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A Permanent OSHA Standard on Covid-19 is Essential to Protect Nurses, Other Health Care Workers, and Their Patients from Covid-19

The Covid-19 pandemic is not over. Nearly three years into the worst public health crisis in recent history, the novel coronavirus continues to spread and new variants that are more transmissible and immune evasive continue to emerge.

Nurses and other health care workers continue to care for Covid-19 patients and other patients without optimal personal protective equipment (PPE), testing, safe staffing levels, and other sound infection control policies. The federal Occupational Safety and Health Administration (OSHA) has repeatedly failed to hold employers accountable to providing safe workplaces during the pandemic citing the agency's lack of a standard on Covid-19.[1]

Up to January 2021, the federal government's response to the pandemic was one of denial and abandonment. President Biden recommitted to a strong, science-based pandemic response. We were hopeful after the inauguration that we would quickly see changes to the federal government's response. But we have been disappointed that critical improvements have not been made or maintained to protect nurses and other health care workers.

We were thankful to see OSHA's Health Care Covid-19 Emergency Temporary Standard (ETS), issued in June 2021, which was a historic effort towards protecting health care workers. With this ETS, OSHA was better able to hold health care employers accountable to protecting staff from Covid-19. However, OSHA's announcement to rescind the Health Care Covid-19 ETS and its subsequent non-enforcement policy was a devastating blow to health care workers, who continue to need strong workplace protections from Covid-19.

In order to protect nurses and health care workers from the ongoing pandemic, OSHA needs to issue a strong, science-based permanent standard on Covid-19 immediately.

On behalf of nearly 225,000 registered nurses, National Nurses United (NNU), the largest labor union and professional association for registered nurses in the United States, urges the White House, the Office of Management and Budget, and the Office of Information and Regulatory Affairs to complete the review of the OSHA permanent Covid-19 standard as quickly as possible and to ensure that OSHA issues a strong permanent Covid-19 standard that fully recognizes the scientific evidence regarding SARS-CoV-2 and goes beyond weak guidance issued by the U.S. Centers for Disease Control and Prevention (CDC). The following document discusses why a permanent Covid-19 standard is needed and what a strong, science-based OSHA permanent Covid-19 standard should include.

[1] For example, see Attachment 2 of Testimony of Pascaline Muhindura, RN, on Behalf of National Nurses United Before the Subcommittee on Workforce Protections, Committee on Education and Labor, March 11, 2021, https://edlabor.house.gov/imo/media/doc/MuhinduraPascalineTestimony03112021.pdf.

Table of Contents

D. OSHA should go beyond CDC guidance and require optimal PPE for nurses and other health care workers caring for patients suspected or confirmed Covid-19. Optimal PPE includes a powered air-purifying respirator (PAPR), virus impervious coveralls that incorporate head and shoe coverings, and medical-grade gloves.
E. OSHA should go beyond the CDC's guidance on transmission-based precautions for patients and ensure the highest standard to prevent onward transmission.
F. OSHA should strengthen ventilation and patient isolation and post-Covid exposure quarantine requirements.
G. OSHA should recognize that vaccines are not a silver bullet and must be part of an infection control plan implementing multiple prevention measures.
H. OSHA should not be swayed by health care employers' false arguments and faulty data.

Appendices:

Section 1: Covid-19/SARS-CoV-2 continues to pose a serious and ongoing risk to nurses and other health care workers.

A. Covid-19/SARS-CoV-2 continues to pose a serious and ongoing risk to nurses and other health care workers.

The Covid-19 pandemic is not over.

The Covid pandemic is far from over. Reports of new Covid-19 cases are once again increasing—weekly new Covid-19 cases have increased by 58 percent over the past month.[2] Forty-five states have seen Covid-19 cases increase over the past 14 days, with seven states reporting that cases have more than doubled.[3] These reports are likely an undercount.[4] The rates of Covid-related hospitalizations have increased by 38 percent in the previous month.[5]

Further, unfettered widespread SARS-CoV-2 transmission has resulted and will continue to result in evolution and spread of new variants of concern. Sub-lineages of the Omicron SARS-CoV-2 variant continue to emerge and spread in the U.S. and around the world, some of which have developed increased transmissibility, severity of disease, and/or immune escape.[6]

It is estimated that between 10 and 74 percent of those infected with Covid will experience persistent or new symptoms for weeks to months after initial infection, known as long

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[2] From 290,464 during the first week of November (Nov 3-9, 2022) to 458,986 during the first week of December (Nov 31-Dec 7, 2022).

U.S. Centers for Disease Control and Prevention (CDC), "COVID Data Tracker: Trends in Number of COVID-19 Cases and Deaths in the US Reported to CDC, by State/Territory," Updated Dec 13, 2022, https://covid.cdc.gov/covid-data-tracker/#trends_weeklycases_select_00.

[3] New York Times analysis, using data from state and local health agencies.

New York Times, "Coronavirus in the U.S.: Latest Map and Case Count, State trends," Updated Dec 14, 2021, https://www.nytimes.com/interactive/2021/us/covid-cases.html.

[4] The CDC estimates that only 1 in 4 Covid-19 infections were reported between February 2020 and September 2021. That disparity has likely increased due to the increase in at-home testing and significant decrease in reported testing volume. The number of tests reported to the CDC has been at the lowest level since June 2020 for multiple months (since mid-August 2022).

U.S. CDC, "Estimated COVID-19 Burden," Updated Aug 12, 2022, https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/burden.html (Accessed Dec 12, 2022).

U.S. CDC, "COVID Data Tracker: Trends in Number of COVID-19 Cases and Deaths in the US Reported to CDC, by State/Territory," Updated Dec 7, 2022, https://covid.cdc.gov/covid-data-tracker/#trends_7daytestresultsreported_select_00 (Accessed Dec 12, 2022).

[5] On Nov 10, 2022, the rate was 1.03 hospitalizations per 100,000 population. On Dec 10, the rate was 1.42 per 100,000 population.

[6] U.S. Centers for Disease Control and Prevention, "COVID Data Tracker," Dec 14, 2021. Available at https://covid.cdc.gov/covid-data-tracker/#variant-proportions.

Covid.[7] Each additional reinfection increases the risk of developing long Covid sequelae, including pulmonary, cardiovascular, hematological, diabetes, gastrointestinal, kidney, mental health, musculoskeletal, and neurological disorders.[8]

With no end in sight, a permanent OSHA Covid-19 standard is both necessary and vital to protect nurses and other health care workers from the grave danger posed by the Covid-19 pandemic. As the CDC explicitly states, "All patients with SARS-CoV-2 infection in the hospital pose a risk to health care workers and other patients, even if the patient has mild illness or is asymptomatic and the infection is incidental."[9]

Health care workers have been infected—and have died—from Covid-19 at high rates.

When the Covid-19 pandemic began, despite consistent advocacy by NNU nurses,[10] health care employers in the United States failed to prepare, a failure that is ongoing. Instead of protecting nurse and patient health and safety, health care employers resolutely prioritized profits and have continued to do so throughout the pandemic. Employers locked up and rationed lifesaving PPE, canceled nurse shifts while Covid-19 units were dangerously short staffed, embraced unproven and dangerous decontamination methods and reuse of N95 respirators, and neglected to test and notify health care workers of Covid-19 exposures.

Nearly three years into the pandemic, health care workers continue to face high risks of contracting Covid-19 on the job due to lack of protections from employers. Specifically, the lack of optimal workplace protections for nurses and other health care workers have

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[7] Chen, C., S.R. Haupert, et al., "Global Prevalence of Post-Coronavirus Disease 2019 (COVID-19) Condition or Long COVID: A Meta-Analysis and Systematic Review" J Infectious Diseases, April 2022, https://doi.org/10.1093/infdis/jiac136.

European Centre for Disease Prevention and Control, "Prevalence of post COVID-19 condition symptoms: a systematic review and meta-analysis of cohort study data, stratified by recruitment setting," Oct 31, 2022, https://www.ecdc.europa.eu/en/publications-data/prevalence-post-covid-19-condition-symptoms-systematic-review-and-meta-analysis.

U.S. Government Accountability Office, "Science & Tech Spotlight: Long COVID," March 2, 2022, https://www.gao.gov/products/gao-22-105666.

CDC, "Nearly One in Five American Adults Who Have Had COVID-19 Still Have "Long COVID," June 22, 2022, https://www.cdc.gov/nchs/pressroom/nchs_press_releases/2022/20220622.htm.

U.K. Office for National Statistics, "Prevalence of ongoing symptoms following coronavirus (COVID-19) infection in the UK: 7 July 2022," July 7, 2022, https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/prevalenceofongoingsymptomsfollowingcoronaviruscovid19infectionintheuk/7july2022.

[8] Bowe, B., Y. Xie, and Z. Al-Aly, "Acute and postacute sequelae associated with SARS-CoV-2 reinfection," Nature Medicine, Nov 10, 2022, https://doi.org/10.1038/s41591-022-02051-3.

[9] U.S. Centers for Disease Control and Prevention, "Science Brief: Indicators for Monitoring COVID-19 Community Levels and Making Public Health Recommendations," updated Aug 12, 2022, https://www.cdc.gov/coronavirus/2019-ncov/science/science-briefs/indicators-monitoring-community-levels.html (Accessed Dec 14, 2022).

[10] National Nurses United, "Survey of Nation's Frontline Registered Nurses Shows Hospitals Unprepared For COVID-19," March 5, 2020, https://www.nationalnursesunited.org/press/survey-nations-frontline-registered-nursesshows-hospitals-unprepared-covid-19.

resulted in staggering rates of preventable infections and deaths. Tracking and reporting of Covid-19 exposure, morbidity, and mortality among health care workers is insufficient in the United States but studies from around the world show the increased danger faced by health care workers.

Workers employed in health care consistently constitute the greatest percentage of positive Covid-19 cases by occupation in the U.S. and around the world:

- In Italy, 20 percent of all health care workers responding to the Covid-19 pandemic were infected.[11]

- A survey of nurses in Spain found a staggering 32 percent of nurses who were tested for Covid-19 were positive.[12]

- In the U.K. and the United States, the risk of testing positive for Covid-19 was nearly 12 times higher among frontline health care workers compared with the general community.[13]

- Another study found that health care workers in the U.K had more than a seven-fold higher risk of severe Covid-19 compared to non-essential workers.[14]

- A study comparing Covid-19 rates among U.S. health care workers to rates among those working outside of health care found higher rates among health care workers, with 7.3 percent of health care workers testing positive compared to 0.4 percent of non–health care workers.[15] Moreover, the study found that, among health care workers, nurses had both the highest rate of infections and the highest number of infections. Specifically, nurses constituted 63 percent of cases, with rates of infection among nurses at 11.1 percent compared to rates of infection of 1.8 percent in attending physicians and 3.1 percent in residents and nonattending physicians. The high rates of infection among nurses compared to other health care workers may

[11] "COVID-19: Protecting Health-Care Workers," The Lancet, vol 395, no. 10228, 2020, p. 922, DOI: https://doi.org/10.1016/S0140-6736(20)30644-9

[12] Kollmeyer, B., "Nearly a Third of Spain's 255,000 Nurses May Be Infected with Coronavirus, Study Indicates," MarketWatch, April 15, 2020, https://www.marketwatch.com/story/nearly-a-third-of-spains-255000-nurses-may-be-infected-with-coronavirus-study-indicates-2020-04-15.

[13] Nguyen, L.H., D.A. Drew, et al., "Risk of COVID-19 among front-line health-care workers and the general community: a prospective cohort study," The Lancet Public Health, July 2020, https://doi.org/10.1016/S2468-2667(20)30164-X.

[14] Mutambudzi , M., C. Niedzwiedz, et al., "Occupation and risk of severe COVID-19: prospective cohort study of 120 075 UK Biobank participants," Occupational & Environmental Medicine, December 9, 2020, https://oem.bmj.com/content/78/5/307.

[15] Barrett, E.S., D.B. Horton, et al., "Prevalence of SARS-CoV-2 infection in previously undiagnosed health care workers in New Jersey, at the onset of the U.S. COVID-19 pandemic," BMC Infectious Diseases, November 16, 2020, https://doi.org/10.1186/s12879-020-05587-2.

also relate to the nature of their work. Registered nurses tend to interact with patients more intimately and for longer periods of time than most other health care workers.[16]

- Another study found that health care workers who worked in clinical and Covid clinical units had 5.87 and 11.46 higher odds, respectively, of breakthrough infection compared to those who had nonclinical roles.[17]

- Recently published data from the CDC found that nurses and other health care workers have been disproportionately impacted by work-related Covid-19 exposure, infection, and death. Workers in health care practitioner and technical occupations, which includes registered nurses, experienced a significantly higher proportion of deaths due to Covid than other causes compared to all workers combined in 2020.[18]

Despite the risks nurses face being on the frontlines of the pandemic, local, state, and federal governments have failed to track and report data on Covid-19 infections and deaths among nurses and other health care workers. In March 2020, when it became clear that the federal and state governments were not effectively tracking health care worker Covid-19 infections, NNU began using public data sources to track health care worker Covid-19 infections and deaths. As of December 16, 2022, NNU has identified nearly two million health care worker Covid-19 cases and at least 5,549 health care workers who have died from Covid-19, including at least 497 registered nurses.[19] This is almost certainly an

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For example, registered nurses perform or participate in aerosol generating procedures — especially with Covid-19 patients, who may require cardiopulmonary resuscitation, intubation, extubation, and other treatments. Respiratory events such as coughing, sneezing, and breathing from Covid-19 patients also frequently expose registered nurses with infectious aerosols. Studies have shown that breathing and speaking produces more aerosol particles than most aerosol-generating procedures. Breathing, speaking, coughing, and sneezing are aerosol-generating. This is what it means to be on the frontlines as a direct care registered nurse.

Brown, J., F.K.A. Gregson, et al., "A quantitative evaluation of aerosol generation during tracheal intubation and extubation," Anaesthesia, February 2021, https://doi.org/10.1111/anae.15292

Coleman, K.K., D.J.W. Tay, et al., "Viral Load of SARS-CoV-2 in Respiratory Aerosols Emitted by COVID-19 Patients while Breathing, Talking, and Singing," Clinical Infectious Diseases, August 6, 2021, https://doi.org/10.1093/cid/ciab691.

Stadnytskyi, V., C.E. Bax, et al., "The airborne lifetime of small speech droplets and their potential importance in SARS-CoV2 transmission," PNAS, May 13, 2020, https://doi.org/10.1073/pnas.2006874117.

Wilson, N.M., G.B. Marks, et al., "The effect of respiratory activity, ventilatory therapy and facemasks on total aerosol emissions," Anaesthesia, March 30, 2021, https://doi.org/10.1111/anae.15475.

[17] Rivelli, A., Fitzpatrick, V., et al., "Factors Associated With COVID-19 Breakthrough Infections in Large Midwestern Healthcare System: Implications for Vulnerable Healthcare Personnel," J Occupational and Environmental Medicine: August 2022 - Volume 64 - Issue 8 - p 635-641 doi: 10.1097/JOM.0000000000002576.

[18] Billock, R.M., A.L. Steege, and A. Miniño, "COVID-19 mortality by usual occupation and industry: 46 states and New York City, United States, 2020," National Vital Statistics Reports; vol 71 no 6. Hyattsville, MD: National Center for Health Statistics, 2022, https://dx.doi.org/10.15620/cdc:120292.

[19] In contrast, as of December 14, 2022, the CDC reports just 1,060,619 health care worker infections and 2,422 health care worker deaths from Covid-19. U.S. Centers for Disease Control and Prevention, "COVID Data Tracker:

undercount, since many deaths do not appear in obituaries or other public sources that contain the person's profession and cause of death.

Of the RNs who have died from Covid-19, 48 percent are nurses of color, reflecting the broader disproportionate impact of Covid-19 on communities of color.[20] Just over a quarter (25.1 percent) of registered nurses in the United States are people of color.[21]

Health care workers experience significant and harmful impacts from long Covid.

Accompanying this high risk of Covid-19 infection is the risk of post-acute sequelae of SARS-CoV-2 infection (PASC or "long Covid"). Long Covid refers to symptoms that can persist for several weeks or months following initial infection and can occur among previously healthy individuals and across all age groups. It can affect most major organ systems including respiratory, cardiovascular, metabolic, musculoskeletal, pulmonary, gastrointestinal, nervous, and regulatory processes (see Appendix 1). Recent studies estimate that 10 to 30 percent of Covid-19 survivors in the United States develop chronic health impacts, which means 7.7 million to 23 million individuals may have developed PASC as of February 2022.[22] But this is likely a conservative estimate and may grow, as there are no laboratory tests or treatment for long Covid. Other studies estimate that an

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Cases & Deaths among Healthcare Personnel," updated December 14 2022, https://covid.cdc.gov/covid-data-tracker/#health-care-personnel.

For methodology, see National Nurses United, "Sins of Omission: How Government Failures to Track Covid-19 Data Have Led to More Than 3,200 Health Care Worker Deaths and Jeopardize Public Health," Updated March 2021, https://www.nationalnursesunited.org/sites/default/files/nnu/documents/0321_Covid19_SinsOfOmission_Data_Report.pdf.

[20] The Covid-19 pandemic has illuminated longstanding systemic and racial disparities in health care. People of color, immigrant, and other underserved populations are disproportionately impacted by Covid-19 as they have inequitably borne the burden of the pandemic. For instance, total cumulative data standardized by age shows that Native Hawaiian or other Pacific Islander, Hispanic, and American Indian, Alaska Native people are about 1.5 times more likely to be infected with Covid-19 and American Indian, Alaska Native, Hispanic, Native Hawaiian or other Pacific Islander, and Black people are about twice as likely to die from Covid-19 as their White counterparts.

Hill, L. and S. Artiga, "COVID-19 Cases and Deaths by Race/Ethnicity: Current Data and Changes Over Time," Kaiser Family Foundation, Aug 22, 2022, https://www.kff.org/coronavirus-covid-19/issue-brief/covid-19-cases-and-deaths-by-race-ethnicity-current-data-and-changes-over-time/.

National Nurses United, "Sins of Omission: How Government Failures to Track Covid-19 Data Have Led to More Than 3,200 Health Care Worker Deaths and Jeopardize Public Health," Updated March 2021, https://www.nationalnursesunited.org/sites/default/files/nnu/documents/0321_Covid19_SinsOfOmission_Data_Report.pdf.

[21] Ibid.

U.S. Bureau of Labor Statistics, "Labor Force Statistics from the Current Population Survey," January 20, 2022, https://www.bls.gov/cps/cpsaat11.htm.

[22] U.S. Government Accountability Office, "Science & Tech Spotlight: Long COVID," March 2, 2022, https://www.gao.gov/assets/gao-22-105666.pdf.

even greater proportion—43 to 74 percent—of people who have had Covid may go on to develop long Covid.[23]

Nurses and other health care workers diagnosed with Covid-19 face lasting symptoms, though systematic tracking of long Covid among nurses, other essential workers, or patients currently does not exist in the United States. Health care workers experience significant impacts from long Covid:

- NNU's most recent Covid-19 survey found that 69.8 percent of nurses had been diagnosed with Covid-19, a majority (68.4 percent) once, 22.0 percent twice, and 6.0 percent three or more times.[24] After recovery from Covid-19, nurses experienced the following symptoms: tiredness or fatigue (80.7 percent), memory or concentration difficulties (52.5 percent), joint or muscle pain (51.5 percent), headaches or migraines (48.8 percent), difficulty breathing or shortness of breath (35.9 percent), symptoms that get worse after physical or mental activities (32.8 percent), heart palpitations (27.8 percent), chest pain (16.6 percent). For nurses experiencing long Covid, these symptoms have lasted: 0-3 months for 31.4 percent of nurses, 4-6 months for 16.2 percent of nurses, 7-9 months for 8.1 percent of nurses, 10-12 months for 7.2 percent of nurses, and more than 12 months for 17.9 percent of nurses. For 35.7 percent of nurses, their long Covid symptoms have affected their ability to work. For 55.7 percent of nurses, their long Covid symptoms have impacted their daily activities outside of work.

- Researchers investigated Covid-related long-term symptoms among healthy health care workers, aged 33 to 56, in Sweden from April 2020 to January 2021. They found that just over one in ten health care workers who had initial mild illness were still coping with at least one moderate to severe symptom eight months later, which negatively affected their work and/or personal lives.[25]

- One study of 6,061 health care workers in Canada found that 46.2 percent of the non-hospitalized cases reported persistent symptoms ≥4 weeks later and 40

[23] Chen, C., S.R. Haupert, et al., "Global Prevalence of Post-Coronavirus Disease 2019 (COVID-19) Condition or Long COVID: A Meta-Analysis and Systematic Review" J Infectious Diseases, April 2022, https://doi.org/10.1093/infdis/jiac136.

European Centre for Disease Prevention and Control, "Prevalence of post COVID-19 condition symptoms: a systematic review and meta-analysis of cohort study data, stratified by recruitment setting," Oct 31, 2022, https://www.ecdc.europa.eu/en/publications-data/prevalence-post-covid-19-condition-symptoms-systematic-review-and-meta-analysis.

