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Contact person: Michael Simon, Manuela Eicher	
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Title: Protecting physical and mental health of healthcare workers	
Summary of request/problem: Identify the risks of SARS-CoV-2 for the healthcare workforce and their possible solutions.	
<p>Executive Summary</p> <p>Epidemics and pandemics have enormous implications on healthcare systems, particularly on the healthcare workforce (1). While the SARS-CoV-2 pandemic poses a significant challenge for the entire healthcare workforce worldwide nursing staff (i.e. nurses, midwives, licensed practical nurses, nursing assistants, nursing students) are especially affected as they represent the largest group of frontline healthcare workers providing extended working hours in close proximity to patients. In all settings (e.g. hospitals, nursing homes and community care) SARS-CoV-2 poses unique occupational health challenges not only to provide a rapid and sustainable response but also to continue providing care to vulnerable populations (e.g. chronically ill, older or frail persons) irrespective of their SARS-CoV-2 status.</p> <p>To maintain the healthcare workforce during this and future crises, it is crucial to provide healthcare workers with the right equipment and appropriate training and to protect their physical and mental health. Healthcare workers are threatened not only by exposure to infectious diseases, but also by long working hours and reduced rest periods. As they fall ill, their absence further exacerbates their colleagues' workloads consequently increasing their risks of infection. Moreover, staff shortages negatively impact quality of care, reduce patient safety and increase incidence of adverse events (e.g. medication errors).</p> <p>Close surveillance and monitoring by testing for viral status is consequently of importance to keep the healthcare workforce safe. Another aspect is to provide enough and appropriate personal protective equipment (PPE). Swiss healthcare workers have reported inter-setting disparities in PPE availability with acute care hospitals having more stock, while community and long-term care facilities seem to be less well prepared. This does not only apply to equipment shortages but also a lack of knowledge in how to use the equipment properly or how to maintain standard infection prevention precautions. A recent study in Swiss nursing homes showed that only 52% of the institutions provided regular hand hygiene training (2). Access to infection control and expert knowledge is</p>	

instrumental in implementing adequate measures into daily clinical practice and while this is available in larger Swiss hospitals, smaller hospitals, community and long-term care settings do not have adequate access to this expertise. Experiences during the first months of the disease outbreak in Switzerland have shown that not all healthcare workers had appropriate access to PPE and that not all had sufficient know-how to respond to an emerging infectious disease, such as SARS-CoV-2. This know-how is rapidly evolving and available at Swiss university hospitals. Currently, resources, particularly in cantonal public health units, university hospitals, larger hospitals and in higher education organisations, are not yet sufficient to disseminate and implement this know-how rapidly across all 281 hospitals, 1'566 nursing homes and more than 600 home care organisations. Cantons and the Federal Office of Public Health are responsible not only to coordinate, but also to seek ways to provide resources for hospitals and higher education organisations to distribute this highly specialised know-how and to provide training opportunities in appropriate volume.

It needs to be highlighted that the SARS-CoV-2 pandemic does not only threaten the physical but also the psychosocial health of the healthcare workforce. For example, a recent online survey of 553 nurses and 857 physicians in Switzerland found that less perceived support by the employer was associated with higher anxiety and burnout (3). This study is in line with previous evidence showing serious implications for the workforce and on the health care systems ability to deliver care at a time of heightened need and thereafter (4). Psychosocial health issues are associated with physical health risks of pandemics and thus contribute to the vicious cycle of sickness absence, workforce shortages, and risks of adverse events, as described above. Supporting not only the physical but also the psychosocial health of healthcare workers and developing appropriate multilevel measures to support them are thus essential for policymakers, executive managers and nurse leaders.

Recommendations (on the federal, cantonal level):

- Take responsibility – including organizational and financially support – to ensure that all healthcare workers are proactively informed about the latest infection control practices and necessary measures of the SARS-CoV-2 outbreak. Cantons provide the financial means, decide on the organization and structure responsible for rolling out such measures.
- Aligned with recommendations of centers of expertise, provide PPE and additional specialized staff resources for infection control training and consultations for all healthcare settings according to legal requirements (EpG Art.35-3) and the needs of the different settings.
- Closely monitor Covid-19 and mortality rates among healthcare workers in all health care settings
- Monitor healthcare workers' mental health and develop appropriate support
- Involve community and long-term care representatives systematically in pandemic emergency task forces of cantons and communities

Main

Managing crises such as the SARS-CoV-2 pandemic demand a well-equipped, well-educated, physically and mentally healthy healthcare workforce. However, in some hospitals, nursing homes and home care personal protective equipment were either difficult to obtain or were initially lacking. In particular, many frontline staff were insecure because of lack of both, infection prevention training, and mental health support. These

shortfalls affect all healthcare personnel but especially the nursing staff as the largest group of healthcare workers. It was thus of importance to further analyze the risks of SARS-CoV-2 for the healthcare workforce and how to best reduce them.

