundation Trust, London SE1 7NJ, UK  
Faculty of Life Sciences and Medicine, King's College London, London WC2R 2LS, UK

#### **Ira Madan**

Occupational Health Service, Guy's and St Thomas NHS Foundation Trust, London SE1 7NJ, UK  
Faculty of Life Sciences and Medicine, King's College London, London WC2R 2LS, UK  
e-mail: [ira.madan@kcl.ac.uk](mailto:ira.madan@kcl.ac.uk)

### **Competing interests**

None declared.

### **References**

1. Nguyen LH, Drew DA, Graham MS *et al.* Risk of COVID-19 among front-line health-care workers and the general

- community: a prospective cohort study. *Lancet Public Health*. 2020;5(9):e475-e83.
2. Ward H, Atchison CJ, Whitaker M *et al*. Antibody prevalence for SARS-CoV-2 in England following first peak of the pandemic: REACT2 study in 100,000 adults. *medRxiv*. 2020, doi:<https://doi.org/10.1101/2020.08.12.20173690>.
  3. ARHAI Scotland. Rapid Review of the Literature: Assessing the Infection Prevention and Control Measures for the Prevention and Management of COVID-19 in Health and Care Settings. NHS National Service Scotland, 2020. <https://www.hps.scot.nhs.uk/web-resources-container/rapid-review-of-the-literature-assessing-the-infection-prevention-and-control-measures-for-the-prevention-and-management-of-covid-19-in-health-care-settings/.21/10/2020> (5 October 2020, date last accessed).
  4. Eyre DW, Lumley SF, O'Donnell D *et al*. Differential occupational risks to healthcare workers from SARS-CoV-2: a prospective observational study. *medRxiv*. 2020, doi:<https://doi.org/10.1101/2020.06.24.20135038>.
  5. BMA Survey Finds Doctors' Lives Still at Risk Despite Government Pledges on PPE. British Medical Association, 7 April 2020. <https://www.bma.org.uk/bma-media-centre/bma-survey-finds-doctors-lives-still-at-risk-despite-government-pledges-on-ppe> (28 July 2020, date last accessed).
  6. *Deaths Involving the Coronavirus (COVID-19) Among Health and Social Care Workers in England and Wales, Deaths Registered Between 9 March and 20 July 2020*. Newport, Titchfield and London: Office for National Statistics, 2020. <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/causesofdeath/adhocs/12112deathsinvolvingthecoronaviruscovid19amonghealthandsocialcareworkersinenglandandwalesdeathsregisteredbetween9marchand20july2020> (5 October 2020, date last accessed).
  7. Public Health England. Evaluation of the ortho clinical diagnostics vitros immunodiagnostic products anti-SARS-CoV-2 IgG serology assay for the detection of anti-SARS-CoV-2 antibodies. London: Public Health England. 2020. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/894173/Evaluation\\_of\\_OCD\\_Vitros\\_Immunodiagnostic\\_Anti-SARS\\_CoV2\\_total\\_antibody\\_serology\\_assay.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/894173/Evaluation_of_OCD_Vitros_Immunodiagnostic_Anti-SARS_CoV2_total_antibody_serology_assay.pdf) (28 July 2020, date last accessed).
  8. Lai J, Ma S, Wang Y *et al*. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw Open* 2020;3:e203976.
  9. Kisely S, Warren N, McMahon L, Dalais C, Henry I, Siskind D. Occurrence, prevention, and management of the psychological effects of emerging virus outbreaks on healthcare workers: rapid review and meta-analysis. *Br Med J* 2020;369:m1642.
  10. BMA. *CovidTracker Survey*. London: British Medical Association, April 2020. <https://www.bma.org.uk/bma-media-centre/bma-survey-reveals-almost-half-of-doctors-have-relied-upon-donated-or-self-bought-ppe-and-two-thirds-still-don-t-feel-fully-protected> (5 October 2020, date last accessed).
  11. Kinman G, Teoh K. *What Could Make a Difference to the Mental Health of UK Doctors? A Review of the Research Evidence*. London: Society of Occupational Medicine, 2018. [https://www.som.org.uk/sites/som.org.uk/files/What\\_could\\_make\\_a\\_difference\\_to\\_the\\_mental\\_health\\_of\\_UK\\_doctors\\_LTF\\_SOM.pdf](https://www.som.org.uk/sites/som.org.uk/files/What_could_make_a_difference_to_the_mental_health_of_UK_doctors_LTF_SOM.pdf) (5 October 2020, date last accessed).