[24] Responses were gathered from 2,825 nurses, from both NNU union nurses and nonunion nurses in 46 states plus Washington, D.C. The results cover the period September 22 through November 28, 2022.

National Nurses United, "NNU Covid Survey #8: Year Three: Acute and Long Covid, A Double Public Health and Occupational Health Crisis," Dec 13, 2022, https://www.nationalnursesunited.org/nnu-covid-survey-8.

[25] Havervall, S., A. Rosell, et al., "Symptoms and Functional Impairment Assessed 8 Months After Mild COVID-19 Among Health Care Worker," JAMA, April 7, 2021, doi:10.1001/jama.2021.5612.

percent had persistent symptoms ≥ 12 weeks later. Persistent symptoms at 4 to 7 weeks post-Covid-19 onset were reported by half of non-hospitalized health care workers compared to 37 percent at 24 to 27 weeks. In addition, 68 percent of health care workers who required hospitalization reported lingering health issues after three months.[26]

- Another study of health care workers with a documented Covid-19 infection found that 45 percent reported persistent symptoms and 32 percent reported struggling to cope three to four months following infection.[27]

Long Covid can impact most major organ systems (see Appendix 1). Long Covid symptoms can be severe enough to disrupt work, family, social, and financial health. A household study conducted in the U.K. found that long Covid symptoms adversely affected the day-to-day activities of 72 percent of those with self-reported long Covid, with 15 percent reporting that their ability to undertake their day-to-day activities had been limited "a lot."[28] People with long Covid symptoms that affected their ability to work experienced a mean reduction in hours of 9.6 hours per week compared to people who did not report having Covid.[29]

Long Covid can occur regardless of the severity of initial Covid-19 infection.[30] Studies have documented factors that elevate the risk of developing long Covid symptoms, including having an underlying illness such as asthma, bronchitis, chronic obstructive pulmonary disease or COPD, cardiovascular disease, and depression/anxiety, being hospitalized during initial infection, and female sex.[31] Reinfection significantly increases the risk of developing

[26] Carazo, S., D.M. Skowronski, et al., "Physical, psychological and cognitive profile of post-COVID condition in healthcare workers, Quebec, Canada," Open Forum Infectious Diseases, Aug 1, 2022, https://doi.org/10.1093/ofid/ofac386.

[27] Gaber, T. A-Z. K., A. Ashish, and A. Unsworth, "Persistent post-covid symptoms in healthcare workers," Occupational Medicine, Volume 71, Issue 3, April 2021, Pages 144–146, https://doi.org/10.1093/occmed/kqab043.

[28] U.K. Office for National Statistics, "Prevalence of ongoing symptoms following coronavirus (COVID-19) infection in the UK: 7 July 2022," July 7, 2022, https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/prevalenceofongoingsymptomsfollowingcoronaviruscovid19infectionintheuk/7july2022.

[29] Ham, D., "Long-Haulers and Labor Market Outcomes," Federal Reserve Bank of Minneapolis, July 7, 2022, https://www.minneapolisfed.org/research/institute-working-papers/long-haulers-and-labor-market-outcomes.

[30] Asymptomatic individuals accounted for 66 percent of Covid long-haulers observed in this study. Huang, Y., M.D. Pinto, et al., "COVID Symptoms, Symptom Clusters, and Predictors for Becoming a Long-Hauler Looking for Clarity in the Haze of the Pandemic," Clinical Nursing Research, Sept 24, 2022, https://doi.org/10.1177/10547738221125632.

Frequency of symptoms persisting after a mild Covid-19 infection ranged between 10 and 35 percent in this literature review. Van Kessel, S.A.M., T.C.O. Hartman, et al., "Post-acute and long-COVID-19 symptoms in patients with mild diseases: a systematic review," Fam Pract, Jan 19, 2022, https://doi.org/10.1093/fampra/cmab076.

[31] Hastie, C.E., D.J. Lowe, et al., "Outcomes among confirmed cases and a matched comparison group in the Long-COVID in Scotland study," Nature Communications, Oct 12, 2022, https://doi.org/10.1038/s41467-022-33415-5.

long Covid; compared to people with Covid infection but no reinfection, people who had two or more Covid infections had a 2.10 times higher risk of at least one sequelae.[32] Risks of some sequelae were even higher with reinfection, including pulmonary (3.54 times higher), cardiovascular (3.02 times higher), coagulation and hematological disorders (3.10 times higher), gastrointestinal disorders (2.48 times higher), and kidney disorders (3.55 times higher).

Preventing harms from long Covid requires putting in place measures to prevent Covid-19 infection to begin with. Vaccines do not fully prevent long Covid. Multiple studies have examined to what extent Covid-19 vaccines may reduce the risk of long Covid and have found a wide range—between 15 percent and 84 percent reduction.[33] For example, a large study looking at a cohort of 33,940 individuals with breakthrough infection and approximately 12 million controls found that vaccines resulted in only a 15 percent reduction in risk of post-acute sequelae following the breakthrough infection.[34] Another study found that 19 percent of vaccinated health care workers who became infected had persistent symptoms longer than 6 weeks.[35] Many of the studies examining vaccine effectiveness against long Covid were conducted prior to the Omicron variant and subvariants becoming predominant, which may mean that actual risk reduction is lower given the increased immune evasiveness of the Omicron variant and subvariants. Additionally, many studies were conducted much closer to time of vaccination, meaning they do not reflect the significant waning in protection over time following vaccination.[36]

Magnusson, K. D.T., Kristoffersen, et al., "Post-covid medical complaints following infection with SARS-CoV-2 Omicron vs Delta variants," Nature Communications, Nov 30, 2022, https://doi.org/10.1038/s41467-022-35240-2.

Thompson, E.J., D.M. Williams, et al., "Long COVID burden and risk factors in 10 UK longitudinal studies and electronic health records," Nature Communications, June 28, 2022, https://doi.org/10.1038/s41467-022-30836-0.

[32] Bowe, B., Y. Xie, and Z. Al-Aly, "Acute and postacute sequelae associated with SARS-CoV-2 reinfection," Nature Medicine, Nov 10, 2022, https://doi.org/10.1038/s41591-022-02051-3.

[33] Al-Aly, Z., B. Bowe, and Y. Xie, "Long COVID after breakthrough SARS-CoV-2 infection," Nature Medicine, May 25, 2022, https://doi.org/10.1038/s41591-022-01840-0.

Assolini, E., R. Levi, et al., "Association Between BNT162b2 Vaccination and Long COVID After Infections Not Requiring Hospitalization in Health Care Workers," JAMA, July 1, 2022, https://jamanetwork.com/journals/jama/fullarticle/2794072.

Senjam, S.S., Y.P.S. Balhara, et al., "Assessment of Post COVID-19 Health Problems and its Determinants in North India: A descriptive cross section study," medRxiv, Oct 7, 2021, https://doi.org/10.1101/2021.10.03.21264490.

Taquet, M., Q. Dercon, and P.J. Harrison, "Six-month sequelae of post-vaccination SARS-CoV-2 infection: A retrospective cohort study of 10,024 breakthrough infections," Brain, Behavior, and Immunity, July 2022, https://doi.org/10.1016/j.bbi.2022.04.013.

[34] Al-Aly, Z., B. Bowe, and Y. Xie, "Long COVID after breakthrough SARS-CoV-2 infection," Nature Medicine, May 25, 2022, https://doi.org/10.1038/s41591-022-01840-0.

[35] Bergwerk, M., T. Gonen, et al., "Covid-19 Breakthrough Infections in Vaccinated Health Care Workers," New England Journal of Medicine, October 14, 2021, DOI: 10.1056/NEJMoa2109072.

[36] Ridgway, J.P., S. Tideman, et al., "Odds of Hospitalization for COVID-19 After 3 vs 2 Doses of mRNA COVID-19 Vaccine by Time Since Booster Dose," JAMA, Sept 23, 2022, doi:10.1001/jama.2022.17811.

Surie, D., L. Bonnell, et al., "Effectiveness of Monovalent mRNA Vaccines Against COVID-19–Associated Hospitalization Among Immunocompetent Adults During BA.1/BA.2 and BA.4/BA.5 Predominant Periods of SARS-CoV-2 Omicron Variant in the United States — IVY Network, 18 States, December 26, 2021–August 31, 2022," MMWR, Oct 21, 2022, http://dx.doi.org/10.15585/mmwr.mm7142a3.

Similarly, anti-viral medications for Covid-19 do not appear to provide substantial risk reduction for long Covid sequelae. A study looking at over 50,000 patients found that administration of Paxlovid (nirmatrelvir) was associated with just a 26 percent reduction in risk of post-acute sequelae of SARS-CoV-2 among patients who met qualifying criteria to receive Paxlovid.[37] For patients who were both vaccinated or vaccinated and boosted and received Paxlovid, there was no additive risk reduction for long Covid.

While long Covid and its risks and impacts are not fully characterized, it is abundantly clear that long Covid poses a significant health threat to health care workers, who are at high risk of exposure to, infection with, and reinfection with Covid-19 because their employers fail to protect them adequately from Covid-19 in the workplace. The risks and impacts of long Covid demonstrate the need for a permanent OSHA Covid-19 standard that requires full and optimal protections for nurses and other health care workers as determined by the precautionary principle, which states that "when an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause-and-effect relationships are not fully established scientifically."[38] Further delays in issuing the permanent OSHA Covid-19 standard will mean more exposures, more infections, and more reinfections among health care workers, and higher rates of long Covid.

B. Health care employers continue to neglect infection control measures essential to protecting health care workers from Covid-19 exposure, infection, death, and long Covid.

Since the beginning of the pandemic, nurses and other health care workers have been placed at significant risk by health care employers' failure to prepare for and respond to the Covid-19 pandemic. Nurses have been exposed to and infected with Covid-19 because their employers withheld lifesaving PPE, failed to properly screen patients for Covid-19, neglected to inform nurses of exposures, denied nurses Covid-19 tests, and prioritized profits and excess revenues over infection control and patient and health care worker safety.

NNU has surveyed nurses throughout the pandemic regarding Covid-19 infection control policies and practices in their workplaces. In NNU's most recent survey from December 2022, it is clear that many health care employers continue to fail to implement protective measures essential to preventing Covid transmission within health care facilities:[39]

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[37] Xie, Y., T. Choi, and Z. Al-Aly, "Nirmatrelvir and the Risk of Post-Acute Sequelae of COVID-19," medRxiv, Nov 5, 2022, https://doi.org/10.1101/2022.11.03.22281783.

[38] Hayes A. The precautionary principle. Arh Hig Rada Toksikol. 2005 Jun;56(2):161-6. PMID: 15968832

[39] Responses were gathered from 2,825 nurses, from both NNU union nurses and nonunion nurses, in 46 states plus Washington, D.C. The results cover the period Sept 22 through Nov 28, 2022. NNU, "NNU Covid Survey #8: Year Three: Acute and Long Covid, A Double Public Health and Occupational Health Crisis," Dec 13, 2022, https://www.nationalnursesunited.org/nnu-covid-survey-8.

- A majority of nurses report that their employer fails to effectively inform them of Covid-19 exposures. Only 33.5 percent of nurses report that all nurses are informed of exposures in a timely fashion. 31.7 percent of nurses report that nurses are informed of exposures but not in a timely fashion. 18.6 percent of nurses report that nurses are not informed of exposures at all. Timely notification of an exposure to Covid-19 is essential for preventing onward transmission.

- While 71.8 percent of nurses report that patients are always screened for Covid signs and symptoms, only 37.2 percent of nurses report that visitors are always screened for Covid signs and symptoms. Even fewer nurses report that patients (49.6 percent) and visitors (7.1 percent) are always tested for Covid, despite the fact that a majority of transmission occurs before symptoms develop.

- Only 67.0 percent of nurses report having access to a sufficient supply of N95 or other kinds of respirators on their unit. 20.7 percent of nurses report they have access to N95 respirators on their unit, but supply is not always sufficient. Ready access to PPE, including N95 respirators, is a necessary element in keeping nurses and other health care workers safe from Covid exposure.

- Only 66.3 percent of nurses report wearing a respirator for every encounter with a Covid-positive patient. It is scientifically clear that Covid-19 is transmitted through respiratory aerosols created when people infected with the virus breath, speak, cough, sneeze, etc. and that respiratory protection is a necessary element in keeping RNs and other health care workers safe from Covid-19.

- 42.8 percent of hospital nurses report having to reuse single-use PPE. While this is a decline from the April 2022 survey, which found that 62 percent of hospital nurses reported reusing single-use PPE, reusing single-use PPE is an unsafe practice that should never occur.

In the eight NNU surveys of nurses since the beginning of the Covid-19 pandemic, included in Appendix 3, results have been consistent: employers are not doing enough to protect workers.

It is clear that an enforceable OSHA permanent Covid-19 standard is necessary to protect health care workers. In fact, it has been the experience of NNU members and other health care workers during the Covid-19 pandemic that health care employers have abused flexibility in regulations and infection control recommendations to take away key protections for workers. For example, many employers used CDC crisis and contingency standards to rationalize racing to the lowest standard, such as reusing single-use N95s and other PPE and implement dangerous and unproven decontamination systems to “recycle” single-use N95s, even when their facilities were not experiencing a surge in Covid patients.

A multilayered approach to protecting health care workers from Covid-19 exposure and infection must not be optional for health care employers. Covid-19 and its variants have been circulating in the United States for over two years and we have learned the specific multilayered approach to infection control that is critical to protecting health care workers and patients and combat the Covid-19 pandemic. If employers could be trusted to protect employee safety at their own discretion, Congress would not have passed the Occupational Safety and Health Act.[40] It is vital that the permanent OSHA Covid-19 standard be issued immediately in order to ensure ongoing and strong protections for health care workers.

C. When OSHA did not have a standard in place, it failed to effectively enforce Covid protections for nurses.

When OSHA did not have the Covid19 Health Care ETS in place, it was not able to effectively enforce protections for nurses and other health care workers related to Covid-19. Health and safety complaints filed with OSHA by NNU member nurses are summarized in Appendix 2 and show a pattern throughout the pandemic of employers failing to provide workers with critical protections against Covid-19 infection and justifying their neglect by reference to CDC guidance. Without an enforceable standard in place, OSHA was unable or unwilling to cite employers on Covid-related issues. However, when the ETS went into effect, OSHA was better able to hold health care employers accountable to protecting health care workers from Covid exposures. A permanent Covid standard is needed to enable OSHA to more effectively ensure health care workers' rights to a safe and healthful workplace.

D. The Health Care Covid-19 ETS was helpful in improving protections and OSHA enforcement.

Health care employers in the United States have consistently failed to protect nurses, other health care workers, and their patients from Covid-19 over the past 21 months. Before the Covid-19 Health Care ETS was issued, NNU members won improvements in infection control in their facilities through collective action and union advocacy, including winning no reuse of single-use personal protective equipment (PPE), an end to unproven, dangerous "decontamination" of N95 filtering facepiece respirators, and improved access to testing for staff.

OSHA's Covid-19 Health Care ETS established the first national enforceable standard for health care employers to implement infection control plans to reduce and prevent Covid-19 transmission within health care facilities. This ETS has supported nurses and other health care workers in holding their employers accountable to protect them and their patients from Covid-19. Through collectively organizing and communicating directly with their employers regarding the requirements of the Covid-19 Health Care ETS, union nurses have won improvements to Covid-related health and safety hazards in their facilities, including gaining access to the employer's written Covid-19 policies and procedures and Covid-19 Logs, getting nurses on Covid-19 units fit-tested for N95 filtering facepiece respirators for

[40] Occupational Safety and Health Act of 1970, https://www.osha.gov/laws-regs/oshact/completeoshact.

the first time, and returning all PPE to patient care units instead of being locked up and rationed.

In certain situations where employers have been recalcitrant about following requirements of the Covid-19 Health Care ETS, members of NNU have filed complaints with federal OSHA and OSHA state plans. The Covid-19 Health Care ETS enabled OSHA to more effectively inspect hospital workplaces and to issue citations regarding employers' non-compliance that exposes health care workers to Covid-19. OSHA's action in these situations leads to remedies and improved protections for those health care workers.

For example, OSHA cited Hospitals of Providence East and Sierra Campuses in El Paso, Texas, for failing to screen and triage all non-employees entering direct patient care settings for symptoms of Covid-19 (see Appendix 2). These citations demonstrate that employers will not enact safe practices without clear, enforced standards and that an active Covid-19 standard allowed OSHA to enforce safe practices.

For non-union nurses and other health care workers, OSHA's Covid-19 Health Care ETS provides essential protection and, for many non-union health care workers, may be the only protection they have to prevent Covid-19 exposures in the workplace.

E. To ensure retention of nurses and other health care workers in bedside care jobs, OSHA should issue a permanent Covid-19 standard.

Health care employers have repeatedly failed to prepare for and respond to the Covid-19 pandemic, despite repeated, urgent calls from nurses. Working conditions for nurses have dramatically deteriorated during the pandemic as hospitals continue to fail to take protective measures, despite ample scientific evidence that such measures are necessary to protecting staff. Nurses caring for patients during the Covid pandemic have experienced both high rates of infections and deaths and high rates of acute stress, anxiety, depression, and post-traumatic stress as well as moral distress and moral injury, causing them to leave the bedside at high rates.

The hospital industry's widespread disregard for nurses' well-being throughout the course of the pandemic is undeniable. Hospitals have prioritized profits and excess revenues over patient care and health care worker safety throughout the pandemic. For example, the hospital industry's "just-in-time" resourcing model that tightly controls inventory has been disastrous during the Covid-19 pandemic. At the beginning of the pandemic, when faced with uncertain N95 supply chains, hospitals could have provided nurses with reusable, more protective powered air-purifying respirators (PAPRs) and elastomeric respirators. Instead, hospital employers gathered PPE, locked it up, and rationed nurses' access, telling nurses that it needed to be saved for future use, even though nurses were already being exposed. Some hospitals forced nurses to wear garbage bags when their employers ran out of surgical gowns or forced nurses to use the same N95 for days or weeks on end, even though the N95 had been designed for one single use. Hospital employers' lack of preparedness and prioritization of profits over preparedness forced nurses to choose

between staying on the job and caring for their patients, who are also at risk when nurses lack necessary PPE, or staying home to protect themselves and their families.

Moreover, the hospital industry not only neglected nurses' health and safety; it actively opposed measures that would have protected nurses from Covid exposure or compensated them if they contracted the virus. For example, the American Hospital Association (AHA), representing hospitals that employ a majority of nurses, vigorously opposed the inclusion of a requirement for OSHA to issue an emergency temporary infectious disease standard requiring respiratory protection in H.R. 6201, the Families First Coronavirus Response Act, and in H.R. 6800, the Health and Economic Recovery Omnibus Emergency Solutions Act.[41] AHA denied the need for respirators, citing CDC guidance that state hospital associations had lobbied for. Rather than admitting the failure to prepare for the pandemic or advocating for government assistance to supply optimal levels of respiratory protection, the hospital industry shored up arguments for denying nurses respirators, claiming that respiratory protection was unnecessary except for specific surgical and aerosolizing procedures and downplaying evidence for airborne transmission of the virus.

Additionally, hospital employers have actively opposed nurses who pled with them and the government for PPE and other protections on the frontlines of the pandemic. When nurses attempted to secure needed PPE by asking for donations on social media, speaking with the press, and holding public protests to expose their employers' failures, employers responded with disparagement and abuse. Some employers prohibited workers from speaking out and fired workers for doing so. Other employers went so far as to prohibit nurses from bringing in their own respirators and even "yank[ed] masks off workers' faces[.]"[42] In cases where employers capitulated to nurses' collective demand for respirators, some continued to deny that respirators were necessary to protect nurses from Covid-19, asserting that they were providing respirators to make nurses feel more comfortable, not to prevent exposure to the virus. And even then, many employers forced nurses to reuse respirators with multiple patients, and often on multiple shifts, even though this practice is known to be unsafe and to contribute to the spread of infectious diseases.

Hospital employers have opposed nurses' workers' compensation claims, taking calculated steps to insist that the thousands of nurses infected because of employers' reprehensible behavior did not contract the virus on the job. Through their own refusal to test nurses,

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[41] American Hospital Association. May 14, 2020. "Letter to Nancy Pelosi." American Hospital Association. https://www.aha.org/system/files/media/file/2020/05/web-AHALettertoHouseonHEROESAct051420final.pdf.

Mason D, Friese C. "Protecting Health Care Workers Against COVID-19 — and Being Prepared for Future Pandemics." JAMA Health Forum. Mar 19, 2020. https://jamanetwork.com/channels/health-forum/fullarticle/2763478. Citing Kopp E. "Hospitals Want to Kill a Policy Shielding Nurses from COVID-19 Because There Aren't Enough Masks." Roll Call. Mar 3, 2020. https://www.rollcall.com/2020/03/13/hospitals-want-tokill-a-policy-shielding-nurses-from-covid-19-because-there-arent-enough-masks/.