1. Protecting the physical health of healthcare workers

Healthcare worker's occupational risks go beyond the risk of infection to the physical and mental strain of longer shifts, overtime and reduced rest periods. As of early May 2020, the International Council of Nurses estimated that roughly 230'000 healthcare workers had been infected by SARS-CoV-2 worldwide (5). Germany's Robert Koch Institute reported 18'937 infected healthcare workers (11.3% of all reported SARS-CoV-2 cases) and 54 deaths in hospitals, primary care, nursing homes and social care organizations (6). A single site screening of symptomatic healthcare workers in England found 14% to be infected (7). Because of limited systematic reporting in Switzerland, the exact numbers of infections among healthcare workers are unknown. To the best of our knowledge, fatalities among healthcare workers were not reported in Switzerland. Also, it was not always clear whether infections were community or hospital associated. Anecdotal evidence suggests high variation of infections between regions, depending on the severity of the outbreak.

A high infection rate is also harmful for settings already struggling to recruit or maintain qualified staff such as nursing homes or home care (8). In highly specialized areas (e.g. ICUs) healthcare workers cannot be replaced easily but need to be intensively trained requiring large expenditures of time and resources. In these settings spiking patient counts typically lead to excessive overtime and the introduction of 12-hour shifts further amplifying healthcare workers' normal strains and health risks (9).

Ultimately sustained high pressure impacts patient safety with increasing adverse events incidence (e.g. medication errors) and flagging quality of care. Therefore, protecting healthcare workers from infection requires close surveillance and monitoring by testing for viral status according to standard procedures (i.e. testing for SARS-Cov-2 by PCR), sufficient personal protective equipment and training across settings, support for organisations to develop of infection prevention measures in all settings and measures to prevent excessive working times (8–11).

Protection from infection through PPE and training

The provision of appropriate personal protective equipment (PPE) is crucial to help healthcare workers protect themselves and patients from infection (1). However, while PPE is mostly available in Switzerland, this does not guarantee its delivery and use in all settings and organizations despite legal obligations (EpG Art.35-3). Healthcare workers report insufficient stocks especially in community care, home care and nursing home settings. Given the Swiss Influenza Pandemic Plan (12), such shortages are unexpected and highlight the need for equal representation of community care, home care and nursing homes in pandemic emergency task forces.

Furthermore healthcare workers need education and training on correct PPE use, hand hygiene, disinfection, medical waste management, and countermeasures to occupational exposure (13–15). This requires clear and consistent guidelines (14). A recent study in Swiss nursing homes showed that only 52% of participating institutions provided regular hand hygiene training (2). Settings with less qualified healthcare workers need specific support to teach and supervise staff on PPE handling in ways that prevent disease transmission.

Training guidelines should explain up-to-date disease-specific training techniques, provide practice updates, overcome challenges and barriers in daily practice and ease healthcare workers' anxiety regarding carrying diseases home to their families (16). Moreover, there

is an important task for educational institutions to integrate the pandemic competencies in their curricula to prepare the future healthcare workforce for similar circumstances.

Support for organizations

University and other large hospitals have quick access to expert knowledge both in handling PPE and appropriately implementing infection control measures to prevent the spread of infections. Smaller hospitals, long-term care and community settings however often lack access to infectious disease specialists. Fewer than 50% of nursing homes employ internal infectious disease specialists which in turn leads to them being less prepared for infectious disease emergencies (2). Moreover, there is an overall shortage of specialists who can provide expert guidance within the specific context of long-term care settings (e.g. infection control on dementia wards or in home care).