[42] NNU, Protecting Our Front Line: Ending the Shortage of Good Nursing Jobs and the Industry-created Unsafe Staffing Crisis, (Dec 2021), https://www.nationalnursesunited.org/sites/default/files/nnu/documents/1121_StaffingCrisis_ProtectingOurFrontLine_Report_FINAL.pdf.

other health care workers, and patients for Covid-19, employers manufactured a situation where nurses would almost certainly lack the direct evidence of workplace exposure needed to prove a workers' compensation claim. As nurses became sick, hospital employers went so far as to issue blanket statements and manipulate data in published studies to say that most nurses were infected in the community (also see Section 3.H.), despite the much higher infection rates among nurses and the fact that many nurses remained isolated from family, friends, and the community at large out of fear they might spread Covid-19.[43]

Hospital employers' utter disregard for and callous treatment of nurses and other health care workers during the Covid-19 pandemic has dramatically and detrimentally affected workers' mental health. The intense internal conflict and dissonance that nurses have experienced during the Covid pandemic is driven by the tension between taking care of themselves or their families, on the one hand, and caring for their patients on the other. For some, the tension between sheltering in place with their families and their calling to care for their patients has led to traumatic stress, anxiety, and depression. The lack of proper PPE, discussed above, played a fundamental role in this tension. The moral distress has led many nurses and other health care workers to leave the bedside.

There is no shortage of nurses. As of Nov. 6, 2021, the National Council of State Boards of Nursing reported that there are more than 4.4 million RNs with active licenses,[44] yet according to the U.S. Bureau of Labor Statistics, there are only 3.2 million people who are employed as RNs, with 1.8 million employed in hospitals.[45] In addition, except for a handful of states, there are sufficient numbers of registered nurses to meet the needs of the country's patients, according to a 2017 U.S. Department of Health and Human Services (HHS) report on the supply and demand of the nursing workforce from 2014 to 2030.[46] Moreover, HHS projected that most states (43) would have surpluses in 2030.[47] Again, there is no shortage of RNs. Rather, there is a shortage of good, permanent nursing jobs where RNs are fully valued for their work at the bedside through safe patient staffing levels, strong union protections, and safe and healthy workplaces.

A permanent Covid-19 standard is an essential element in improving nurses' working conditions, which is necessary to retaining bedside nurses.

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[43] Ibid.

[44] National Council of State Boards of Nursing. Nov 6, 2021. "Active RN Licenses, A Profile of Nursing Licensure in the U.S." National Council of State Boards of Nursing. https://www.ncsbn.org/6161.htm

As the National Council of State Boards of Nursing data excludes Michigan RNs, the number reflects the number of RNs employed in Michigan. The Michigan data comes from U.S. Bureau of Labor Statistics. 2021. "May 2020 Occupational Employment and Wages." U.S. Department of Labor. https://www.bls.gov/oes/home.htm

[45] U.S. Bureau of Labor Statistics. 2021. "May 2020 Occupational Employment and Wages." U.S. Department of Labor. https://www.bls.gov/oes/home.htm.

[46] Health Resources and Services Administration. 2017. "National and Regional Supply and Demand Projections of the Nursing Workforce: 2014-2030." U.S. Department of Health and Human Services. https://bhw.hrsa.gov/sites/default/files/bureau-health-workforce/data-research/nchwa-hrsa-nursing-report.pdf.

[47] Ibid.

For more information and data, see NNU's report, Protecting Our Front Line: Ending the Shortage of Good Nursing Jobs and the Industry-created Unsafe Staffing Crisis, (Dec 2021), https://www.nationalnursesunited.org/sites/default/files/nnu/documents/1121_StaffingCrisis_ProtectingOurFrontLine_Report_FINAL.pdf.

Section 2: The permanent OSHA Covid-19 standard should be based on the ETS, with certain updates and improvements.

The permanent OSHA Covid-19 standard should be strong, protective, and should provide consistent rules that require health care employers to protect health care workers from the ongoing threat of Covid-19 exposure, the health effects of Covid-19 infection, and the risk of long Covid. OSHA's Covid-19 Health Care ETS, which was published June 21, 2021, provided clear and strong requirements for multilayered protections.

When issuing the Covid-19 Health Care ETS in June, OSHA stated that the agency intended to "continue to monitor trends in COVID-19 infections and deaths as more of the workforce and the general population become vaccinated and the pandemic continues to evolve," and that where the agency finds "new information indicates a change in measures necessary to address the grave danger, OSHA will update the ETS, as appropriate."[48] The pandemic has continued to evolve over the intervening 18 months and new and updated scientific information has emerged; thus, it is appropriate and necessary for the requirements of the ETS to be updated and strengthened in the permanent OSHA Covid-19 standard.

The following updates to the requirements of the Covid-19 Health Care ETS should be included in the permanent standard:

1. The permanent Covid-19 standard should not rely on weak guidance from the U.S. Centers for Disease Control and Prevention (CDC). OSHA's permanent Covid-19 standard should require optimal workplace protections for nurses and other health care workers, based on the available scientific evidence and the precautionary principle.

2. The permanent Covid-19 standard should require employers to proactively establish plans for surge preparation, including plans to expand isolation beds with negative pressure ventilation and HEPA air filtration, plans to provide safe staffing during a surge in Covid-19 patients, and establishment of a PPE stockpile.

3. The permanent Covid-19 standard should remove all exemptions to the scope of the Covid-19 Health Care ETS when updating the ETS and issuing a permanent standard. The Covid-19 Health Care ETS allows exemptions where all employees are fully vaccinated, and all non-employees are screened for Covid-19 prior to entry and individuals who have or may have Covid-19 are not allowed to enter the facility.

4. The permanent Covid-19 standard should ensure that fully vaccinated individuals and individuals recovered from Covid-19 in the previous 90 days are not exempted from medical removal and medical removal protection benefits.

[48] 86 Fed. Reg. 32,376 (June 21, 2021).

5. The permanent Covid-19 standard should require precautionary screening and testing of all patients, visitors, and others entering the facility, including screening for Covid-19 symptoms and recent exposure history to Covid-19 as well as testing using a reliable diagnostic test for SARS-CoV-2.

6. The permanent Covid-19 standard should update requirements so that screening of nurses and other health care workers for Covid-19 includes weekly surveillance testing in addition to existing requirements for symptom screening and exposure surveillance. Testing should occur regardless of vaccination status. The permanent Covid-19 standard should also expand the list of symptoms that trigger medical removal and testing to the full list of symptoms congruent with Covid-19, not the extremely limited symptoms specified in the Covid-19 Health Care ETS.

7. The permanent Covid-19 standard should require optimal PPE for nurses and other health care workers caring for patients with suspected or confirmed Covid-19. Optimal PPE includes a powered air-purifying respirator (PAPR), virus impervious coveralls that incorporate head and shoe coverings, and medical-grade gloves. The permanent Covid-19 standard to fully ban reuse of single use PPE and to ban the use of decontamination methods to reuse PPE.

8. The permanent Covid-19 standard should include a stronger definition of close-contact exposure to reflect the available scientific evidence regarding aerosol transmission. The CDC's definition of close contact exposure for health care workers (within six feet for cumulative total 15 minutes or more over a 24-hour period) is based on arbitrary assumptions and fails to account for up-to-date scientific data and the precautionary principle.

    - NNU commends OSHA on already improving on the CDC's definition of close contact exposure for health care workers in the Covid-19 Health Care ETS by not considering a face mask to be equivalent protection to a respirator. This protection should be maintained in the permanent Covid-19 standard.

    - The permanent Covid-19 standard should remove the exemption in the Covid-19 Health Care ETS for exposure notification to staff due to the presence of a Covid-positive patient in areas where suspected and confirmed Covid-19 patients are normally cared for. All staff have the right to be informed of a hazardous exposure that occurs at the worksite, and a permanent Covid-19 standard should provide that right to all employees.

9. The permanent Covid-19 standard should strengthen ventilation and patient isolation requirements, including:

- Requiring employers to establish dedicated Covid-19 units and prohibiting mixing Covid-positive patients, patients who may have Covid-19, and patients who do not have Covid-19 in the same units or on the same assignment.

- Requiring employers to make improvements to ventilation systems to reduce the risk of aerosol transmission in both patient care and non-patient care areas, such as by increasing outdoor air proportion and filtration levels for recirculated air or by placing and maintaining portable high efficiency particulate air (HEPA) filter units.

- Requiring employers to convert patient rooms to negative pressure/airborne infection isolation ventilation if there is a need for more rooms than exist.

A. Recommended Updates #1 and #2: OSHA's Covid-19 Health Care ETS Relies Too Heavily on Weak CDC Guidance; OSHA Should Update the Permanent Covid Standard Based on the Precautionary Principle and Up-To-Date Scientific Evidence.

Recommended Update #1: OSHA should not rely on weak CDC guidance. OSHA's permanent standard should require the optimal workplace protections for nurses and other health care workers, based on the available scientific evidence and the precautionary principle.

Recommended Update #2: OSHA should require employers to proactively establish plans for surge preparation, including plans to expand isolation beds with negative pressure ventilation and HEPA air filtration, plans to provide safe staffing during a surge in Covid-19 patients, and establishment of a PPE stockpile. To include PPE stockpile requirements in the permanent standard, OSHA should follow the model established in California Labor Code Sec. 6403.3 by California Assembly Bill 2537 (2019-2020 Session), sponsored by the California Nurses Association/NNU and signed into law in September 2020, which now requires California hospitals to create and maintain a three-month stockpile of new N95 filtering facepiece respirators, gowns, and other PPE.[49]

Rationale: In addition to establishing important mandates around Covid-19 plans, PPE, and other workplace protections, OSHA's Covid-19 Health Care ETS draws on and incorporates by reference certain CDC Covid-19 guidance documents.[50] It is understandable that, in the face of a novel infectious disease pandemic, OSHA relied upon

[49] See National Nurses United, "New law requiring hospitals to maintain a three-month supply of PPE takes effect April 1," March 31, 2021, https://www.nationalnursesunited.org/press/new-law-requiring-hospitals-maintain-three-month-supply-of-ppe-takes-effect-april-1.

California Assembly Bill 2537 was codified at Cal. Code Lab. § 6403.3.

[50] U.S. Occupational Safety and Health Administration, Department of Labor, "Materials Incorporated by Reference in § 1910.502." Available at https://www.osha.gov/coronavirus/ets/ibr (Accessed Oct 29, 2021).

guidance from the federal government's public health agency. However, it is important to note that CDC guidance falls short in vital ways—CDC guidance fails to recognize the precautionary principle and fails to account for available scientific evidence regarding SARS-CoV-2. The precautionary principle states that taking action to protect people's health should not await scientific certainty of harm. Application of the precautionary principle to decisions about protections is required to protect people's health during a novel infectious disease pandemic, like Covid-19, especially with the frequent mutation, emergence, and spread of variants that are more transmissible, deadlier, and vaccine resistant.[51,52]

The CDC guidance on Covid-19 infection control in health care facilities falls short in the following ways (see Section 3 for a detailed analysis and explicit recommendations on how OSHA's permanent Covid standard should go beyond CDC guidance):

- The CDC fails to fully recognize that symptom-based testing strategies will miss asymptomatic and pre-symptomatic Covid-19 infections.[53] Both asymptomatic and pre-symptomatic cases play a significant role in Covid-19 transmission, making up approximately half of all transmission events.[54] Identification and isolation of all SARS-CoV-2 infections – among patients, visitors, and health care workers – is paramount to preventing transmission within health care facilities.

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[51] Many features of the response to the current SARS-CoV-2 pandemic are reminiscent of the SARS outbreak response in 2003. The SARS Commission's Final Report is a detailed account of what happened that very clearly underlines the need to apply the precautionary principle in these kinds of situations and to protect nurses and other health care workers from exposure:

> *"Some of the same Ontario hospital leaders who argued against the N95 respirator required to protect nurses and who actually denied there was a safety law that required the N95 to be fit tested still insist that science, as it evolves from day to day, comes before safety.* ***If the Commission has one single take-home message it is the precautionary principle that safety comes first, that reasonable efforts to reduce risk need not await scientific proof.*** *Ontario needs to enshrine this principle and to enforce it throughout our entire health system."* (13)

> "*What we do need is a common-sense approach to worker safety in hospitals coupled with a measure of scientific humility in light of the terrible and sometimes fatal failures in scientific advice and hospital safety systems during the SARS outbreak… It is better to be safe than sorry."* (1047)

Campbell, A., The Honourable Mr. Justice (Dec 2006), "The SARS Commission Final Report," online at http://www.archives.gov.on.ca/en/e_records/sars/report/.

[52] World Health Organization, "Tracking SARS-CoV-2 variants," Updated Dec 1, 2022, https://www.who.int/en/activities/tracking-SARS-CoV-2-variants/ (Accessed Dec 16, 2022).

[53] U.S. Centers for Disease Control and Prevention, "Interim Infection Prevention and Control Recommendations for Healthcare Personnel During the Coronavirus Disease 2019 (COVID-19) Pandemic," Updated Sept 23, 2022, https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html.

[54] Hu, S., W. Wang, et al., "Infectivity, susceptibility, and risk factors associated with SARS-CoV-2 transmission under intensive contact tracing in Hunan, China," Nature Communications, March 9, 2021, https://doi.org/10.1038/s41467-021-21710-6.

Subramanian, R., Q. He, and M. Pascual, "Quantifying asymptomatic infection and transmission of COVID-19 in New York City using observed cases, serology, and testing capacity," PNAS, March 2, 2021, https://doi.org/10.1073/pnas.2019716118.

- The CDC's definition of "exposure" that warrants precautionary removal from the workplace fails to recognize aerosol transmission of SARS-CoV-2.[55]

    - The CDC ignores the latest scientific evidence that show that asymptomatic cases can transmit the virus, including fully vaccinated, boosted, and unvaccinated individuals with asymptomatic infections.[56] The CDC wrongly excludes asymptomatic health care workers from work restriction following exposure.

    - While the CDC guidance acknowledges that exposures to Covid-19 can occur less than 15 minutes and beyond 6 feet, it still fails to fully recognize the latest scientific evidence on aerosol transmission.

    - The CDC still fails to account for the fact that face masks and respirators are not equivalent levels of protection. Transmission even with the use of face masks and surgical masks has been documented.[57] The CDC erroneously assumes equivalency between face masks and respirators in determining whether a health care worker has been exposed.[58]

- The CDC ties prevention measures, like universal masking, to local Covid-19 Community Level metrics, which is inadequate and waits until after Covid hospitalizations have increased to take preventive action, when it is too late.

Despite repeated surges of Covid-19 cases, many of which continue to be driven by new variants of concern that have emerged and spread since the beginning of the pandemic

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[55] U.S. Centers for Disease Control and Prevention, "Interim Guidance for Managing Healthcare Personnel with SARS-CoV-2 Infection or Exposure to SARS-CoV-2," Updated September 23, 2022, https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-risk-assesment-hcp.html.

[56] Gounder, P.P., M.R. Saint, et al., "COVID-19 Outbreak Among Vaccinated Staff and Residents at a Skilled Nursing Facility in Los Angeles County," Infection Control & Hospital Epidemiology, Sept 21, 2021, doi:10.1017/ice.2021.420.

Susky, E.K., S. Hota, et al., "Hospital Outbreak of the SARS-CoV-2 Delta Variant in Partially and Fully Vaccinated Patients and Healthcare Workers in Toronto, Canada," Infection Control & Hospital Epidemiology, October 28, 2021, doi:10.1017/ice.2021.471.

[57] Goldberg, L., Y. Levinsky, et al., "SARS-CoV-2 Infection Among Health Care Workers Despite the Use of Surgical Masks and Physical Distancing—the Role of Airborne Transmission ," Open Forum Infectious Diseases, January 27, 2021, https://doi.org/10.1093/ofid/ofab036.

Klompas, M., M.A. Baker, et al., "A SARS-CoV-2 Cluster in an Acute Care Hospital," Annals of Internal Medicine, February 9, 2021, https://doi.org/10.7326/M20-7567.

Pringle, J.C., J. Leikauskas, et al., "COVID-19 in a Correctional Facility Employee Following Multiple Brief Exposures to Persons with COVID-19 — Vermont, July–August 2020," MMWR Early Release, October 30, 2020, http://dx.doi.org/10.15585/mmwr.mm6943e1.

[58] U.S. Centers for Disease Control and Prevention, "Interim Guidance for Managing Healthcare Personnel with SARS-CoV-2 Infection or Exposure to SARS-CoV-2," Updated September 23, 2022, https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-risk-assesment-hcp.html.

such as the Alpha, Delta, and Omicron variants, the CDC maintains guidance on crisis standards on its website—referred to as "optimization" and "mitigation" strategies.[59] These crisis standards have been used by health care employers to neglect preparations for surges in Covid-19 cases and to race to the lowest standard, such as by embracing reuse of single-use PPE and unproven decontamination processes rather than more protective respirators designed to be reusable such as powered air-purifying respirators (PAPRs) and elastomeric respirators.

B. Recommended Updates #3 and #4: Based on New Data about the Omicron Variant and Subvariants and Covid-19 Vaccines, and in Preparation for New Variants of Concern that May Emerge and Spread, OSHA Should Remove Any and All Exemptions Based on Covid-19 Vaccination from the Permanent Standard.

Recommended Update #3: Based on updated scientific information regarding Omicron variant immune escape, transmission from breakthrough infections, the potential for long-term health harm from breakthrough infections (long Covid), reports of Omicron sub-lineage and new variants, and the precautionary principle, OSHA should remove all exemptions to the scope and application of the Covid-19 Health Care ETS when issuing a permanent standard.[60]

Recommended Update #4: OSHA should ensure in the permanent standard that fully vaccinated individuals and individuals recovered from Covid-19 in the previous 90 days are not exempted from medical removal and medical removal protection benefits protections.[61]

Rationale: OSHA's Covid-19 Health Care ETS provided exemptions to the scope of the ETS and to the medical removal and medical removal protection benefits protections subsection based on employee Covid-19 vaccinations:

- The Covid-19 Health Care ETS exempted well-defined hospital ambulatory care settings where all employees were fully vaccinated and all non-employees were screened for Covid-19 prior to entry and individuals who had or may have had Covid-19 were not allowed to enter the facility.[62]

[59] U.S. Centers for Disease Control and Prevention, "Optimizing Personal Protective Equipment (PPE) Supplies," Updated July 16, 2020, https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/index.html.

U.S. Centers for Disease Control and Prevention, "Strategies to Mitigate Healthcare Personnel Staffing Shortages," Updated Sept 23, 2022, https://www.cdc.gov/coronavirus/2019-ncov/hcp/mitigating-staff-shortages.html.

[60] Including all exemptions based on vaccination status and Covid-19 screening of patients and visitors in 29 C.F.R. §1910.502(a)(2)(iv) and (a)(4).

[61] 29 C.F.R. §1910.502(l)(4)(iii)(B).

[62] 29 C.F.R. §1910.502(a)(2)(iv)

- For hospitals and other settings covered by the Covid-19 Health Care ETS, exemptions from certain subsections pertaining to facemask usage, physical distancing, and physical barriers were provided for fully vaccinated employees in well-defined areas.

- Fully vaccinated employees and employees who had had a SARS-CoV-2 infection in the previous 90 days were not required to be medically removed from the workplace following an exposure to Covid-19 unless they were experiencing the limited symptoms specified in the ETS.[63]

These exemptions were premature in June 2021 when the Covid-19 Health Care ETS was issued—symptom-based screening of patients and visitors does not provide assurance that all SARS-CoV-2 infections will be identified and, while Covid-19 vaccines and boosters are effective at preventing severe illness and death, the vaccines and boosters are not 100 percent effective.[64] Now, with new data about the Omicron variant, its subvariants, and updated data on the Covid-19 vaccines, and in preparation for new variants of concern that continue to emerge and spread, no exemptions based on vaccination status should be included in the permanent standard.

Additionally, past infection does not guarantee protection against future infection. In fact, as new variants, including new Omicron subvariants, continue to emerge with increased immune escape, reinfections will continue to occur. Research has found rapid reinfections with different Omicron subvariants.[65] The risk of reinfection has increased substantially with the emergence of the Omicron variant, combined with waning immunity from vaccines, and the lack of public health measures and dissembling from leaders about the ongoing pandemic.[66] For example, data from the California Department of Public Health

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[63] 29 C.F.R. §1910.502(a)(4) and (l)(4)(iii)(B)

[64] Canetti, M., N. Barda, et al., "Six-Month Follow-up after a Fourth BNT162b2 Vaccine Dose," NEJM, Nov 9, 2022, DOI: 10.1056/NEJMc2211283.

Helmsdal, G., O.K. Hansen, et al., "Omicron Outbreak at a Private Gathering in the Faroe Islands, Infecting 21 of 33 Triple-Vaccinated Healthcare Workers," Clinical Infectious Diseases, Sept 2022, 75(5): 893-6, https://doi.org/10.1093/cid/ciac089.