Prevention of excessive working times

A common organisational response to a crisis is to reorganise services, including changes in working times, schedules, and shift organisation. During the SARS-CoV-2 pandemic this is particularly common in ICUs, but is also routinely used in other settings to cover for staff absences due to disease/quarantine or to prevent cross-infection between teams. There is only scarce evidence considering these effects on healthcare workers' health and patient safety during a pandemic, even if some recommendations were adapted from disaster planning (17) and gleaned from early experiences in Singapore(18). One statistical modelling study focusing on the difference between regular working schedules versus 12h shifts found less SARS-CoV-2 infection related workforce shortages for the 12h shift model, but did not analyze further health aspects resulting from these longer shifts (19).

The importance of balanced working times for healthcare worker's health and patient safety has however been confirmed (20).

2. Protecting the mental health of healthcare workers

Health care workers deliver care (including psychosocial support) directly to patients and their families. In limited resource settings their exposure to patients' and families' unmet needs and suffering is consequently high which in turn influences their mental health.

Impact on mental health

While many care staff experience stress and anxiety related to their own safety and health, they are also sensitive to the risk of infecting their families and patients (21). Evidence from previous epidemics and pandemics on healthcare workers' mental health confirms a higher incidence of e.g. insomnia, alcohol and drug abuse, posttraumatic stress disorder (PTSD), depression and anxiety (28). Some evidence also supports the possibility of long-term effects on mental health. For example, Maunder et al. observed higher symptom scores of PTSD, higher prevalence rates of burnout (30.4% vs. 19.2%) and more drinking, smoking or other work or relationship restricting behaviors (21.0% vs.8.1%) in exposed compared to non-exposed healthcare workers one year after the SARS outbreak (29). They also showed that healthcare workers exposed to SARS were more likely to have less face-to-face patient contact (16.5% vs. 8.3%) and to work fewer hours (8.6% vs. 2.2%) than those who were not exposed (29). Thus, some evidence indicates a link between exposure and detrimental patient care-related behaviors. However further investigation is warranted.

Healthcare workers also risk moral injury, i.e., psychological distress resulting from their own or their colleagues' actions, omissions or unprecedented decisions in this high pressure environment that might violate their moral or ethical codes (22, 23). Moral injury

can contribute to the development of mental health difficulties including depression, burnout, PTSD, even suicidal ideation and might thus lead to healthcare workers leaving their jobs (24, 25, 26).

Further factors influencing mental health

Organizational (i.e., occupational role and job related stress, specialized training and preparedness, high-risk environment and perceived risks and threats to safety, quarantine), social (i.e., support from their organization, family and friends, social rejection or isolation) and crisis-related factors influencing the personal life (e.g., reduced family contact) act as predictors that healthcare professionals will suffer mental health difficulties during an epidemic/pandemic (30). Consequently several factors appear to be protective for healthcare workers' mental health (30) — specifically, adequate infection control training, confidence in that training and in one's ability to do one's job, as well as stable social support.

In addition, personal (e.g., being young or single, separation from one's family, little healthcare work experience or lower income) and psychological factors (e.g., stigma) may increase healthcare workers' risk of mental health difficulties (28)(31). Stigma associated with mental illness was also found to affect healthcare workers' perceived stress thereby exacerbating mental health symptoms (31). In addition, it may prevent healthcare professionals from seeking professional help. For a more comprehensive overview of the evidence supporting factors beyond social and organizational factors please see Stuijzand et al. (21).

SARS-CoV-2's impact on healthcare workers' mental health

Surveys concerning healthcare workers' mental health in China and Switzerland already show the impact of the SARS-CoV-2 pandemic (3, 32–34) (e.g., high incidence of depressive symptoms, anxiety, insomnia, somatization or obsessive-compulsive symptoms). A Swiss national survey for example (based on the responses of 553 nurses and 857 physicians) described clinically relevant symptoms of anxiety in 25.9% and depression in 20.7% of the participants and an elevated burnout score (median of 4 on a scale ranging from 0-12) during the SARS-CoV-2 pandemic (3). However, the results have to be interpreted with caution due to possible selection of healthcare workers responding with increased probability for relevant symptoms. Further research is needed with longer follow-up and more robust sampling confirming the results. Nevertheless, the surveys indicate that a high percentage of healthcare workers were heavily burdened by the pandemic.(3,32–34).

Possible interventions to reduce SARS-CoV-2's impact on healthcare workers' mental health

To date, there is only very limited evidence concerning effective interventions to prevent or treat psychological strain in healthcare professionals before, during and after an epidemic/pandemic. One study, using a pre-post design — dealing with an Ebola outbreak — showed evidence of effectively reducing mental health symptoms by offering wellbeing screening workshops (including psychological first aid) and targeted further therapy (including targeted psychoeducation), if indicated (35).

In order to prevent healthcare workers bearing the high risks of both increased mental health issues and moral concerns individual Swiss healthcare services and professional organisations have adopted the WHO's basic principles for the provision of mental health support for healthcare workers (27). As these support measures vary in content and availability between institutions, a comprehensive and coordinated mental health support for healthcare workers during and after the SARS-CoV-2 pandemic needs to be assured.

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Recommendations from the Task Force

1. During the disease outbreak or in case of another wave of infections

- Cantons and the Federal Office of Public Health monitor infection, hospitalization, and death rates of health care workers. This enables the recognition of hotspots where leadership support is particularly needed.
- The cantons, the Federal Office of Public Health and healthcare providers work together to provide enough PPE in all settings, especially in outbreak hotspots, prioritizing the protection of healthcare workers and of vulnerable groups.
- The cantons take the responsibility and provide financial means to ensure that all HCWs have enough PPE. The canton may delegate the implementation to organisations within the canton, jointly with several cantons or to a national organisation. It is part of the cantonal responsibilities to coordinate and monitor such efforts.
- Infectious disease specialists and experts in infection prevention and -control from centers of expertise with the required knowledge develop appropriate prevention strategies for different organisations. In order to disseminate this know-how and provide expertise to smaller organizations and across settings, cantons need to provide additional resources for additional staff, training and technology. Again cantons may delegate the implementation to organisations within the canton or to a national organisation.
- Based on the recommendations of the centers of expertise healthcare providers and higher education organisations educate and train staff about appropriate use of PPE, infection control practices for SARS-CoV-2 and protecting mental health of healthcare workers. Uptake is supported via different media, videos and social media links. In order to foster confidence, updated information should be provided regularly about both pandemic and personal infection control procedures. Through educational campaigns, the providers explain the potential impacts that healthcare workers may be experiencing on their mental health, addressing potential stigma and encouraging anyone who needs help to come forward. Peer and social support amongst healthcare colleagues is actively encouraged. This will require additional resources.
- Healthcare providers ensure appropriate working hours and resting periods for healthcare workers and provide measures for self-distancing during an outbreak.
- To facilitate assessment of mental health symptoms and psychological distress linked to the disease outbreak, healthcare providers in all settings and independently of the pandemic screen individuals against known risk factors (see above). The screening should include particularly symptoms of insomnia, alcohol/drug misuse, PTSD, depression, anxiety, burnout, anger, and perceived stress. These data are anonymously monitored on a cantonal level and at the Federal Office of Public Health.
- For those reporting mental health symptoms, interventions (a stepped programme consisting, e.g. of a workshop on psychological first aid, a workshop on psychoeducation, and a brief CBT group program) should be made available. To

increase access, mental health specialists could train healthcare professionals to deliver the intervention to their peers within diverse healthcare contexts complemented with online tools.

2. After the disease outbreak

- Review of national, cantonal and institutional pandemic plans, PPE stocking strategies and plans for the provision of psychosocial support. The Federal Office of Public Health, cantons, and healthcare providers work together to develop a blueprint for workforce strategies under pandemic conditions.
- In the months following the outbreak, healthcare workers' perceived risks should be assessed, with tailored support provided in cases of continuing mental health symptoms.

3. Preparation before another disease outbreak

- Based on the recommendations of the centers of expertise, healthcare providers and higher education institutions offer regular refresher courses in PPE use and infection control principles for staff at all levels. It will require additional resources to organize and deliver such training courses.
- Mental health is integrated as part of education and training in catastrophe preparedness for all health care professions at all competency levels.
- Healthcare providers plan for pandemics and build reserve staff capacity, including plans for appropriate reallocation of staff.
- A mental health crisis team to support health care workers is established to oversee planning for all settings and support executive management for healthcare workers' psychosocial support.
- Infectious disease specialists are trained for under-served settings, e.g. long-term care.
- Infectious disease specialists prepare protocols for PPE use and infection control in all settings and revise these protocols on a regular basis.