Kim, S.S., J.R. Chung, et al., "Effectiveness of two and three mRNA COVID-19 vaccine doses against Omicron- and Delta-Related outpatient illness among adults, October 2021–February 2022," Influenza and other respiratory viruses, July 29, 2022, https://doi.org/10.1111/irv.13029.

Ridgway, J.P., S. Tideman, et al., "Odds of Hospitalization for COVID-19 After 3 vs 2 Doses of mRNA COVID-19 Vaccine by Time Since Booster Dose," JAMA, Sept 23, 2022, doi:10.1001/jama.2022.17811.

Surie, D., L. Bonnell, et al., "Effectiveness of Monovalent mRNA Vaccines Against COVID-19–Associated Hospitalization Among Immunocompetent Adults During BA.1/BA.2 and BA.4/BA.5 Predominant Periods of SARS-CoV-2 Omicron Variant in the United States — IVY Network, 18 States, December 26, 2021–August 31, 2022," MMWR, Oct 21, 2022, http://dx.doi.org/10.15585/mmwr.mm7142a3.

[65] Nguyen, N.N., L. Houhamdi, et al., "Reinfections with Different SARS-CoV-2 Omicron Subvariants, France," Emerging Infectious Diseases, Nov 2022, https://doi.org/10.3201/eid2811.221109.

[66] Andrews, N., J. Stowe, et al., "Covid-19 Vaccine Effectiveness against the Omicron (B.1.1.529) Variant," NEJM April 21, 2022, DOI: 10.1056/NEJMoa2119451

found that reinfections accounted for at least one in seven new Covid-19 cases in July 2022.[67] More Covid-19 infections and reinfections will mean more debilitating chronic conditions in the form of long Covid and societal disruptions due to school absences and missed workdays.[68] As nurses have said from the beginning of the pandemic, a commitment to preventing Covid-19 infection with a multiple mitigation measures approach is required to fully protect nurses, other health care workers, and their patients.

New evidence regarding the Omicron variant and Covid-19 vaccines has emerged since OSHA issued the Covid-19 Health Care ETS that underlines the importance of including vaccines in the context of a broader infection control plan:

- Vaccine effectiveness against symptomatic illness in US outpatient settings was significantly lower with the Omicron variant than with Delta—21 percent among two-dose recipients and 62 percent among three-dose recipients during Omicron predominance.[69]

- Vaccine effectiveness during the period when Omicron subvariant BA2.2/BA2.12.2 was dominant was lower than during the BA.1 dominance period.[70]

- Antibody response to a fourth mRNA vaccine peaked at four weeks after vaccination and declined to levels seen before the fourth dose by 13 weeks. Overall, vaccine effectiveness was 41 percent and waned from 52 percent in the first five weeks after vaccination to -2 percent at 15-26 weeks.[71]

- An outbreak of the Omicron variant occurred in 21 of 33 triple-vaccinated health care workers at a gathering. All but one attendee had received their booster at least three weeks prior, and one had received their booster in the days before the

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Burkholz, S., M. Rubsamen, et al., "Increasing Cases of SARS-CoV-2 Omicron Reinfection Reveals Ineffective Post-COVID-19 Immunity in Denmark and Conveys the Need for Continued Next-Generation Sequencing," medRxiv, September 14, 2022, https://doi.org/10.1101/2022.09.13.22279912.

Seid, A.G., T. Yirko, et al., "Infection with SARS-CoV-2 Omicron Variant 24 Days after Non-Omicron Infection, Pennsylvania, USA," Emerging Infectious Diseases, September 2022, https://doi.org/10.3201/eid2809.220539.

[67] Rowan, H.B., "COVID: Reinfections account for 50,000 California cases this month. Here's how that number is rising," The Mercury News, July 31, 2022, https://www.mercurynews.com/2022/07/31/covid-1-in-7-new-california-cases-this-month-are-reinfections/?clearUserState=true.

[68] Bowe, B., Y. Xie, and Z. Al-Aly, "Acute and postacute sequelae associated with SARS-CoV-2 reinfection," Nature Medicine, Nov 10, 2022, https://doi.org/10.1038/s41591-022-02051-3.

[69] Kim, S.S., J.R. Chung, et al., "Effectiveness of two and three mRNA COVID-19 vaccine doses against Omicron- and Delta-Related outpatient illness among adults, October 2021–February 2022," Influenza and other respiratory viruses, July 29, 2022, https://doi.org/10.1111/irv.13029.

[70] Link-Gelles, R., A.A. Ciesla, et al., "Effectiveness of Bivalent mRNA Vaccines in Preventing Symptomatic SARS-CoV-2 Infection — Increasing Community Access to Testing Program, United States, September–November 2022," MMWR, Nov 22, 2022, http://dx.doi.org/10.15585/mmwr.mm7148e1.

[71] Canetti, M., N. Barda, et al., "Six-Month Follow-up after a Fourth BNT162b2 Vaccine Dose," NEJM, Nov 9, 2022, DOI: 10.1056/NEJMc2211283.

gathering. All attendees had a negative test approximately 36 hours before the gathering. No masks were worn.[72]

- Booster vaccination was associated with decreased odds of hospitalization for Covid-19 (34.7% vs 49.3% for matched controls). The odds of hospitalization increased over time following the booster dose—the odds ratio for Covid-19 hospitalization increased from 0.24 to 0.47 to 0.72 from less than 50 days, 101 to 150 days, and more than 150 days after booster, respectively.[73]

- Data from the United Kingdom indicates that booster vaccine effectiveness against Omicron hospitalization declined from 91 percent to 67 percent after 105 days among 18- to 64-year-olds.[74]

- Another study found that Omicron subvariants BA.4 and BA.5 were four-fold more resistant to sera from vaccinated and boosted individuals compared to BA.2.[75]

- One study found that fully vaccinated individuals with breakthrough infections had peak viral loads similar to unvaccinated individuals and transmitted Covid-19 to household contacts at a similar rate to unvaccinated individuals, including to fully vaccinated contacts.[76]

- Another study found that booster protection against hospitalization dropped to 78 percent within four months and that booster protection against emergency department and urgent care visits dropped to 66 percent within four months.[77]

- Protection of three doses of monovalent Covid vaccine against Covid-related hospitalization decreased by almost half with time since vaccination. During the

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[72] Helmsdal, G., O.K. Hansen, et al., "Omicron Outbreak at a Private Gathering in the Faroe Islands, Infecting 21 of 33 Triple-Vaccinated Healthcare Workers," Clinical Infectious Diseases, Sept 2022, 75(5): 893-6, https://doi.org/10.1093/cid/ciac089.

[73] Ridgway, J.P., S. Tideman, et al., "Odds of Hospitalization for COVID-19 After 3 vs 2 Doses of mRNA COVID-19 Vaccine by Time Since Booster Dose," JAMA, Sept 23, 2022, doi:10.1001/jama.2022.17811.

[74] U.K. Health Security Agency, "COVID-19 vaccine surveillance report: Week 12," March 24, 2022, Available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1063023/Vaccine-surveillance-report-week-12.pdf (Accessed July 13, 2022).

[75] Wang, Q., Y. Guo, et al., "Antibody evasion by SARS-CoV-2 Omicron subvariants BA.2.12.1, BA.4, & BA.5," Nature, July 5, 2022, https://www.nature.com/articles/s41586-022-05053-w.

[76] Singanayagam, A., Seran Hakki, et al., "Community transmission and viral load kinetics of the SARS-CoV-2 delta (B.1.617.2) variant in vaccinated and unvaccinated individuals in the UK: a prospective, longitudinal, cohort study," Lancet Infectious Diseases, Oct 29, 2021, https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(21)00648-4/fulltext.

[77] Ferdinands, J.M., S. Rao, et al., "Waning 2-Dose and 3-Dose Effectiveness of mRNA Vaccines Against COVID-19–Associated Emergency Department and Urgent Care Encounters and Hospitalizations Among Adults During Periods of Delta and Omicron Variant Predominance — VISION Network, 10 States, August 2021–January 2022," MMWR, 71(7): 255- 263, Feb 18, 2022, https://www.cdc.gov/mmwr/volumes/71/wr/mm7107e2.htm.

BA.1/BA.2 period, vaccine effectiveness was 79 percent. During the BA.4/BA.5 period, vaccine effectiveness was 60 percent during the initial 120 days after booster dose. Vaccine effectiveness declined to 41 percent and 29 percent, respectively, after vaccination.[78]

C. Recommended Updates #5 and #6: Given New Data on the Omicron Variant and Increasing Data on Asymptomatic and Pre-symptomatic Transmission, OSHA Should Strengthen Screening, Testing, and Contact Tracing Requirements in the Permanent Covid Standard.

Recommended Update #5: NNU advocates for precautionary screening and testing of all patients and visitors entering health care facilities and urges OSHA to update the permanent standard based upon the summarized evidence in this subsection. Precautionary screening and testing include screening all patients and visitors for symptoms of Covid-19, screening for recent exposure history to Covid-19, and testing for SARS-CoV-2 using a reliable diagnostic test prior to entering a health care facility.[79]

Recommended Update #6: Additionally, NNU urges OSHA to require in the permanent standard that health care workers should also be tested and screened for Covid-19, including for asymptomatic infections. Testing and screening for health care workers should include at least twice weekly surveillance testing for SARS-CoV-2, proactive monitoring of all staff exposures to Covid-19, in addition to screening health care workers for symptoms of Covid-19 prior to each shift.[80] Testing should be provided to health care workers regardless of vaccination status, and health care employers should track all asymptomatic infections including breakthrough infections on the Covid-19 Log. OSHA should also expand the list of symptoms that trigger medical removal and testing to the full list of symptoms congruent with Covid-19, not the limited symptoms currently specified in the Covid-19 Health Care ETS.[81]

Rationale: OSHA's Covid-19 Health Care ETS requires covered health care employers to limit and monitor points of entry to health care facilities and screen and triage all patients,

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[78] Surie, D., L. Bonnell, et al., "Effectiveness of Monovalent mRNA Vaccines Against COVID-19–Associated Hospitalization Among Immunocompetent Adults During BA.1/BA.2 and BA.4/BA.5 Predominant Periods of SARS-CoV-2 Omicron Variant in the United States — IVY Network, 18 States, December 26, 2021–August 31, 2022," MMWR, Oct 21, 2022, http://dx.doi.org/10.15585/mmwr.mm7142a3.

[79] National Nurses United, "Covid Testing and Screening in Health Care Settings: A Science-Driven Approach to Protecting Patient, Health Care Worker, and Public Health," June 11, 2021. Available at https://www.nationalnursesunited.org/sites/default/files/nnu/documents/0621_Covid19_IssueBrief_TestingScreening.pdf.

[80] National Nurses United, "Covid Testing and Screening in Health Care Settings: A Science-Driven Approach to Protecting Patient, Health Care Worker, and Public Health," June 11, 2021. Available at https://www.nationalnursesunited.org/sites/default/files/nnu/documents/0621_Covid19_IssueBrief_TestingScreening.pdf (Accessed Aug 5, 2021).

[81] 29 C.F.R. §1910.502(l)(2) and (l)(4).

clients, visitors, contractors, and others entering the facility for Covid-19, and to screen employees before each workday and each shift.[82] As stated above, the Covid-19 Health Care ETS exempts non-hospital ambulatory care settings from the standard where all non-employees are screened prior to entry and people with suspected or confirmed Covid-19 are not permitted to enter.[83] The Covid-19 Health Care ETS defines screening for Covid-19 as "asking questions to determine whether a person is COVID–19 positive or has symptoms of COVID–19."[84] OSHA's definition of screening for Covid-19 should be updated based upon increasing data regarding asymptomatic and pre-symptomatic transmission of SARS-CoV-2 as well as new information regarding the Omicron variant.

Additionally, the Covid-19 Health Care ETS defines a specific list of symptoms that trigger medical removal and SARS-CoV-2 testing: recent loss of taste and/or smell with no other explanation or both fever (≥100.4°F) and new unexplained cough associated with shortness of breath. This list of symptoms is too limited to be effective and should be expanded when OSHA updates the Covid-19 Health Care ETS and issues a permanent standard.

OSHA should update the Covid-19 Health Care ETS based on the new information about the Omicron variant summarized above in addition to scientific data regarding the role asymptomatic and pre-symptomatic cases play in transmission of SARS-CoV-2:

- A high proportion of SARS-CoV-2 cases are asymptomatic.[85] Individuals who are infected with SARS-CoV-2 but not showing symptoms—asymptomatic or pre-symptomatic case—can shed infectious virus and transmit SARS-CoV-2.[86] In fact,

[82] 29 C.F.R. §1910.502(d) and (l)(1).

[83] 29 C.F.R. §1910.502(a)(2)(ii).

[84] 29 C.F.R §1910.502(b).

[85] Sah, P., M.C. Fitzpatrick, et al., "Asymptomatic SARS-CoV-2 infection: A systematic review and meta-analysis," Proceedings of the National Academy of Sciences of the United Stats of America, Aug 24, 2021, https://doi.org/10.1073/pnas.2109229118.

[86] Du, Z., Xu, X., et al. "Serial Interval of COVID-19 among Publicly Reported Confirmed Cases," Emerging Infectious Diseases, March 19, 2020, https://doi.org/10.3201/eid2606.200357.

Guoqing Q., N. Yang, et al., "COVID-19 Transmission within a family cluster by presymptomatic infectors in China," Clinical Infectious Diseases, March 23, 2020, https://doi.org/10.1093/cid/ciaa316.

Kim, G.U., M.J. Kim, et al. "Clinical characteristics of asymptomatic and symptomatic patients with mild COVID-19," Clinical Microbiology and Infection, May 1, 2020, https://doi.org/10.1016%2Fj.cmi.2020.04.040. /.

Kimball, A., H.M. Hatfield, et al., "Asymptomatic and Presymptomatic SARS-CoV-2 Infections in Residents of a Long-Term Care Skilled Nursing Facility — King County, Washington, March 2020." *MMWR,* March 27, 2020, http://dx.doi.org/10.15585/mmwr.mm6913e1.

Krieg, S.J., J.J. Schnur, et al., "Symptomatic, Presymptomatic, and Asymptomatic Transmission of SARS-CoV-2 in a University Student Population, August–November 2020," Public Health Reports, July 16, 2022 https://doi.org/10.1177/00333549221110300.

Li, C., F. Ji, et al. 2020. "Asymptomatic and Human-to-Human Transmission of SARS-CoV-2 in a 2-Family Cluster, Xuzhou, China," *Emerging Infectious Diseases*, July 2020, https://doi.org/10.3201/eid2607.200718.

Lu, S., J. Lin, et al. "Case Report of Familial Cluster With Three Asymptomatic COVID-19 Patients," *Journal of Medical Virology*, March 19, 2020, https://doi.org/10.1002/jmv.25776.

studies estimate that approximately half of all SARS-CoV-2 transmission events come from cases that are asymptomatic or pre-symptomatic at the time of onward transmission.[87] A study published in the journal *Clinical Infectious Diseases* reported that, of the health care workers who tested positive for SARS-CoV-2 antibodies, only 57.9 percent reported symptoms of prior illness, indicating that asymptomatic infections among health care providers are important to consider in Covid-19 infection control plans.[88] In a letter to the editor published in the journal *Open Forum Infectious Diseases*, Gupta et al. summarized evidence on transmission from asymptomatic and pauci-symptomatic Covid-19 patients.[89] Several reports have documented transmission in health care settings from patients with unrecognized asymptomatic infections.[90,91] With the more transmissible Omicron variant leading

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Ma, Q., J. Liu, et al., "Global Percentage of Asymptomatic SARS-CoV-2 Infections Among the Tested Population and Individuals With Confirmed COVID-19 Diagnosis: A Systematic Review and Meta-analysis," JAMA Network Open, Dec 14, 2021, doi:10.1001/jamanetworkopen.2021.37257.

Rothe C., Schunk M., Sothmann P., et al., "Transmission of 2019-nCoV Infection from an Asymptomatic Contact in Germany." NEJM, Jan 30, 2021, DOI: 10.1056/NEJMc2001468.

Wei, W.E., Li, Z., et al., "Presymptomatic Transmission of SARS-CoV-2 — Singapore, January 23–March 16, 2020," MMWR, April 10, 2020, http://dx.doi.org/10.15585/mmwr.mm6914e1.

Xiao, T., Wang, Y., et al., "Early Viral Clearance and Antibody Kinetics of COVID-19 Among Asymptomatic Carriers," Frontiers in Medicine, March 15, 2021, https://doi.org/10.3389/fmed.2021.595773.

Yin, G., & H. JIN, "Comparison of transmissibility of coronavirus between symptomatic and asymptomatic patients: Reanalysis of the Ningbo COVID-19 data (Preprint)," JMIR Public Health and Surveillance, April 18, 2020, https://doi.org/10.2196/19464.

Zhang, W., Cheng, W., et al., " Secondary Transmission of Coronavirus Disease from Presymptomatic Persons, China," Emerging Infectious Diseases, August 2020, https://doi.org/10.3201/eid2608.201142.

Zou, L., Ruan, F., et al. "SARS-CoV-2 Viral Load in Upper Respiratory Specimens of Infected Patients" NEJM, March 19, 2020, DOI: 10.1056/NEJMc2001737.

[87] He X, Eric HY, Wu P, et al., "Temporal dynamics in viral shedding and transmissibility of COVID-19," *Nature Medicine*, April 15, 2020, https://doi.org/10.1038/s41591-020-0869-5.

Ng, T.C., H.Y. Cheng, et al., "Comparison of Estimated Effectiveness of Case-Based and Population-Based Interventions on COVID-19 Containment in Taiwan," JAMA Internal Medicine, April 6, 2021, https://doi.org/10.1001/jamainternmed.2021.1644.

Meher, K.P., "Quantitative COVID-19 infectiousness estimate correlating with viral shedding and culturability suggests 68% pre-symptomatic transmissions," medRxiv, May 12, 2020, https://doi.org/10.1101/2020.05.07.20094789.

Wu, P., F. Liu, et al., "Assessing asymptomatic, pre-symptomatic and symptomatic transmission risk of SARS-CoV-2," Clinical Infectious Diseases, March 27, 2021, https://doi.org/10.1093/cid/ciab271.

[88] Stubblefield, W.B., H.K. Talbot, et al., "Seroprevalence of SARS-CoV-2 Among Frontline Healthcare Personnel During the First Month of Caring for Patients With COVID-19—Nashville, Tennessee," Clin Infect Dis, May 2021, 72(9): 1645-48, https://doi.org/10.1093/cid/ciaa936.

[89] Gupta, A., S. Jain, and V. Gupta, "Viral RNA Shedding and Transmission Potential of Asymptomatic and Pauci-symptomatic COVID-19 Patients," Open Forum Infectious Diseases, Aug 14, 2021, https://doi.org/10.1093/ofid/ofab112.

[90] Pringle, J.C., J. Leikauskas, et al., "COVID-19 in a Correctional Facility Employee Following Multiple Brief Exposures to Persons with COVID-19 — Vermont, July–August 2020," MMWR Early Release, Oct 30, 2020, http://dx.doi.org/10.15585/mmwr.mm6943e1.

[91] Goldberg, L., Y. Levinsky, et al., "SARS-CoV-2 Infection Among Health Care Workers Despite the Use of Surgical Masks and Physical Distancing—the Role of Airborne Transmission," Open Forum Infectious Diseases, Jan 27, 2021, https://doi.org/10.1093/ofid/ofab036.

to higher viral loads and earlier peak viral shedding, addressing the role of asymptomatic and pre-symptomatic transmission is essential to effective Covid-19 infection control.

- Symptom-based screening for Covid-19 misses cases.[92,93] A study published in the *Journal of Hospital Infection* reported that of the SARS-CoV-2-positive patients identified via universal pre-admission testing, 46 percent were asymptomatic and would have been admitted without Covid-19 precautions if the testing program had not been in place.[94] Other studies have found that longer time to diagnosis of patients with SARS-CoV-2 leads to more onward transmission[95,96] and that frequent testing and rapid isolation of newly detected Covid-19 patients reduces onward transmission.[97] Authors of a study published in *Clinical Infectious Diseases* reported that 8.3 percent of frontline first responders and health care providers reporting no history of Covid-19 symptoms were positive on serology and concluded, "These findings demonstrate the limitations of symptom-based surveillance and importance of testing."[98]

- A combination of pre-admission SARS-CoV-2 diagnostic testing and screening for Covid-like symptoms and recent exposure to Covid-19 cases is effective at identifying patients who may be SARS-CoV-2-positive and enabling prompt isolation to prevent onward transmission. Similarly, regular, at least twice weekly, surveillance testing of health care workers is essential to promptly identifying infections. NNU has summarized supporting evidence in our report, *Covid Testing*

[92] Letizia, A.G., I. Ramos, et al., "SARS-CoV-2 Transmission among Marine Recruits during Quarantine," NEJM, Dec 17, 2020, DOI: 10.1056/NEJMoa2029717.

[93] Ng, O.T., K. Marimuthu, et al., "SARS-CoV-2 seroprevalence and transmission risk factors among high-risk close contacts: a retrospective cohort study," The Lancet Infectious Diseases, March 1, 2021, 21(3): 333-43, https://doi.org/10.1016/S1473-3099(20)30833-1.