References

1. Regional Office for Europe. Maintaining the delivery of essential health care services freeing up resources for the COVID-19 response while mobilizing the health workforce for the COVID-19 response [Internet]. World Health Organisation; 2020 Apr [cited 2020 May 10]. Available from: http://www.euro.who.int/__data/assets/pdf_file/0007/436354/strengthening-health-systems-response-COVID-19-technical-guidance-1.pdf?ua=1
2. Zúñiga F, Favez L. SHURP 2018 Infektionskontrolle - Resultate zu Handen Strategie NOSO. University of Basel; 2020.
3. Weilenmann S, Ernst J, Petry H, Szapinar O, Pfaltz MC, Gehrke S, et al. Health Care Workers Mental Health During the First Weeks of the SARS-CoV-2 Pandemic in Switzerland: A Cross-Sectional Study. medRxiv. 2020 May 8;
4. Dall'Ora C, Griffiths P, Ball J, Simon M, Aiken LH. Association of 12 h shifts and nurses' job satisfaction, burnout and intention to leave: findings from a cross-sectional study of 12 European countries. BMJ Open. 2015 Aug 23;5(9):e008331.
5. International Council of Nurses. ICN calls for data on healthcare worker infection rates and deaths [Internet]. 2020 [cited 2020 May 10]. Available from:

- <https://www.icn.ch/news/icn-calls-data-healthcare-worker-infection-rates-and-deaths>
6. Robert-Koch-Institut. Täglicher Lagebericht des RKI zur Coronavirus-Krankheit-2019 (COVID-19) 09.05.2020 [Internet]. 2020 [cited 2020 May 10]. Available from: https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Situationsberichte/2020-05-09-de.pdf?__blob=publicationFile
 7. Hunter E, Price DA, Murphy E, van der Loeff IS, Baker KF, Lendrem D, et al. First experience of COVID-19 screening of health-care workers in England. *Lancet*. 2020 May 2;395(10234):e77–8.
 8. Kim G, Wang M, Pan H, Neukirch J, Lei D, Hawken-Dennis E, et al. A Health System Response to COVID-19 in Long Term Care and Post-Acute Care: A Three-Phase Approach. *J Am Geriatr Soc*. 2020 Apr 28;
 9. Bae S-H, Fabry D. Assessing the relationships between nurse work hours/overtime and nurse and patient outcomes: systematic literature review. *Nurs Outlook*. 2014 Apr;62(2):138–56.
 10. Tsay S-F, Kao C-C, Wang H-H, Lin C-C. Nursing's response to COVID-19: Lessons learned from SARS in Taiwan. *Int J Nurs Stud*. 2020 Apr 11;108:103587.
 11. Bagnasco A, Zanini M, Hayter M, Catania G, Sasso L. COVID 19 - a message from Italy to the global nursing community. *J Adv Nurs*. 2020 Apr 30;
 12. Federal Department of Home Affairs FDHA, Federal Office of Public Health FOPH. Swiss Influenza Pandemic Plan - Strategies and measures to prepare for an influenza pandemic. Swiss Confederation; 2018.
 13. Peters A, Lotfinejad N, Simniceanu A, Pittet D. The economics of infection prevention: why it is crucial to invest in hand hygiene and nurses during the novel coronavirus pandemic. *J Infect*. 2020 Apr 23;
 14. Houghton C, Meskell P, Delaney H, Smalle M, Glenton C, Booth A, et al. Barriers and facilitators to healthcare workers' adherence with infection prevention and control (IPC) guidelines for respiratory infectious diseases: a rapid qualitative evidence synthesis. *Cochrane Database Syst Rev*. 2020 Apr 21;4:CD013582.
 15. Huang L, Lin G, Tang L, Yu L, Zhou Z. Special attention to nurses' protection during the COVID-19 epidemic. *Crit Care*. 2020 Mar 27;24(1):120.
 16. Quigley DD, Dick A, Agarwal M, Jones KM, Mody L, Stone PW. COVID-19 Preparedness in Nursing Homes in the Midst of the Pandemic. *J Am Geriatr Soc*. 2020 Apr 28;
 17. Wax RS. Preparing the intensive care unit for disaster. *Crit Care Clin*. 2019 Oct;35(4):551–62.
 18. Liew MF, Siow WT, MacLaren G, See KC. Preparing for COVID-19: early experience from an intensive care unit in Singapore. *Crit Care*. 2020 Mar 9;24(1):83.
 19. Mascha EJ, Schober P, Schefold JC, Stueber F, Luedi MM. Staffing with disease-based epidemiologic indices may reduce shortage of intensive care unit staff during the COVID-19 pandemic. *Anesth Analg*. 2020 Apr 7;
 20. Bernstrøm VH, Alves DE, Ellingsen D, Ingelsrud MH. Healthy working time arrangements for healthcare personnel and patients: a systematic literature review. *BMC Health Serv Res*. 2019 Mar 27;19(1):193.
 21. Stuijzand S, Deforges C, Sandoz V, Consuela-Thais S, Jaques C, Elmers J, et al. Psychological impact of an epidemic/pandemic on the mental health of healthcare professionals: a rapid review. (under review). 2020; DOI: 10.21203/rs.3.rs-30156/v1
 22. Greenberg N, Docherty M, Gnanapragasam S, Wessely S. Managing mental health