[94] Saidel-Odes, L., T. Shafat, et al., "SARS-CoV-2 universal screening upon adult hospital admission in Southern Israel," The Journal of Hospital Infection, Aug 1, 2021, 114: 167-170, https://doi.org/10.1016/j.jhin.2021.04.026.

[95] Trannel, A.M., T. Kobayashi, et al., "COVID-19 Incidence After Exposures in Shared Patient Rooms, Tertiary Care Center, Iowa, July 2020–May 2021 ," Infection Control & Hospital Epidemiology, July 12, 2021, doi:10.1017/ice.2021.313.

[96] Jung, J., S.Y. Lim, et al., "Clustering and multiple-spreading events of nosocomial severe acute respiratory syndrome coronavirus 2 infection," The Journal of Hospital Infection, Nov 1, 2021, 117: 28-36, https://doi.org/10.1016/j.jhin.2021.06.012.

[97] Walsh, J., M. Skally, et al., "The early test catches the case. Why wait? Frequent testing of close contacts aids COVID-19 control," The Journal of Hospital Infection, Oct 1, 2021, 116: 101-2, https://doi.org/10.1016/j.jhin.2021.08.004.

[98] Akinbami, L.J., L.R. Petersen, et al., "Coronavirus Disease 2019 Symptoms and Severe Acute Respiratory Syndrome Coronavirus 2 Antibody Positivity in a Large Survey of First Responders and Healthcare Personnel, May–July 2020," Clin Infect Dis, Aug 1, 2021, 73(3): e822-25, https://doi.org/10.1093/cid/ciab080.

and Screening in Health Care Settings: A Science-Driven Approach to Protecting Patient, Health Care Worker, and Public Health.[99]

Additionally, a pair of studies published in the journal *Infection Control & Hospital Epidemiology* reported on pre-admission and surveillance testing of health care workers and patients in the largest hospital in Singapore.[100,101] They found that the combination of rapid testing of all patients upon admission, in addition to screening for epidemiological and clinical characteristics, led to prompt isolation of patients (average of 16.5 hours prior to implementation of universal testing to average of 0.2 hours after implementation of universal testing) and a significant decrease in close contacts (2.1 per Covid-positive patient to 0.3 on average after implementation of universal testing). Regular surveillance testing of health care workers identified asymptomatic infections that would not have been otherwise identified or isolated and could have led to onward transmission. The authors made two important observations in these reports:

- "Although a triage strategy based on epidemiological risk and clinical syndrome was resource-intensive, the potential for false-negative RAD [rapid antigen detection] tests and the possibility that patients with epidemiological risk could still be incubating at point of admission meant that RAD testing could not be used alone for isolation triage."[102]

- "In conclusion, institution of [rostered routine testing] RRT for all [health care workers] HCWs as well as universal screening for COVID-19 in all inpatients during a 6-week period of increased transmission in the surrounding community detected additional asymptomatic cases amongst HCWs and inpatients. While the yield of testing was not high, earlier detection of asymptomatic inpatient cases allowed for faster isolation, limiting potential exposure. No clusters of COVID-19 infections were seeded amongst staff or patients during a period of heightened risk."[103]

- Given the infectiousness of asymptomatic and pre-symptomatic cases, symptom-based screening of health care workers is insufficient by itself to detect cases. At

[99] Given increased transmissibility of new variants of concern, including the Omicron variant and its subvariants, our recommendation at this point in the pandemic would be surveillance testing at least twice per week.

National Nurses United, "Covid Testing and Screening in Health Care Settings: A Science-Driven Approach to Protecting Patient, Health Care Worker, and Public Health," June 11, 2021, https://www.nationalnursesunited.org/sites/default/files/nnu/documents/0621_Covid19_IssueBrief_TestingScreening.pdf.

[100] Wee, L.E.I., E.P. Conceicao, et al., "Utilization of rapid antigen assays for detection of severe acute respiratory coronavirus virus 2 (SARS-CoV-2) in a low-incidence setting in emergency department triage: Does risk-stratification still matter?," Infection Control & Hospital Epidemiology, Sept 15, 2021, doi:10.1017/ice.2021.407.

[101] Wee, L.E.I., E.P. Conceicao, et al., "Rostered routine testing for healthcare workers and universal inpatient screening: The role of expanded hospital surveillance during an outbreak of coronavirus disease 2019 (COVID-19) in the surrounding community," Infection Control & Hospital Epidemiology, Aug 6, 2021, doi:10.1017/ice.2021.366.

[102] Wee, L.E.I., E.P. Conceicao, et al., Sept 15, 2021.

[103] Wee, L.E.I., E.P. Conceicao, et al., Aug 6, 2021.

least twice weekly surveillance testing of all health care workers is necessary to prevent exposures and transmission of SARS-CoV-2. For example, one study published in the journal *Clinical Infectious Diseases* reported on an outbreak investigation in six long-term care facilities and found that a single introduction of the virus led to rapid and sustained transmission.[104] This study illuminates the capacity of SARS-CoV-2 to spread exponentially with just one introduction of the virus and underlines the importance of proactive surveillance testing of health care workers to ensure the safety of patients and staff.

- Testing for SARS-CoV-2 should be made available to all health care workers, regardless of vaccination status. Careful monitoring of SARS-CoV-2 infections among fully vaccinated health care workers, regardless of symptoms, is critical to ensure that infected health care workers are promptly isolated. Transmission from infected fully vaccinated individuals, including outbreaks, has been documented. [105] Chronic impacts of Covid-19 can also occur among individuals who had mild and asymptomatic infections, including those who have been vaccinated (see Section 1.A.). Testing for SARS-CoV-2 should be offered to all health care workers, which would enable health care employers to track all employee SARS-CoV-2 infections, including asymptomatic infections and breakthrough infections.

- The symptoms of Covid-19 can be broad-ranging. The CDC reports the following can be symptoms of Covid-19: fever or chills, cough, shortness of breath or difficulty breathing, fatigue, muscle or body aches, headache, new loss of taste or smell, sore throat, congestion or runny nose, nausea or vomiting, and diarrhea, and further says, "This list does not include all possible symptoms." [106] A *Cochrane Systematic Review* reported on the sensitivity and specificity of different symptoms including cough (62.4 percent and 45.4 percent), fever (37.6 percent and 75.2 percent), loss of taste or smell (39.2 percent and 92.1 percent),and combining symptoms with other information such as contact or travel history, age, gender, and local recent case detection rate (sensitivities approached 90 percent).[107] Symptoms alone have poor

[104] Maccannell, T., J. Batson, et al., "Genomic epidemiology and transmission dynamics of SARS-CoV-2 in congregate healthcare facilities in Santa Clara County, California," Clinical Infect Dis, July 30, 2021, https://doi.org/10.1093/cid/ciab553.

[105] Singanayagam, A., S. Hakki, et al., "Community transmission and viral load kinetics of the SARS-CoV-2 delta (B.1.617.2) variant in vaccinated and unvaccinated individuals in the UK: a prospective, longitudinal, cohort study," Lancet Infectious Diseases, Oct 29, 2021, https://doi.org/10.1016/S1473-3099(21)00648-4.

Helmsdal, G., O.K. Hansen, et al., "Omicron Outbreak at a Private Gathering in the Faroe Islands, Infecting 21 of 33 Triple-Vaccinated Healthcare Workers," Clinical Infectious Diseases, Sept 2022, 75(5): 893-6, https://doi.org/10.1093/cid/ciac089.

[106] U.S. Centers for Disease Control and Prevention, "Symptoms of COVID-19," Updated Oct 26, 2022 https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html.

[107] Struyf, T., J.J. Deeks, et al., "Signs and symptoms to determine if a patient presenting in primary care or hospital outpatient settings has COVID-19," Cochrane Library, May 20, 2022, https://doi.org/10.1002/14651858.CD013665.pub3.

diagnostic quality. Combined with the high rates of asymptomatic and pre-symptomatic transmission, this indicates that the extremely limited symptoms that trigger medical removal and testing among health care workers in the Covid-19 Health Care ETS must be updated to be more protective.

D. Recommended Updates #7, #8, and #9: Based on Additional Evidence Regarding Aerosol/Airborne Transmission of SARS-CoV-2, OSHA Should Strengthen PPE, Exposure Surveillance, Ventilation, and Patient Isolation Requirements in the Permanent Covid Standard.

Recommended Update #7: OSHA should require optimal PPE for nurses and other health care workers caring for patients with suspected or confirmed Covid-19. Optimal PPE includes a powered air-purifying respirator (PAPR), virus impervious coveralls that incorporate head and shoe coverings, and medical-grade gloves. NNU encourages OSHA to fully ban reuse of single use PPE and to ban the use of decontamination methods to reuse single-use PPE.

Recommended Update #8: OSHA should strengthen the definition of exposure in issuing a permanent standard to reflect the available scientific evidence regarding aerosol transmission. The CDC's definition of close contact exposure (with six feet for cumulative total 15 minutes or more over a 24-hour period) is based on arbitrary assumptions, not scientific data regarding aerosol/airborne transmission of SARS-CoV-2 or the precautionary principle.

Rationale: NNU commends OSHA for recognizing the science on aerosol/airborne transmission of SARS-CoV-2 in issuing Covid-19 Health Care ETS and requiring health care employers to provide airborne precautions, including respiratory protection at least as protective as a fit-tested N95 filtering facepiece respirator, eye protection, protective clothing, and gloves, to health care workers exposed to Covid-19.[108] However, when updating the ETS and issuing a permanent standard, OSHA's Covid-19 Health Care ETS requirements on PPE, exposure surveillance, ventilation, and patient isolation should be strengthened based upon scientific evidence regarding aerosol/airborne transmission of SARS-CoV-2 and other updates:

- SARS-CoV-2 is transmitted through aerosol or airborne transmission.[109] Multiple studies have captured SARS-CoV-2 virus in air samples from Covid-19 patient

[108] 29 C.F.R. §1910.502(f)(2).

[109] Greenhalgh, T., J.L. Jimenez, et al., "Ten scientific reasons in support of airborne transmission of SARS-CoV-2," The Lancet, April 15, 2021, https://doi.org/10.1016/S0140-6736(21)00869-2.

Wang, C.C., K.A. Prather, et al., "Airborne transmission of respiratory viruses," Science, Aug 27, 2021, 373(981), https://doi.org/10.1126/science.abd9149.

See additional studies at NNU's Covid-19 Bibliography page, https://www.nationalnursesunited.org/covid-19-bibliography.

rooms, hallways, and other areas of health care facilities.[110] A study published in the journal *Environmental Research* reported that, "there was significant transfer of viruses from Covid-19 patients' rooms to the corridors," in a health care facility.[111]

- SARS-CoV-2 transmission can occur with fleeting exposures, less than 15 minutes.[112]

- Extensive contamination of personal protective equipment worn by health care workers caring for Covid-positive patients has been documented.[113] SARS-CoV-2 can survive on surfaces for extended periods of time, depending on environmental factors.[114] This evidence underlines the importance of no mixed assignments and, combined with the evidence regarding aerosol/airborne transmission of this virus, the need for optimal personal protective equipment for health care workers, including a PAPR, virus impervious coveralls that incorporate head and shoe coverings, and medical-grade gloves.

- Studies have documented the use of dedicated Covid-19 units and effective Covid patient isolation, including the use of negative pressure ventilation/airborne

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[110] Ang, A.X.Y., I. Luhung, et al., "Airborne SARS-CoV-2 surveillance in hospital environment using high-flowrate air samplers and its comparison to surface sampling," Indoor Air, September 14, 2021, https://doi.org/10.1111/ina.12930.

Birgand, G., N. Peiffer-Smadja, et al., "Assessment of Air Contamination by SARS-CoV-2 in Hospital Settings," JAMA Network Open, December 2020, doi:10.1001/jamanetworkopen.2020.33232.

Chia, P.Y., K.K. Coleman, et al. "Detection of Air and Surface Contamination by (SARS-CoV-2 in Hospital Rooms of Infected Patients" Nature Communications, May 29, 2020, https://doi.org/10.1038/s41467-020-16670-2.

Dietz, L., D.A. Constant, et al., "Exploring Integrated Environmental Viral Surveillance of Indoor Environments: A comparison of surface and bioaerosol environmental sampling in hospital rooms with COVID-19 patients," medRxiv, March 26, 2021, https://doi.org/10.1101/2021.03.26.21254416.

Dumont-Leblond, N., M. Veillette, et al., "Positive no-touch surfaces and undetectable SARS-CoV-2 aerosols in long-term care facilities: An attempt to understand the contributing factors and the importance of timing in air sampling campaigns," American Journal of Infection Control, Feb 11, 2021, https://doi.org/10.1016/j.ajic.2021.02.004.

[111] Grimalt, J.O., H. Vilchez, et al., "Spread of SARS-CoV-2 in hospital areas," Environ Res, Sept 20, 2021, https://doi.org/10.1016/j.envres.2021.112074.

[112] Goldberg, L., Y. Levinsky, et al., "SARS-CoV-2 Infection Among Health Care Workers Despite the Use of Surgical Masks and Physical Distancing—the Role of Airborne Transmission ," Open Forum Infectious Diseases, Jan 27, 2021, https://doi.org/10.1093/ofid/ofab036.

Kwon, K.S., J.I. Park, et al., "Evidence of Long-Distance Droplet Transmission of SARS-CoV-2 by Direct Air Flow in a Restaurant in Korea," Journal of Korean Medical Science, November 2020, https://doi.org/10.3346/jkms.2020.35.e415.

Mack, C.D., E.B. Wasserman, et al., "Implementation and Evolution of Mitigation Measures, Testing, and Contact Tracing in the National Football League, August 9–November 21, 2020," MMWR, January 2021, http://dx.doi.org/10.15585/mmwr.mm7004e2.

[113] Aumeran, C., C. Henquell, et al., "Isolation gown contamination during health care of confirmed SARS-CoV-2 infected patients," J Hospital Infection, Jan 1 2021, 107: 111-13, https://doi.org/10.1016/j.jhin.2020.11.004.

[114] Chin, A.W.H., J.T.S. Chu, et al. "Stability of SARS-CoV-2 in different environmental conditions," The Lancet Microbe, May 2020, 1(1): e10, https://doi.org/10.1016/S2666-5247(20)30003-3.

infection isolation rooms, as important aspects of infection control.[115] An outbreak investigation in a hospital in Hong Kong determined that the lack of air exhaust in a patient care area led to multiple patient and staff infections.[116] A study published in *The Journal of Hospital Infection* found that portable air cleaners could improve ventilation rates and reduce aerosol transmission in combination with building HVAC ventilation in small and enclosed areas in health care settings.[117]

- Ongoing research continues to underline the dangers of reusing single-use PPE, including N95 filtering facepiece respirators. PPE becomes contaminated during use and single-use PPE can be degraded and damaged with multiple uses.[118] NNU encourages OSHA to fully ban reuse of single use PPE and to ban the use of decontamination methods to reuse PPE.

- It is very good that OSHA, in the Covid-19 Health Care ETS, does not consider a facemask to be equivalent protection to a respirator. This protection, which is an improvement on CDC guidance, should be maintained in the permanent Covid-19 standard.

- OSHA should remove the exemption for exposure notification to staff due to the presence of a Covid-positive patient in areas where suspected and confirmed Covid-19 patients are normally cared for. All staff have the right to be informed of a hazardous exposure that occurs at the worksite, and OSHA should ensure the permanent Covid-19 standards provide that right to all employees.

[115] Ambrosch, A., F. Rockmann, et al., "Effect of a strict hygiene bundle for the prevention of nosocomial transmission of SARS-CoV-2 in the hospital: a practical approach from the field," Journal of Infection and Public Health, December 2020, 13(12): 1862-7, https://doi.org/10.1016%2Fj.jiph.2020.10.005.

[116] Cheng, V.C..C., K.S.C. Fung, et al., "Nosocomial outbreak of COVID-19 by possible airborne transmission leading to a superspreading event," Clinical Infect Dis, Sept 2021, 73(6): e1356-64, https://doi.org/10.1093/cid/ciab313.

[117] Lee, J.H., M. Rounds, et al., "Effectiveness of portable air filtration on reducing indoor aerosol transmission: preclinical observational trials," J Hosp Infection, Sept 22, 2021, https://doi.org/10.1016/j.jhin.2021.09.012.

[118] Jung, J., J. Kim, et al., "Fit-failure rate associated with simulated reuse and extended use of N95 respirators assessed by a quantitative fit test," Infection Control & Hospital Epidemiology, Jan 25, 2021, doi:10.1017/ice.2021.5.

Li, D.F., H. Alhmidi, et al., "A simulation study to evaluate contamination during reuse of N95 respirators and effectiveness of interventions to reduce contamination," May 10, 2021, doi:10.1017/ice.2021.218.

National Nurses United, "Nurse Health and Safety Alert: Reusing N95 Respirators is Dangerous," Nov 2020, https://www.nationalnursesunited.org/sites/default/files/nnu/graphics/documents/1120_Covid19_H%26S_PPE-reuse-flyer_Updated.pdf.

E. Recommended Update #9: OSHA Should Strengthen Ventilation and Patient Isolation Requirements When Issuing a Permanent Covid Standard.

Recommended Update #9: OSHA should strengthen ventilation and patient isolation requirements when issuing a permanent standard, including:

- Requiring employers to establish dedicated Covid-19 units in the permanent Covid-19 standard and should prohibit mixing Covid-positive patients, patients who may have Covid-19, and patients who do not have Covid-19 in the same units or on the same assignment.

- Requiring employers to make improvements to ventilation systems to reduce the risk of aerosol transmission in both patient care and non-patient care areas, such as by increasing outdoor air proportion and filtration levels for recirculated air or by placing and maintaining portable high efficiency particulate air (HEPA) filter units.

- Requiring employers to convert patient rooms to negative pressure/airborne infection isolation ventilation if there is a need for more rooms than exist.

Section 3: OSHA's permanent Covid-19 standard should go beyond weak CDC guidance and should not be swayed by false arguments from health care employers.

OSHA should not align its final rule with CDC guidance on Covid-19 as the CDC guidance frequently falls short in vital ways; specifically, CDC guidance fails to recognize the precautionary principle and ignores available scientific evidence regarding Covid-19. The permanent Covid-19 standard should follow the precautionary principle and the most up-to-date science on Covid-19 at the time of issuance, fully recognizing aerosol transmission and going beyond CDC guidance.

For nearly three years of the pandemic, permissive and weak CDC guidance on Covid-19 health care infection control has led to dangerous working conditions and high rates of Covid-19 infection for nurses and other health care workers.[119] For example, in March 2020, the CDC rolled back vital PPE and other infection control guidance under pressure from the health care industry.[120] As a result, many health care employers locked up N95 respirators and told health care workers to wear surgical masks—or even bandanas—when caring for Covid-positive patients.

The results of health and safety complaints filed with OSHA by NNU member nurses show a pattern of health care employers using CDC guidance to justify their failures and refusals to protect health care workers and patients throughout the pandemic (Appendix 2). After OSHA announced it was rescinding the Health Care ETS and halted enforcement on the ETS in December 2021, health care employers justified dangerous practices of pressuring health care workers to report to work even while actively infected with Covid-19.[121] Health care employers once again justified their actions using the CDC guidance, which allowed employers to select from crisis standards of care. This endangered the health of the infected workers, their coworkers, and their patients.

It is vital that OSHA makes independent decisions tailored to its mission of protecting workers and that it does not surrender that responsibility to another agency with different priorities. The CDC makes frequent changes to its guidance that often have been more responsive to political pressure than to the science of Covid-19 transmission. By contrast, OSHA has an enduring responsibility to reduce significant risks to worker safety and health in the workplace. OSHA is also obliged to follow procedural requirements when creating

[119] "Testimony of Pascaline Muhindura, RN On Behalf of National Nurses United Before the Subcommittee on Workforce Protections Committee on Education and Labor," March 11, 2021, https://edlabor.house.gov/imo/media/doc/MuhinduraPascalineTestimony03112021.pdf.

[120] Burger D, RN, "Letter to Committee on Homeland Security," March 11, 2020, https://www.nationalnursesunited.org/sites/default/files/nnu/graphics/documents/COVID19_Homeland_Security_Letter_Burger.pdf.

Gollan and Shogren, "31,000 and counting," Reveal, May 12, 2020, https://revealnews.org/article/31000-andcounting/.

[121] Shammas B, Knowles H, "Stressed hospitals are asking workers with covid to return — even if they may be infectious," Washington Post, January 23, 2022, https://www.washingtonpost.com/health/2022/01/23/hospitalworkers-covid-isolation-cdc/.

and updating standards that do not apply to the issuance of CDC guidance. Tying the permanent standard to current or future CDC guidance will cause confusion when CDC guidance invariably changes. OSHA should include strong, comprehensive Covid-19 protections in a permanent standard without reference to CDC guidance.

It is also vital that the permanent standard does not grant impunity to employers based on following CDC guidance. Allowing a "safe harbor" for employers violating the permanent standard requirements because they are in compliance with lax CDC guidance would, in effect, grant impunity to employers who flout their obligations to protect workers. The CDC's health care infection control guidelines have consistently fallen short of what is needed to protect workers by lagging behind the science on aerosol transmission, allowing unsafe reuse of PPE, excessively deferring to employers, and failing to incorporate the precautionary principle. Allowing employers to avoid OSHA enforcement of the Covid-19 standard based on following CDC guidance would, in effect, make the standard optional. It would mean that employers could pick and choose between rules and guidance promulgated by different agencies, based on whatever is cheapest and most convenient instead of being held to one standard designed to protect workers. Employers who did not want to follow the OSHA standard could instead lobby for changes to the CDC guidance, which can be made quickly without the opportunity for all stakeholders to have input through the notice and comment process. Deference to CDC guidance would mean making worker safety optional. OSHA is the agency charged with protecting the health and safety of workers. It must not surrender that responsibility to another agency with different priorities.

CDC guidance on Covid infection control in health care settings remains weak in several ways and OSHA should go beyond CDC guidance in issuing requirements in the permanent standard, including the following:

A. Instead of tying precautions to local metrics for Covid transmission like the CDC, OSHA should establish clear requirements for Covid infection control at all health care facilities, including requiring universal masking and precautionary screening and testing of all patients, visitors, and others entering health care facilities, which should include screening for Covid-19 symptoms and recent exposure history to Covid-19 as well as testing for SARS-CoV-2.

OSHA should not link its regulatory requirements to measures of local risk, such as the CDC's Covid-19 Community Level metric. OSHA's permanent Covid-19 standard should require health care employers to provide optimal workplace protections for all nurses and other health care workers who may be exposed to Covid-19, as employers have a legal and moral obligation to provide a safe and healthful workplace for employees. Reductions in the availability and accessibility of Covid testing in the larger community mean that there is no reliable data source for adjustments based on local risk. Moreover, local risk measures will not accurately capture the exposure risk presented by non-employees at health care

facilities. Relying on employers to monitor local risk measures and adjust protections, accordingly, informing staff each day what they must do in accordance to changing community levels of transmission, is impractical. The risk that Covid-19 poses to health care workers is ongoing, and the protections to keep them safe must be incorporated into the daily routine of every health care facility, like with other protective standards, not pulled together last minute after a region enters crisis conditions, as hospitals have done so disastrously for the past three years.

The CDC's Covid-19 Community Level metric allows high levels of transmission based on incorrect assumptions about the danger of Covid infections.

CDC's Covid-19 Community Level metric is both harmful and antithetical to public health. The CDC based this metric on the idea that it was safe to allow high levels of community transmission of Covid-19 because high levels of population immunity and less severe recent variants meant the risk of serious disease and death was "greatly reduced for most people."[122] This idea relies on fatally flawed assumptions:[123]

a. future SARS-CoV-2 variants will only lessen in severity,
b. the U.S. has widespread population immunity, and
c. population immunity will not wane over time.

These assumptions are not based on science and dangerously minimize the impact of the Covid-19 pandemic.

- The CDC's Community Level metric incorrectly assumes that future variants will cause less severe disease.

Wishful narratives about the lessening severity of future variants assume that Covid-19 has become a stable and predictable disease. However, Covid cases are currently on the rise and are expected to increase in the United States.[124] As of December 14, 2022, Covid rates increased in 45 states over the past 14 days,[125] test positivity has increased nationally to

[122] U.S. Centers for Disease Control and Prevention, "Science Brief: Indicators for Monitoring COVID-19 Community Levels and Making Public Health Recommendations," last updated August 12, 2022, https://www.cdc.gov/coronavirus/2019-ncov/science/science-briefs/indicators-monitoring-community-levels.html

[123] National Nurses United, "Nurses challenge new CDC metric on latest Covid-19 safety rollback," February 28, 2022, https://www.nationalnursesunited.org/press/nurses-challenge-new-cdc-metric-on-latest-covid-19-safety-rollback

[124] Lee, MJ., "White House warns of possible Covid-19 winter surge: 'This is not one disease in isolation,'" CNN Politics, December 15, 2022, available at https://www.cnn.com/2022/12/15/politics/covid-winter-surge-warning-white-house/index.html

[125] The New York Times, "Coronavirus in the U.S.: Latest Map and Case Count," last updated December 15, 2022, available at https://www.nytimes.com/interactive/2021/us/covid-cases.html

11.7 percent with extremely limited testing being reported,[126] and Covid-related hospitalizations increased about 40 percent in the past month.[127]

The first Omicron variant, BA.1, caused record-breaking infections, hospitalizations, and deaths around the world.[128] Barely two months since the Omicron BA.1 wave peaked in the United Kingdom and other countries, the Omicron subvariant BA.2 has caused a new wave of infections, with nearly 5 million people testing positive for the virus in the U.K. in the week ending March 26.[129] The REACT-1 survey, England's largest population Covid-19 surveillance study, performed 110,000 tests of randomly selected participants between March 8 and March 31 and recorded one Covid-19 infection for every 16 tests, which is 40 percent higher than the first Omicron peak in January and the highest prevalence recorded since the survey began in May 2020.[130]

Covid-associated hospitalizations from the BA.2 subvariant in the U.K. reached the same level as the first Omicron BA.1 peak.[131] These variants were neither predicted nor stable. In fact, a recent study found that Omicron-induced immunity provides reduced protection against reinfection or infection from future, more pathogenic SARS-CoV-2 variants.[132] Multiple SARS-CoV-2 variants of concern have emerged rapidly throughout the pandemic, with new variants and sub-variants continuing to evolve.[133]

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[126] U.S. Centers for Disease Control and Prevention, "COVID DATA TRACKER WEEKLY REVIEW," last updated December 9, 2022, https://www.cdc.gov/coronavirus/2019-ncov/covid-data/covidview/index.html

[127] U.S. Centers for Disease Control and Prevention, "COVID Data Tracker," last updated December 15, 2022, https://covid.cdc.gov/covid-data-tracker/#new-hospital-admissions

[128] National Public Radio, "Omicron causes record-breaking COVID cases in the U.S. and globally," December 30, 2021, https://www.npr.org/2021/12/30/1069027394/omicron-causes-record-breaking-covid-cases-in-the-u-s-and-globally

[129] The Guardian, "Covid experts call for return of free tests as UK cases hit new high," April 1, 2022, https://www.theguardian.com/world/2022/apr/01/covid-infections-at-all-time-high-in-england-ons-data-reveals.

Office for National Statistics, "Coronavirus (COVID-19) Infection Survey, UK: 1 April 2022," April 1, 2022, https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/coron aviruscovid19infectionsurveypilot/latest.

[130] Elliot et al., "Twin peaks: the Omicron SARS-CoV-2 BA.1 and BA.2 epidemics in England," Imperial College London, April 6, 2022, https://spiral.imperial.ac.uk/handle/10044/1/96170.

[131] Pagel C, "Why is the UK seeing near-record Covid cases? We still believe the three big myths about Omicron," The Guardian, March 30, 2022, https://www.theguardian.com/commentisfree/2022/mar/30/uk-near- record-covid-cases-three-myths-omicron-pandemic.

U.K. Health Security Agency, "UK Summary," last updated April 1, 2022, https://coronavirus.data.gov.uk/details/healthcare.

[132] Servellita, V., A.M. Syed, et al., "Neutralizing immunity in vaccinebreakthrough infections from the SARS-CoV-2 Omicron and Delta variants," Cell, March 17, 2022, DOI: https://doi.org/10.1016/j.cell.2022.03.019

[133] U.S. CDC, "SARS-CoV-2 Variant Classifications and Definitions," last updated April 26, 2022, https://www.cdc.gov/coronavirus/2019-ncov/variants/variant-classifications.html.

World Health Organization, "Weeklyepidemiological update on COVID-19 - 29 March 2022," last updated March 29, 2022, https://www.who.int/publications/m/item/weekly-epidemiological-update-on-covid-19---29- march-2022.

Strikingly, SARS-CoV-2 variants have emerged independently from one another, with the Omicron variant being the most antigenically divergent from previous variants and the ancestral Wuhan-Hu-1 strain.[134] Independent emergence of variants means that it is incorrect to assume that future variants will be less virulent or cause less severe illness than previous variants. For example, unlike SARS-CoV-2, seasonal influenza viruses undergo a pattern of antigenic drift or minor changes where variants are typically a direct descendant from previous variants.[135] Additionally, emergence of a highly transmissible and more virulent strain of the HIV virus identified recently proves that viruses can evolve to become more virulent over time.[136] The long-term evolutionary trajectory of human coronaviruses remains unknown.[137]

- The CDC's Community Level metric incorrectly assumes that the United States has a high level of Covid-19 immunity that will not wane over time.

CDC's Community Level metric also falsely assumes that Covid infection-induced and vaccine-induced immunity will not wane over time. Several studies have found that immunity wanes across all ages with increasing time since Covid vaccination or prior infection.[138] Data from the U.K. found that booster vaccine effectiveness against Omicron hospitalization declined from 91 percent to 67 percent after 105 days among 18–64-year-old.[139] A CDC Morbidity and Mortality Weekly Report found that booster protection against Covid- associated emergency department and urgent care visits and hospitalizations

[134] Markov, P.V., A. Katzourakis, et al., "Antigenic evolution will lead to new SARS-CoV-2 variants with unpredictable severity," Nature Reviews Microbiology, March 14, 2022, https://doi.org/10.1038/s41579-022-00722-z

U.K. Health Security Agency, "Long term evolution of SARS-CoV-2, 26 July 2021," July 20, 2021, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1055746/S1512_2_20201_Long_term_evolution_of_SARS-CoV-2.pdf.

[135] U.S. CDC, "How Flu Viruses Can Change: "Drift" and "Shift,"" last updated December 12, 2022, https://www.cdc.gov/flu/about/viruses/change.htm

[136] Wymant, C., D. Bezemer, et al., "A highly virulent variant of HIV-1 circulating in the Netherlands," Science, February 3, 2022, https://doi.org/10.1126/science.abk1688.

[137] U.K. Health Security Agency, "Long term evolution of SARS-CoV-2, 26 July 2021," July 20, 2021, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1055746/S1512_2_20201_Long_term_evolution_of_SARS-CoV-2.pdf.

[138] Tartof et al., "Effectiveness of mRNA BNT162b2 COVID-19 vaccine up to 6 months in a large integrated health system in the USA: a retrospective cohort study," The Lancet, October 4, 2021, https://doi.org/10.1016/S0140-6736(21)02183-8.

U.K. Health Security Agency,"COVID-19 vaccine surveillance report Week 6," February 10, 2022, https://www.gov.uk/government/publications/covid-19-vaccine-weekly-surveillance-reports.

U.S. Centers for DiseaseControl and Prevention, "Science Brief: SARS-CoV-2 Infection-induced and Vaccine-induced Immunity," last updated October 29, 2021, https://www.cdc.gov/coronavirus/2019-ncov/science/science-briefs/vaccine-induced-immunity.html.

[139] U.K. Health Security Agency, "COVID-19 vaccine surveillance report Week 12," March 24, 2022, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1063023/Vaccine-surveillance-report-week-12.pdf

among adults declined within four months during Omicron predominance.[140] While updated bivalent boosters have been developed to match the spike protein of Omicron subvariants BA.4/BA.5, it is unclear how long added protection from the bivalent boosters will last, especially since BA.4/BA.5 subvariants are no longer dominant in the United States.

Covid-19 vaccinations in the United States also lag behind other high-income countries.[141] According to the CDC, a little over two-thirds of the U.S. population have completed their primary vaccine series and nearly half of the total booster-eligible population has yet to receive a bivalent booster dose.[142] Immunocompromised individuals are also less likely or unable to mount a sufficient immune response and only 11 percent of children under four and 38 percent of 5 to 11-year-olds have received just one dose of Covid vaccine,[143] leaving a significant proportion of the population constantly at great risk for contracting Covid-19 and experiencing severe illness, hospitalization, or death.

- The CDC's Community Level metric fails to recommend protections against transmission until hospitalizations rise, which is too late to stop a surge.

Disturbingly, the CDC's Covid-19 Community Level metric relies on lagging indicators, placing Covid-19 policies in a dangerously reactive position, allowing uncontrolled spread of Covid-19 in communities before universal masking or other measures are recommended, including in health care facilities. Unlike the previous CDC metric of community transmission that was based on new Covid-19 cases and positivity rates over the last seven days,[144] CDC's Covid-19 Community Level metric now relies largely on Covid-19 admissions and hospital capacity as well as a tremendously higher case threshold.[145] According to the previous CDC metric, fewer than 10 new cases per 100,000 population were considered "low" levels of community transmission. But under the CDC's Covid-19

[140] Ferdinands, J.M., S. Rao, et al., "Waning 2-Dose and 3-Dose Effectiveness of mRNA Vaccines Against COVID-19–Associated Emergency Department and Urgent Care Encounters and Hospitalizations Among Adults During Periods of Delta and Omicron Variant Predominance — VISION Network, 10 States, August 2021–January 2022," MMWR 2022;71:255–263, http://dx.doi.org/10.15585/mmwr.mm7107e2.

[141] Mueller and Lutz, "U.S. Has Far Higher Covid Death Rate Than Other Wealthy Countries," The New York Times, February 1, 2022, https://www.nytimes.com/interactive/2022/02/01/science/covid-deaths-united-states.html

[142] U.S. Centers for Disease Control and Prevention, "COVID DATA TRACKER WEEKLY REVIEW," last updated December 2, 2022, https://www.cdc.gov/coronavirus/2019-ncov/covid-data/covidview/past-reports/12022022.html

[143] American Academy of Pediatrics, "Children and COVID-19 Vaccination Trends," last updated December 7, 2022, https://www.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/children-and-covid-19-vaccination-trends/

[144] U.S. Centers for Disease Control and Prevention, "COVID Data Tracker," last updated December 15, 2022, https://covid.cdc.gov/covid-data-tracker/#county-view?list_select_state=all_states&list_select_county=all_counties&data-type=Risk

[145] U.S. Centers for Disease Control and Prevention, "Science Brief: Indicators for Monitoring COVID-19 Community Levels and Making Public Health Recommendations," last updated March 4, 2022, https://www.cdc.gov/coronavirus/2019-ncov/science/science-briefs/indicators-monitoring-community-levels.html.

Community Level metric, anything up to 200 new cases per 100,000 could still be considered "low" so long as Covid-19 admissions and hospital capacity are low enough. A determination of "low" community level using the Covid-19 Community Level metric has the potential to be twenty times higher than the previous "low" community level indicator. Moreover, reliance on lagging indicators will miss critical windows to act as severe disease and hospitalizations rise weeks after Covid infections.

Unchecked transmission of Covid-19 under the CDC community metric ultimately places the public health burden on communities that are already at increased risk for severe Covid-19 illness, including people with disabilities and children who are not vaccinated or not yet eligible for a Covid-19 vaccine. The CDC fails to recognize that the risk for severe Covid-19 outcomes is not limited to medically diagnosed immunocompromised individuals. One's health status and risk level changes over time, and medical conditions that place people at increased risk for severe Covid-19 outcomes expansively range from pregnancy, physical inactivity, and being a current or former smoker to chronic liver or kidney disease, cancer, cystic fibrosis and other conditions.[146] According to the CDC, "a person with one or more of these conditions who gets very sick from Covid-19 (has severe illness from COVID-19) is more likely to be hospitalized, need intensive care, require a ventilator to help them breathe, or die."[147] Yet many people lack consistent access to health care and may not have accurate knowledge of their health status. Further, anyone is at risk of developing long Covid.

- Elimination of community protections under the CDC's Community Level metric will lead to repeated Covid surges and frequent reinfection, endangering health care workers.

By significantly increasing the case thresholds and by using lagging indicators, such as severe disease and hospitalization, CDC's Covid-19 Community Level metric inappropriately alters the current understanding of Covid-19 risk and narrows the critical window during which public health agencies can respond to and prevent the next surge – further prolonging the pandemic. More Covid infections mean more hospitalizations and deaths and more opportunities for variants of concern to emerge. More Covid infections also mean more long Covid, debilitating chronic complications, and societal disruption due to school absences and missed work days. Repeated surges in Covid infections, hospitalizations, long-term complications, and deaths put nurses at heightened and perpetual risk from infection and moral injury.

Repeated or continual reinfections also raise serious concerns for health care workers who have worked on the front lines of the pandemic for nearly three years.[148] A recently

[146] U.S. Centers for Disease Control and Prevention, "People with Certain Medical Conditions," last updated December 6, 2022, https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html

[147] Ibid.

[148] Amorim, M.R., W.M. Souza, et al., "Respiratory Viral Shedding in Healthcare Workers Reinfected with SARS-CoV-2, Brazil, 2020," Emerging Infectious Diseases, April 19, 2021, https://doi.org/10.3201/eid2706.210558.

published study found that each subsequent infection, regardless of disease severity, contributes to additional risks of all-cause mortality, hospitalization, and adverse outcomes for multiple organ systems at six months after reinfection. They can also additionally worsen the risk for diabetes, GI, kidney, mental health, musculoskeletal and neurologic disorders.[149] In other words, each reinfection increases the risk of long Covid. Slezak and colleagues found that hospitalization was more common at reinfection than the initial Covid infection.[150] Another study found that patients discharged from Covid hospitalization and surviving at least a week had more than double the risk of subsequent hospitalization or death and a 4.8-fold higher risk of all-cause mortality compared to the general population. Discharged Covid patients were also more likely than influenza patients to be readmitted or die and to experience mental health or cognitive-related admission or death.[151] This means that reinfections can result in worse outcomes[152] and those who get reinfected can spread the virus to others and, more critically, to those who are medically vulnerable.

Use of any local risk metric to reduce protections puts health care workers in danger.

While the CDC's Community Level metrics are a particularly atrocious measure for triggering public health responses to Covid-19, OSHA should also not connect protections to the community transmission rates used for the CDC's guidance for health care workers or any other metric of local risk. Health care workers will continue to face significant risk from Covid exposure in the foreseeable future, even during the lulls between surges when community transmission rates are relatively low. The widespread use of the CDC's Community Level metrics to determine protections in the wider community means that protections are even more important in health care facilities, where health care workers are relied on to test and treat Covid cases resulting from unmitigated spread. Reliance on local risk is impractical because the quality of data about case rates is degrading over time and changing the rules that apply over time makes it difficult for facilities to create and consistently implement a safety program.

Roskosky, M., B.F. Borah, et al., "Notes from the Field: SARS-CoV-2 Omicron Variant Infection in 10 Persons Within 90 Days of Previous SARS-CoV-2 Delta Variant Infection — Four States, October 2021–January 2022," MMWR 2022;71:524–526. DOI: http://dx.doi.org/10.15585/mmwr.mm7114a

[149] Bowe, B., Xie, Y. & Al-Aly, Z. Acute and postacute sequelae associated with SARS-CoV-2 reinfection. *Nat Med* **28**, 2398–2405 (2022). https://doi.org/10.1038/s41591-022-02051-3.

[150] Slezak, J., K. Bruxvoort, et al., "Rate and severity of suspected SARS-Cov-2 reinfection in a cohort of PCR-positive COVID- 19 patients," Clinical Microbiology and Infection, August 18, 2021, https://doi.org/10.1016/j.cmi.2021.07.030.

[151] Bhaskaran, K., C.T. Rentsch, et al., "Overall and cause-specific hospitalisation and death after COVID-19 hospitalisation in England: A cohort study using linked primary care, secondary care, and death registration data in the OpenSAFELY platform," PLOS Medicine, January 25, 2022, https://doi.org/10.1371/journal.pmed.1003871.

[152] Cavanaugh, A.M., D. Thoroughman, et al., "Suspected Recurrent SARS-CoV-2 Infections Among Residents of a Skilled Nursing Facility During a Second COVID-19 Outbreak — Kentucky, July–November 2020," MMWR, February 26, 2021, http://dx.doi.org/10.15585/mmwr.mm7008a3.

It is also important to remember that health care facilities treat the sick. While not everyone who comes into a health care facility is ill, the patient population in many facilities will be disproportionately made up of older people, people with chronic conditions that require frequent treatment, and people in the midst of an acute health crisis. Vaccine-acquired immunity to Covid-19 is weaker and wanes more rapidly in immunocompromised people and people over 50.[153] Health care workers spend their time interacting with patients whose immune systems are less likely to be able to resist infection by Covid-19 than the average member of the public. The Covid prevalence level in the local community cannot be assumed to represent the risk level at health care facilities.

- OSHA should not create triggers within the standard based on local risk or community transmission levels because shifting tiers of mitigation measures based on local risk will prevent employers from establishing a routine, predictable plan for protections.