- challenges faced by healthcare workers during covid-19 pandemic. *BMJ*. 2020 Mar 26;368:m1211.
23. Horsch A, Lalor J, Downe S. Moral and mental health challenges faced by maternity staff during the Covid-19 pandemic . *Psychological Trauma: Theory, Research, Practice, and Policy*. 2020; DOI: 10.1037/tra0000629 .
 24. Williamson V, Stevelink SAM, Greenberg N. Occupational moral injury and mental health: systematic review and meta-analysis. *Br J Psychiatry*. 2018;212(6):339–46.
 25. Fernandez PR, Lord H, Halcomb PE, Moxham PL, Middleton DR, Alananzeh DI, et al. Implications for COVID-19: a systematic review of nurses’ experiences of working in acute care hospital settings during a respiratory pandemic. *Int J Nurs Stud*. 2020 May;103637.
 26. Jun J, Tucker S, Melnyk BM. Clinician Mental Health and Well-Being During Global Healthcare Crises: Evidence Learned From Prior Epidemics for COVID-19 Pandemic. *Worldviews Evid Based Nurs*. 2020 Apr 4;
 27. World Health Organization. Mental health and psychosocial considerations during the COVID-19 outbreak [Internet]. 2020 [cited 2020 May 10]. Available from: <https://www.who.int/docs/default-source/coronaviruse/mental-health-considerations.pdf>
 28. Vyas KJ, Delaney EM, Webb-Murphy JA, Johnston SL. Psychological Impact of Deploying in Support of the U.S. Response to Ebola: A Systematic Review and Meta-Analysis of Past Outbreaks. *Mil Med*. 2016;181(11):e1515–31.
 29. Maunder RG, Lancee WJ, Balderson KE, Bennett JP, Borgundvaag B, Evans S, et al. Long-term psychological and occupational effects of providing hospital healthcare during SARS outbreak. *Emerging Infect Dis*. 2006 Dec;12(12):1924–32.
 30. Brooks SK, Dunn R, Amlôt R, Rubin GJ, Greenberg N. A systematic, thematic review of social and occupational factors associated with psychological outcomes in healthcare employees during an infectious disease outbreak. *J Occup Environ Med*. 2018;60(3):248–57.
 31. Park J-S, Lee E-H, Park N-R, Choi YH. Mental Health of Nurses Working at a Government-designated Hospital During a MERS-CoV Outbreak: A Cross-sectional Study. *Arch Psychiatr Nurs*. 2018 Feb;32(1):2–6.
 32. Li Z, Ge J, Yang M, Feng J, Qiao M, Jiang R, et al. Vicarious traumatization in the general public, members, and non-members of medical teams aiding in COVID-19 control. *Brain Behav Immun*. 2020 Mar 10;
 33. Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw Open*. 2020 Mar 2;3(3):e203976.
 34. Zhang W-R, Wang K, Yin L, Zhao W-F, Xue Q, Peng M, et al. Mental Health and Psychosocial Problems of Medical Health Workers during the COVID-19 Epidemic in China. *Psychother Psychosom*. 2020 Apr 9;1–9.
 35. Waterman S, Hunter ECM, Cole CL, Evans LJ, Greenberg N, Rubin GJ, et al. Training peers to treat Ebola centre workers with anxiety and depression in Sierra Leone. *Int J Soc Psychiatry*. 2018;64(2):156–65.