Health care employers have a legal and moral obligation to invest and prioritize the health and safety of their employees. Hospitals and health care facilities play a critical function in caring for individuals with suspected or confirmed Covid-19 and in preventing the spread of infection. SARS-CoV-2 spreads easily from person to person via aerosol transmission when an infected person breathes, speaks, coughs, or sneezes, regardless of symptoms or vaccination status. Nurses and other health care workers provide the hands-on care for our communities in hospitals and health care facilities, facing a significant risk of Covid exposure because of their professional duties to provide patient care. Even for health care workers who do not directly interact with suspected or confirmed Covid patients, the frequency of asymptomatic transmission and the aerosolized mode of Covid's transmission will result in significant risk to all workers in health care settings.

Therefore, to effectively protect health care workers from the significant risk of Covid, employers must proactively anticipate occupational exposure to Covid by implementing multiple protective measures to prevent transmission of the virus within facilities and to protect workers from exposures *before* community transmission levels rise. Conversely, workplace protections implemented based on risk place hospitals and health care facilities in a reactive state of unpreparedness, endangering health care workers and their patients.

Covid surges can grow very quickly, particularly with highly transmissible variants like the Omicron SARS-CoV-2 variants and subvariants. The upswing of a Covid surge is a poor time for health care facilities to implement substantial changes to their procedures. In other words, health care employers must proactively prevent exposures and transmissions of Covid among health care workers and must not wait until another outbreak in the community occurs and must not wait until a crisis emerges to act. OSHA should provide clear requirements that health care employers can incorporate into their work every day and clear requirements that health care employers prevent transmissions and exposures in

[153] U.S. Centers for Disease Control and Prevention, "Interim Clinical Considerations for Use of COVID-19 Vaccines Currently Approved or Authorized in the United States," last updated Dec 9, 2022, https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html.

the first place. OSHA should not leave employers and workers on the frontlines of our health care system scrambling to get safety measures in place while also facing increasing numbers of Covid patients who need urgent, safe care.

The CDC dangerously ties universal masking in health care facilities to high Community Levels Metrics.

According to the CDC, universal source control is only recommended in health care facilities when Covid-19 community transmission levels are high.[154] CDC guidance also states that health care workers could choose not to wear source control (respirators, well-fitting face masks or cloth masks) when they are in well-defined areas (e.g., breakrooms, staff meeting rooms).[155] However, there is clear evidence that universal masking is a necessary element to control Covid-19 transmission.[156] The CDC estimates that approximately half of all transmission occurs prior to symptom onset.[157] Because these cases will not be effectively identified by a screening program that simply screens for Covid symptoms or exposures, universal masking is an essential protection that should be required by the permanent Covid standard. Additionally, OSHA should eliminate exemptions to protections such as masking in well-defined areas in health care settings.

The CDC recommends symptom-based screening, which misses infectious cases and contributes to transmission.

The CDC recommends that health care facilities establish a process to make everyone entering the facility aware of recommended actions to prevent transmission (namely, wearing a mask for source control, being tested, and being placed in a single-person room) if they have a positive viral test for SARS-CoV-2, symptoms of Covid-19, or close contact with someone with SARs-CoV-2 infection.[158] Additionally, the CDC no longer recommends precautions for asymptomatic patients or health care workers who have had close contact

[154] Page 3, under" Implement Source Control Measures." CDC, Interim Infection Prevention and Control Recommendations for Healthcare Personnel During the Coronavirus Disease 2019 (COVID-19) Pandemic, last updated September 23, 2022, https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html.

[155] Page 3, under "Implement Source Control Measures. CDC, "Interim Infection Prevention and Control Recommendations for Healthcare Personnel During the Coronavirus Disease 2019 (COVID-19) Pandemic, last updated September 23, 2022, https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html.

[156] Piapan, L., P. De Michieli, et al., "COVID-19 outbreaks in hospital workers during the first COVID-19 wave," Occupational Medicine, December 17, 2021, https://doi.org/10.1093/occmed/kqab161.

[157] CDC, "COVID-19 Pandemic Planning Scenarios," Updated March 19, 2021, https://www.cdc.gov/coronavirus/2019-ncov/hcp/planning-scenarios.html.

[158] CDC, Interim Infection Prevention and Control Recommendations for Healthcare Personnel During the Coronavirus Disease 2019 (COVID-19) Pandemic, last updated September 23, 2022, https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html.

with someone with SARS-CoV-2 infection.[159] The CDC states that screening testing of asymptomatic health care workers without known exposures is at the discretion of health care facilities.[160]

Identification and isolation of all SARS-CoV-2 infections among patients, visitors, and staff is paramount to preventing transmission within health care facilities. Spread from people who are asymptomatic or not yet experiencing symptoms is a hallmark of SARS-CoV-2 transmission. Both asymptomatic and presymptomatic infected individuals can shed infectious virus and transmit SARS-CoV-2, regardless of vaccination status.[161] Asymptomatic and symptomatic Covid cases have similar viral loads. Multiple studies have found that approximately half of all transmission is from asymptomatic cases.[162]Even the CDC's current best estimate is that 50 percent of SARS-CoV-2 transmission occurs prior to symptom onset.[163]

Precautionary screening (including symptom and exposure history screening in combination with testing) of all patients, visitors, and others entering health care facilities is an essential protection that should be required by the permanent Covid standard.[164]

B. OSHA should go beyond the CDC's guidance on return-to-work criteria for health care workers exposed to or infected with Covid-19.

The CDC's guidance for health care workers who have been exposed or infected with Covid-19 is weak and ignores the available scientific evidence:

[159] CDC, Interim Infection Prevention and Control Recommendations for Healthcare Personnel During the Coronavirus Disease 2019 (COVID-19) Pandemic, last updated September 23, 2022, https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html.

[160] Page 5, under "Perform SARS-CoV-2 Viral Testing." CDC, Interim Infection Prevention and Control Recommendations for Healthcare Personnel During the Coronavirus Disease 2019 (COVID-19) Pandemic, last updated September 23, 2022. https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html.

[161] Garrett, N., A. Tapley, et al., "High Rate of Asymptomatic Carriage Associated with Variant Strain Omicron," medRxiv, January 14, 2022, https://doi.org/10.1101/2021.12.20.21268130

Milton, D.K., S.-H. Sheldon Tai, et al. "Initial Assessment of SARS-cov-2 Omicron Variant in Exhaled Breath Aerosol." OSF Preprints, March 5, 2022, https://osf.io/mtdx9/.

Lyngse, F.P., L.H. Mortensen, et al., "Household transmission of the SARS-CoV-2 Omicron variant in Denmark," Nature Communications, Sept 23, 2022, https://doi.org/10.1038/s41467-022-33328-3.

[162] Joung, S.Y., J.E. Ebinger, et al., "Awareness of SARS-CoV-2 Omicron Variant Infection Among Adults With Recent COVID-19 Seropositivity," JAMA Network Open, August 17, 2022, doi:10.1001/jamanetworkopen.2022.27241

[163] U.S. Centers for Disease Control and Prevention, "COVID-19 Pandemic Planning Scenarios," last updated March 19, 2021, https://www.cdc.gov/coronavirus/2019-ncov/hcp/planning-scenarios.html

[164] Allan-Blitz, L.T., B. Aboabdo, et al., "Effect of Frequent SARS-CoV-2 Testing on Weekly Case Rates in Long-Term Care Facilities, Florida, USA," Emerging Infectious Diseases, September 2022, https://doi.org/10.3201/eid2809.212577.

- According to the CDC, work restriction is not required for asymptomatic health care workers following a higher-risk workplace exposure, regardless of vaccination status, if they do not develop symptoms or test positive for SARS-CoV-2.[165]

- The CDC only requires a 7-day isolation period for nurses who have tested positive for Covid and no longer require exposed vaccinated and boosted health care workers to quarantine.[166]

- CDC's medical removal criteria for health care workers with asymptomatic or mild to moderate Covid infections is further reduced to 5 days for facilities with "contingency" staffing shortages and to no work restriction whatsoever under "crisis" conditions.[167]

The CDC's dangerous isolation guidance is not based on the science regarding Covid-19 transmission and has resulted in, and will continue to result in, health care worker and hospital-acquired Covid-19 infections. For public health and occupational health protection, it is necessary to use a timeframe that effectively covers the incubation period experienced by a majority of individuals. Research indicates the incubation period for

[165] Page 1. CDC, Interim Guidance for Managing Healthcare Personnel with SARS-CoV-2 Infection or Exposure to SARS-CoV-2, last updated September 23, 2022, https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-risk-assesment-hcp.html.

[166] Page 2, under "Return to Work Criteria for HCP with SARS-CoV-2 Infection." CDC, Interim Guidance for Managing Healthcare Personnel with SARS-CoV-2 Infection or Exposure to SARS-CoV-2, last updated September 23, 2022, https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-risk-assesment-hcp.html.

[167] Page 3, under "Contingency Capacity Strategies to Mitigate Staffing Shortages." CDC, Strategies to Mitigate Healthcare Personnel Staffing Shortages, last updated September 23, 2022, https://www.cdc.gov/coronavirus/2019-ncov/hcp/mitigating-staff-shortages.html.

Covid-19 ranges approximately from one to 14 days.[168,169,170,171,172] A post-exposure period shorter than 14 days will miss cases, leading to more transmission and endangering nurses, health care workers and their patients.

C. OSHA should include a protective definition of exposure in the permanent Covid-19 standard to reflect the available scientific evidence regarding aerosol transmission. CDC's definition of close contact exposure is based on arbitrary assumptions, not scientific data regarding aerosol/airborne transmission of SARS-CoV-2 or the precautionary principle.

The CDC still defines Covid-19 exposure as prolonged close contact – cumulative total of 15 minutes or more over 24 hours, within 6 feet of an infected individual.[173] The CDC's 15-minute timeframe for exposure is arbitrary. There are multiple reports of infections that occurred with exposure for less than 15 minutes. The CDC's 6-foot distance is also arbitrary and does not account for the scientific evidence on aerosol transmission.[174]

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[168] In a cohort of college student athletes who tested positive for SARS-CoV-2, 27 percent remained positive at seven days. Students with the BA.2 variant were more likely to test positive on day seven compared to those with BA.1. The authors conclude that the results suggest, "that the Centers for Disease Control and Prevention-recommended 5 day isolation period may be insufficient in preventing ongoing spread of disease." Tsao, J., A. Kussman, et al., "Prevalence of Positive Rapid Antigen Tests After 7-Day Isolation Following SARS-CoV-2 Infection in College Athletes During Omicron Variant Predominance," JAMA Network Open, October 18, 2022, doi:10.1001/jamanetworkopen.2022.37149.

[169] Over half of individuals infected with Omicron tested positive using antigen tests, which have been correlated with detection of viable virus, indicating continued infectiousness, five to nine days after sympom onset or diagnosis. Lefferts, B., I. Blake, et al., "Antigen Test Positivity After COVID-19 Isolation — Yukon-Kuskokwim Delta Region, Alaska, January–February 2022," MMWR, February 25, 2022, http://dx.doi.org/10.15585/mmwr.mm7108a3.

[170] Nearly 60 percent of Covid-positive health care workers still tested positive on rapid antigen tests after day five, indicating that they likely remained infectious. Landon, E., A.H. Barlett, et al., "High Rates of Rapid Antigen Test Positivity After 5 days of Isolation for COVID-19," medRxiv, February 2, 2022, https://doi.org/10.1101/2022.02.01.22269931.

[171] A return-to-work test on day five was negative in only 11.9 percent of health care workers. Tande, A.J., M.D. Swift, et al., "Utility of Follow-up Coronavirus Disease 2019 (COVID-19) Antigen Tests After Acute Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Infection Among Healthcare Personnel," Clinical Infectious Diseases, July 2022, https://doi.org/10.1093/cid/ciac235.

[172] Individuals with Omicron and Delta variants shed culturable virus more than five days after symptom onset or an initial positive test. Boucau, J., J. Regan, et al., "Duration of Shedding of Culturable Virus in SARS-CoV-2 Omicron (BA.1) Infection," New England Journal of Medicine, July 21, 2022, DOI: 10.1056/NEJMc2202092.

[173] Page 3, under "Return to Work Criteria for HCP Who Were Exposed to Individuals with Confirmed SARS-CoV-2 Infection." CDC, Interim Guidance for Managing Healthcare Personnel with SARS-CoV-2 Infection or Exposure to SARS-CoV-2, last updated September 23, 2022, https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-risk-assesment-hcp.html.

[174] Asad, H., L. O'Connell, et al., "Getting to the Heart of In-hospital Transmission of SARS-CoV-2 with the Help of Whole Genome Sequencing," J Hospital Infection, Oct 11, 2022, https://doi.org/10.1016/j.jhin.2022.09.023.

SARS-CoV-2 is transmitted via infectious aerosols emitted when an infected person breathes, speaks, coughs, sneezes, or sings.[175] Infectious aerosols can also be generated during aerosol generated procedures. These aerosols range in size from very small to large particles and can remain suspended in the air and travel long distances, up to 27 feet.[176] The CDC's categorical distinction between droplet (large) and airborne (small) transmission was established in the 1930s and has not been substantially updated since.[177] This paradigm incorrectly requires a focus on the behavior of isolated droplets and a simplified distinction between large and small droplets and their corresponding evaporation rates. Together, these give the false sense that droplets behave in only one of two ways and create a division between two types of transmission and their ranges, either close or far.

Instead, OSHA should include an expansive and protective definition of exposure to Covid-19, which accounts for the scientific evidence showing transmission with brief contact and contact over distances or through shared air-space.

D. OSHA should go beyond CDC guidance and require optimal PPE for nurses and other health care workers caring for patients suspected or confirmed Covid-19. Optimal PPE includes a powered air-purifying respirator (PAPR), virus impervious coveralls that incorporate head and shoe coverings, and medical-grade gloves.

It is well established that SARS-CoV-2 is aerosol-transmitted.[178] And yet, the CDC still erroneously assumes equivalency between respirators and face masks in determining whether a health care worker has been exposed.[179] But SARS-CoV-2 transmission even with

[175] Wang, C.C., K.A. Prather, et al., "Airborne transmission of respiratory viruses," Science, Aug 27, 2021, https://doi.org/10.1126/science.abd9149.

[176] Bourouiba, Lydia, "Turbulent Gas Clouds and Respiratory Pathogen Emissions: Potential Implications for Reducing Transmission of Covid-19," JAMA, March 2020, doi:10.1001/jama.2020.4756.

Linde, K.J., I.M. Wouters, et al., "Detection of SARS-CoV-2 in Air and on Surfaces in Rooms of Infected Nursing Home Residents," Annals of Work Exposures and Health, September 7, 2022, https://doi.org/10.1093/annweh/wxac056

[177] Jimenez, J.L., L.C. Marr, et al., "What were the historical reasons for the resistance to recognizing airborne transmission during the COVID-19 pandemic?," Indoor Air, Aug 21, 2022, https://doi.org/10.1111/ina.13070.

[178] Wang, C.C., K.A. Prather, et al., "Airborne transmission of respiratory viruses," Science, Aug 27, 2021, https://doi.org/10.1126/science.abd9149.

[179] Page 3, under "Return to Work Criteria for HCP Who Were Exposed to Individuals with Confirmed SARS-CoV-2 Infection." CDC, Interim Guidance for Managing Healthcare Personnel with SARS-CoV-2 Infection or Exposure to SARS-CoV-2, last updated September 23, 2022, https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-risk-assesment-hcp.html.

the use of face masks and surgical masks has been well documented.[180,181,182] Unlike respirators, surgical or face masks do not effectively filter all particles emitted by a person who is infectious. The loose fit of surgical and cloth masks also decreases the amount of particles stopped by these masks. Air will take the easiest path available, which is most often around the edges of a loose-fitting mask rather than through the material. Therefore, OSHA must go beyond CDC guidance in the permanent standard in requiring respiratory protection for health care workers caring for confirmed or suspected Covid-19 patients, with N95 respirators as the minimum, as in the ETS.

Additionally, despite ample supply and availability of NIOSH-approved respirators, extended use of single-use N95 respirators and suspension of annual respirator fit testing, are still allowed under CDC's PPE crisis capacity strategies.[183] CDC also allows consideration of reuse and decontamination of N95 respirators.[184] Reuse and extended use of single-use N95 respirators endangers nurses, health care workers and their patients in two ways: (1) N95s become contaminated during use.[185,186] Donning contaminated reused N95s poses a serious risk of SARS-CoV-2 exposure. (2) N95 respirators can be degraded or damaged with multiple uses. Repeat donning and doffing damages the fit of the N95 and the elasticity of the straps. N95s that have been reused multiple times are significantly more likely to fail fit testing and therefore do not fully protect the wearer.[187] Reuse or extended use of single use N95 respirators is never acceptable. N95 respirators were designed for one single use with one single patient only. The permanent Covid standard should fully ban reuse and extended use practices for single-use N95 respirators and other single-use PPE. OSHA should not align its final rule with the CDC's PPE crisis capacity strategies. Instead, OSHA should require employers to proactively establish plans for surge preparation, including plans to establish a PPE stockpile.

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[180] Klompas, M., M.A. Baker, et al., "A SARS-CoV-2 Cluster in an Acute Care Hospital," Annals of Internal Medicine, June 2021, https://doi.org/10.7326/M20-7567.

[181] Goldberg, L., Y. Levinsky, et al., "SARS-CoV-2 Infection Among Health Care Workers Despite the Use of Surgical Masks and Physical Distancing—the Role of Airborne Transmission," Open Forum Infectious Diseases, January 2021, https://doi.org/10.1093/ofid/ofab036.

[182] Dantes, R.B., T.T. Jones, and D.C. Neujahr, "Delayed recognition of community transmission of COVID-19 resulting in healthcare worker infections," Infection Control & Hospital Epidemiology, December 2021, doi:10.1017/ice.2020.285.

[183] Page 9, under "Contingency Capacity Strategies (during expected shortages).CDC, "Strategies for Optimizing the Supply of N95 Respirators, last updated September 16, 2021, https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirators-strategy/index.html.

[184] Page 3, under "What is limited FFR reuse?". CDC, Implementing Filtering Facepiece Respirator (FFR) Reuse, Including Reuse after Decontamination, When There Are Known Shortages of N95 Respirators, last updated October 19, 2020, https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/decontamination-reuse-respirators.html.

[185] Onakpoya, I.J., C.J. Heneghan, et al., "Viral cultures for assessing fomite transmission of SARS-CoV-2: a systematic review and meta-analysis," Journal of Hospital Infection, September 13, 2022, https://doi.org/10.1016/j.jhin.2022.09.007.

[186] Legeay, C., W. Peron, et al., "SARS-CoV-2 detection on healthcare workers' hands caring for COVID-19 patients," Journal of Hospital Infection, May 17, 2022, https://doi.org/10.1016/j.jhin.2022.05.005.

[187] Jung, J., J. Kim, et al., "Fit-failure rate associated with simulated reuse and extended use of N95 respirators assessed by a quantitative fit test," Infection Control & Hospital Epidemiology, Jan 25, 2021, https://doi.org/10.1017%2Fice.2021.5.

E. OSHA should go beyond the CDC's guidance on transmission-based precautions for patients and ensure the highest standard to prevent onward transmission.

CDC's guidance states that asymptomatic patients no longer require transmission-based precautions following close contact with a Covid-infected person.[188] CDC's guidance on duration of transmission-based precautions for patients with Covid infections is based on symptom severity and the presence of immunocompromising conditions unless symptoms rebound.[189]

Several studies have found that some individuals, particularly among immunocompromised patients, can shed infectious virus for several weeks or months.[190] One study found that 42 percent of patients had persistent viral shedding at least 14 days from initial testing.[191] The longest observed PCR test was 269 days from initial positive test. Among patients with prolonged viral shedding, 27 percent had a positive repeat PCR after having a prior negative repeat PCR, occurring a median of 53 days from initial positive test. Another study found that Covid patients in the intensive care unit can shed high titers of SARS-CoV-2 virus in upper and lower respiratory tract and tend to be prolonged shedders.[192] The longest duration was 98 days while most patients shed live virus for 20+ days.

OSHA should go beyond CDC's guidance on transmission-based precautions for patients and ensure the highest standard to prevent onward transmission, including timeframes that adequately reflect infectious periods for patients, including immunocompromised patients.

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[188] Page 6, under "Recommended infection prevention and control practices when caring for a patient with suspected or confirmed SARS-CoV-2 infection." CDC, Interim Infection Prevention and Control Recommendations for Healthcare Personnel During the Coronavirus Disease 2019 (COVID-19) Pandemic, last updated September 23, 2022, https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html.

[189] Page 7, under "Duration of Transmission-Based Precautions for Patients with SARS-CoV-2 Infection." CDC, Interim Infection Prevention and Control Recommendations for Healthcare Personnel During the Coronavirus Disease 2019 (COVID-19) Pandemic, last updated September 23, 2022, https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html.

[190] Munnink, B.B.O., R.H.T. Nijhuis, et al., "Highly Divergent SARS-CoV-2 Alpha Variant in Chronically Infected Immunocompromised Person," Emerging Infectious Diseases, August 4, 2022, https://doi.org/10.3201/eid2809.220875.

[191] Batra, A., J.R. Clark, et al., "Persistent viral RNA shedding of SARS-CoV-2 is associated with delirium incidence and six-month mortality in hospitalized COVID-19 patients," GeroScience, May 11, 2022, https://doi.org/10.1007/s11357-022-00561-z.

[192] Saud, Z., M. Ponsford, et al., "Mechanically Ventilated Patients Shed High-Titer Live Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) for Extended Periods From Both the Upper and Lower Respiratory Tract," Clin Infect Dis, July 2022, https://doi.org/10.1093/cid/ciac170.

F. OSHA should strengthen ventilation and patient isolation.

CDC guidance recommends health care employers "explore options" to improve ventilation and indoor air quality to help reduce the risk of Covid-19 transmission.[193] If a patient is deemed as confirmed or suspected Covid-19 case based on test results or presence of symptoms, CDC guidance recommends implementing source control and place the patient in a single-person room.[194] There is no recommendation for facilities to designate units as cohort Covid units, but the CDC tells health care employers that they "could consider" doing so when the number of Covid patients is high.

Ventilation and prompt and effective patient isolation are important prevention measures for Covid-19. Transmission has been documented when patients are not effectively identified as Covid-positive and isolated in a timely manner. [195,196] Ideally, patients with confirmed or suspected Covid-19 should be placed in negative pressure rooms or airborne infection isolation rooms. As discussed above, SARS-CoV-2 is airborne/aerosol transmitted. Employers can and should make improvements to ventilation systems to reduce the risk of aerosol transmission in both patient care and non-patient care areas, such as by increasing the outdoor air proportion and filtration levels for recirculated air or by place and maintaining portable high efficiency particulate air (HEPA) filter units.[197]

OSHA should go beyond CDC guidance on ventilation, patient isolation, and post-Covid exposure quarantine requirements, including:

- Requiring employers to establish dedicated Covid-19 units in the permanent Covid-19 standard and prohibiting mixing Covid-positive patients, patients who may have

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[193] "Optimize the Use of Engineering Controls and Indoor Air Quality." CDC, Interim Infection Prevention and Control Recommendations for Healthcare Personnel During the Coronavirus Disease 2019 (COVID-19) Pandemic, last updated September 23, 2022, https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html.

[194] "Patient Placement." CDC, Interim Infection Prevention and Control Recommendations for Healthcare Personnel During the Coronavirus Disease 2019 (COVID-19) Pandemic, last updated September 23, 2022, https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html.

[195] Wee, L.E.I., E.P. Conceicao, et al., "Utilization of rapid antigen assays for detection of severe acute respiratory coronavirus virus 2 (SARS-CoV-2) in a low-incidence setting in emergency department triage: Does risk-stratification still matter?," Infection Control & Hospital Epidemiology, Sept 15, 2021, https://doi.org/10.1017/ice.2021.407.

[196] Wee, L.E.I., E.P. Conceicao, et al., "Rostered routine testing for healthcare workers and universal inpatient screening: The role of expanded hospital surveillance during an outbreak of coronavirus disease 2019 (COVID-19) in the surrounding community," Infection Control & Hospital Epidemiology, Aug 6, 2021, https://doi.org/10.1017/ice.2021.366.

[197] Morris, A.C., K. Sharrocks, et al., "The Removal of Airborne Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) and Other Microbial Bioaerosols by Air Filtration on Coronavirus Disease 2019 (COVID-19) Surge Units," Clin Infect Dis, July 2022, https://doi.org/10.1093/cid/ciab933.

Pirkle, S., S. Bozarth, et al., "Evaluating and contextualizing the efficacy of portable HEPA filtration units in small exam rooms," AJIC, Aug 11, 2021, https://doi.org/10.1016/j.ajic.2021.08.003.

Thuresson, S., C.J. Fraenkel, et al., "Airborne Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) in Hospitals: Effects of Aerosol-Generating Procedures, HEPA-Filtration Units, Patient Viral Load, and Physical Distance," Clin Infect Dis, July 2022, https://doi.org/10.1093/cid/ciac161.

Ueki, H., M. Ujie, et al., "Effectiveness of HEPA Filters at Removing Infectious SARS-CoV-2 from the Air," ASM Journals, Aug 10, 2022, https://doi.org/10.1128/msphere.00086-22.

Covid-19, and patients who do not have Covid-19 in the same units or on the same assignment.

- Requiring employers to make improvements to ventilation systems to reduce the risk of aerosol transmission in both patient care and non-patient care areas, such as by increasing outdoor air proportion and filtration levels for recirculated air or by placing and maintaining portable HEPA filter units.

- Requiring employers to convert patient rooms into negative pressure or airborne infection isolation rooms if there is a need for more room than exists.

G. OSHA should recognize that vaccines are not a silver bullet and must be part of an infection control plan implementing multiple prevention measures.

While the Covid-19 vaccines and boosters are effective at preventing severe illness, hospitalization, and death, protection wanes over time and more immune evasive variants continue to emerge and spread.[198] Vaccines are not a silver bullet for combatting infectious diseases; Covid-19 vaccines and boosters are a critical part of a comprehensive public health program for infection control, but data on breakthrough infections, transmission, and outbreaks underline the importance of maintaining a comprehensive approach to Covid-19 infection control including testing, contact tracing, and isolation. Additionally, studies of Covid-19 breakthrough infections show that vaccination does not effectively prevent post-acute sequelae of Covid-19 or long Covid-19.[199] Preventing SARS-CoV-2 transmission while concurrently increasing vaccination and booster rates is necessary to maintain the current level of protection that Covid vaccines provide and to prevent the risk of long Covid-19. Covid-19 vaccines must be used within the context of infection control plans such as those required by the Covid-19 Health Care ETS standard.

Health care workers will continue to face a significant risk from exposure to Covid-19 as neither vaccination nor prior infection confer long-lasting immunity from future

[198] Kim, S.S., J.R. Chung, et al., "Effectiveness of two and three mRNA COVID-19 vaccine doses against Omicron- and Delta-Related outpatient illness among adults, October 2021–February 2022," Influenza and other respiratory viruses, July 29, 2022, https://doi.org/10.1111/irv.13029.

Ridgway, J.P., S. Tideman, et al., "Odds of Hospitalization for COVID-19 After 3 vs 2 Doses of mRNA COVID-19 Vaccine by Time Since Booster Dose," JAMA, Sept 23, 2022, doi:10.1001/jama.2022.17811.

Surie, D., L. Bonnell, et al., "Effectiveness of Monovalent mRNA Vaccines Against COVID-19–Associated Hospitalization Among Immunocompetent Adults During BA.1/BA.2 and BA.4/BA.5 Predominant Periods of SARS-CoV-2 Omicron Variant in the United States — IVY Network, 18 States, December 26, 2021–August 31, 2022," MMWR, Oct 21, 2022, http://dx.doi.org/10.15585/mmwr.mm7142a3.

[199] Al-Aly, Z., B. Bowe, and Y. Xie, "Long COVID after breakthrough SARS-CoV-2 infection," Nature Medicine, May 25, 2022, https://doi.org/10.1038/s41591-022-01840-0.

infections.[200] For example, a study published in the journal *Clinical Microbiology and Infection* reported on reinfection rates in a cohort of approximately 75,000 individuals who had a previous positive test for SARS-CoV-2.[201] In this cohort, hospitalization was more common at reinfection than initial infection (11.4 percent vs 5.4 percent). Additionally, a study published in the *Journal of Infectious Disease* reported that, while the mean time to reinfection in a cohort was 89.1 days, the 95 percent confidence interval ranged from 75.3 to 103.5 days, indicating that reinfections can occur at intervals shorter than 90 days.[202]

As we've seen throughout the pandemic, Covid evolves rapidly, leading to successive surges of infections as new variants evade vaccine- and infection-derived immunity. Vaccination or a previous infection will never mitigate the need for personal protective equipment and other workplace protections. OSHA should not base the application of the permanent Covid-19 standard on either employee or community vaccination or infection rate as immunity from either does not equal protection.

H. OSHA should not be swayed by health care employers' false arguments and faulty data.

As discussed above in Section 1.E., health care employers have falsely claimed that SARS-CoV-2 is not airborne and that health care workers are more often infected from community exposures than from patient care exposures. OSHA should not be swayed by health care employers' false arguments and faulty data.

It is abundantly clear in the scientific literature that SARS-CoV-2 is airborne.[203] Studies have established that SARS-CoV-2 is shed in aerosols emitted by infected patients, predominantly in aerosols smaller than one micron.[204] These infectious aerosols can travel

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[200] Letizia, A.G., Y. Ge, et al., "SARS-CoV-2 seropositivity and subsequent infection risk in healthy young adults: a prospective cohort study," The Lancet Respiratory Medicine, April 15, 2021, https://doi.org/10.1016/S2213-2600(21)00158-2.

[201] Slezak, J., K. Bruxvoort, et al., "Rate and severity of suspected SARS-Cov-2 reinfection in a cohort of PCR-positive COVID-19 patients," Clinical Microbiology and Infection, Aug 18, 2021, https://doi.org/10.1016/j.cmi.2021.07.030.

[202] Biggerstaff, B.J., L.J. Akinbami, et al., "Duration of Viral Nucleic Acid Shedding and Early Reinfection with the Severe Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) in Health Care Workers and First Responders ," J Infect Dis, Oct 5, 2021, https://doi.org/10.1093/infdis/jiab504.

[203] Wang, C.C., K.A. Prather, et al., "Airborne transmission of respiratory viruses," Science, Aug 27, 2021, https://doi.org/10.1126/science.abd9149.

[204] Chia, P.Y., K.K. Coleman, et al., "Detection of air and surface contamination by SARS-CoV-2 in hospital rooms of infected patients," Nature Communications, May 29, 2020, https://doi.org/10.1038/s41467-020-16670-2.

Lednicky, J.A., M. Lauzardo, et al., "Viable SARS-CoV-2 in the air of a hospital room with COVID-19 patients," International Journal of Infectious Diseases, September 15, 2020, https://doi.org/10.1016/j.ijid.2020.09.025.

Leung, N.H.L., D.K.W. Chu, et al., "Respiratory virus shedding in exhaled breath and efficacy of face masks," Nature Medicine, April 3, 2020, https://doi.org/10.1038/s41591-020-0843-2.

Ma, J., X. Qi, et al., "COVID-19 patients in earlier stages exhaled millions of SARS-CoV-2 per hour," Clinical Infectious Diseases, Aug 28, 2020, https://doi.org/10.1093/cid/ciaa1283.

long distances, stay aloft in the air for long periods of time, and remain infectious.[205] Multiple consensus statements have been written on the topic of airborne/aerosol transmission of SARS-CoV-2 by well-qualified and recognized scientists.[206]

Santarpia, J.L., D.N. Rivera, et al., "Aerosol and surface contamination of SARS-CoV-2 observed in quarantine and isolation care," Scientific Reports, July 2020, https://doi.org/10.1038/s41598-020-69286-3.

Santarpia, J.L., V.L. Herrera, et al., "The size and culturability of patient-generated SARS-CoV-2 aerosol," J Exposure Science & Environmental Epidemiology, Aug 18, 2021, https://doi.org/10.1038/s41370-021-00376-8.

Stern, Koutrakis, et al., "Characterization of hospital airborne SARS-CoV-2," Respiratory Research, February 26, 2021, https://doi.org/10.1186/s12931-021-01637-8.

Wölfel, R., V.M. Corman, et al., "Virological assessment of hospitalized patients with COVID-2019," Nature, April 1, 2020, https://doi.org/10.1038/s41586-020-2196-x.

Zhou, L., M. Yao, et al., "Breath-, air- and surface-borne SARS-CoV-2 in hospitals," Journal of Aerosol Science, February 2021, Vol 152: 105693, https://doi.org/10.1016/j.jaerosci.2020.105693.

[205] Abkarian, M., S. Mendez, et al., "Speech can produce jet-like transport relevant to asymptomatic spreading of virus," Proceedings of the National Academy of Sciences, Sept 25, 2020, https://doi.org/10.1073/pnas.2012156117.

Bourouiba, L., "Turbulent Gas Clouds and Respiratory Pathogen Emissions: Potential Implications for Reducing Transmission of COVID-19," JAMA, March 26, 2020, doi:10.1001/jama.2020.4756.

de Oliveira, P.M., L.C.C. Mesquita, et al., "Evolution of spray and aerosol from respiratory releases: theoretical estimates for insight on viral transmission," Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, January 20, 2021, https://royalsocietypublishing.org/doi/10.1098/rspa.2020.0584.

Fears, A.C., W.B. Klimstra, et al., "Persistence of Severe Acute Respiratory Syndrome Coronavirus 2 in Aerosol Suspensions," Emerging Infectious Diseases, Sept 2020, Vol 26, No 9, https://doi.org/10.3201/eid2609.201806.

Kwon, K.S., J.I. Park, et al., "Evidence of Long-Distance Droplet Transmission of SARS-CoV-2 by Direct Air Flow in a Restaurant in Korea," Journal of Korean Medical Science, November 30, 2020, https://doi.org/10.3346/jkms.2020.35.e415.

van Doremalen et al., "Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1," New England Journal of Medicine, April 16, 2020, DOI: 10.1056/NEJMc2004973.

[206] Nelson, Alondra, "Let's Clear The Air On COVID," White House Office of Science and Technology Policy Blog, March 23, 2022, https://www.whitehouse.gov/ostp/news-updates/2022/03/23/lets-clear-the-air-on-covid/.

White House Virtual Event – "Let's Clear the Air on COVID: An OSTP Discussion on Clean Indoor Air," March 29, 2022, https://www.whitehouse.gov/ostp/events-webinars/past-events/

Bright, R., L.M. Brosseau, L.R. Goldman, C. Gounder, J. Jimenez, Y. Kawaoka, L. Marr, D. Michaels, D.K. Milton, M. Osterholm, K. Prather, R.T. Schooley, and P. Seminario to J. Zients, R.P. Walensky, and A.S. Fauci, "Re: Immediate Action is Needed to Address SARS-CoV-2 Inhalation Exposure," Feb 15, 2021, https://aiha-assets.sfo2.digitaloceanspaces.com/AIHA/uploads/PressReleases/Immediate-Action-to-Address-Inhalation-Exposure-to-SARS-CoV-2_2142021.pdf.

National Nurses United, "Nurses, Unions, Allies Urge CDC to Acknowledge Covid-19 Aerosol Transmission to Help Bring Virus Under Control," Feb 23, 2021, https://www.nationalnursesunited.org/press/nurses-unions-allies-urge-cdc-to-acknowledge-covid-19- aerosol-transmission.

Brosseau, L.M., A.H. Mitchell, and J. Rosen, "Joint Consensus Statement on Addressing the Aerosol Transmission of SARS CoV-2 and Recommendations for Preventing Occupational Exposures," American Industrial Hygiene Association, Feb 1, 2021, https://aiha-assets.sfo2.digitaloceanspaces.com/AIHA/resources/Fact-Sheets/Joint-Consensus-Statement-on-Addressing-the-Aerosol-Transmission-of-SARS-CoV-2-Fact-Sheet.pdf.

ASHRAE Epidemic Task Force, "Core Recommendations for Reducing Airborne Infectious Aerosol Exposure," Jan 6, 2021, https://www.ashrae.org/file%20library/technical%20resources/covid-19/core- recommendations-for-reducing-airborne-infectious-aerosol-exposure.pdf.

Scott, R.C., R.L. DeLauro, F. Pallone, Jr., J.E. Clyburn, and A.S. Adams to J. Zients, R.P. Walensky, and A. Stewart, March 1, 2021.

Health care employers' narratives that health care workers are more often infected in the community than at work are harmful, epistemologically flawed, willfully neglect the empirical reality of conditions in health care facilities over the past three years, and deny science, and the studies that employers rely on lack supporting evidence. For example, a recently published study in the *Annals of Internal Medicine*, funded by the World Health Organization, purports to find that surgical masks were "as good as" N95 respirators for health care workers providing routine Covid care. However, this study has serious methodological flaws, including:

- The study results had wide confidence intervals, indicating a high degree of uncertainty in the findings. A confidence interval is an indicator of how reliable a finding is and is key to interpreting the results from a study. A 95 percent confidence interval indicates a range within which we can be 95 percent certain that the true effect lies. However, confidence intervals that are wide indicate a lack of certainty about the true effect of the intervention. Indeed, the authors of the study noted that, "firm conclusions about noninferiority may not be applicable given the between-country heterogeneity."

- Adherence to the intervention differed between the surgical mask and N95 respirator groups, undermining the study's ability to draw any reliable conclusion. Unlike the surgical mask group that self-reported that they "always" masked 91.2 percent of the time, the N95 group had an adherence of only 80.7 percent.

- The study methodology did not provide a reliable assessment of exposures or infections to nurse participants. The authors of the study did not account for unidentified asymptomatic or presymptomatic Covid exposures in their analysis, undermining reliability of results comparing mask/respirator efficacy. Additionally, Covid testing was performed only if signs and symptoms were reported by nurse

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House Education & Labor Committee, Workforce Protections Subcommittee, "Clearing the Air: Science- Based Strategies to Protect Workers from COVID-19 Infections," March 11, 2021, https://edlabor.house.gov/hearings/clearing-the-air-science-based-strategies-to-protect-workers-from-covid-19-infections.

Scott, B., "Scott Statement on CDC Decision to Weakening Coronavirus Protections for Frontline Health Care Workers," House Education & Labor Committee, March 10, 2020, https://edlabor.house.gov/media/press-releases/scott-statement-on-cdc-decision-to-weakening-coronavirus-protections-for-frontline-health-care-workers.

Greenhalgh, T., Jimenez, J.L., et al., "Ten scientific reasons in support of airborne transmission of SARS-CoV-2," The Lancet, April 15, 2021, https://doi.org/10.1016/S0140-6736(21)00869-2.

Samet, J.M., K. Prather, et al., "Airborne Transmission of SARS-CoV-2: What We Know," Clinical Infectious Diseases, Jan 18, 2021, https://doi.org/10.1093/cid/ciab039.

Tang, J.W., W.P. Bahnfleth, et al., "Dismantling myths on the airborne transmission of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2)," J Hosp Infection, Jan 12, 2021, https://doi.org/10.1016/j.jhin.2020.12.022.

participants, potentially leaving half of true infections (asymptomatic) unidentified.[207]

- While ventilation rates were reported, they varied between study sites, and most did not provide key information about outdoor air exchange rates or the type and level of filtration. Because ventilation can decrease or increase the risk of SARS-CoV-2 transmission, this information is essential to understanding the different infection risks between workers at different study sites and within different units at each site.

- Some of the N95 respirators that were used are not FDA-approved; two N95 models at one study site are not NIOSH-approved. Respirators that are approved neither by the FDA nor NIOSH are not medical N95s and did not perform in accordance with NIOSH standards. This means some of the N95s used in the study may not have provided adequate respiratory protection and results of the study may not be applicable to NIOSH-certified N95s.

- Reuse of N95 respirators was utilized at some study sites. Nurses were instructed to discard N95s only when they became soiled or damaged or if breathing through the device became difficult. The authors of the study failed to include this in their analysis, despite the fact that several studies have shown that donning and doffing the same N95 respirator, designed for single use, increases the risk of Covid exposure for health care workers from contamination on the N95. It also damages the fit of the N95 respirator and elasticity of the straps, which undermines respiratory protection.[208,209]

Another study published in the *Journal of the American Medical Association*,[210] funded by the CDC, also perpetuates the health care industry narrative that health care workers are infected more often from community exposures than from patient care exposures. This study also has serious methodological issues including:[211]

- The authors make a causal claim based on cross-sectional, population-based data, which does not fully or effectively support such a claim.

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[207] Young, S.Y., J.E. Ebinger, et al., "Awareness of SARS-CoV-2 Omicron Variant Infection Among Adults With Recent COVID-19 Seropositivity," JAMA Network Open, Aug 17, 2022, doi:10.1001/jamanetworkopen.2022.27241.

[208] National Nurses United, "Study confirms N95 respirators are for single use only!" April 2021, https://www.nationalnursesunited.org/sites/default/files/nnu/documents/0421_Covid19_H%26S_N95ReuseFlyer.pdf

[209] National Nurses United, "Nurse Health and Safety Alert: Reusing N95 Respirators is Dangerous," June 2020, https://www.nationalnursesunited.org/sites/default/files/nnu/graphics/documents/1120_Covid19_H%26S_PPE-reuse-flyer_Updated.pdf

[210] Jacob, J.T., J.M. Baker, et al., JAMA, March 10, 2021, doi:10.1001/jamanetworkopen.2021.1283.

[211] Ibid.

- The study's hypothesis was an a priori hypothesis that stated: "that community exposure but not health care exposure was associated with seropositivity." This is problematic because the researchers are beginning their research with the assumption that exposure happens in the community, thereby analyzing toward that result. If the hypothesis were stated the other way around, i.e., it happens in the healthcare setting, analysis would lean toward that result. Such a priori hypothesis could lead to confirmation bias.

- The researchers write that, "Most [health care providers] HCP (20 072 [81.1%]) reported no known contact with a person confirmed or suspected of having COVID-19 in their community" (page 6). But, further on the same page, they write, "Half of HCP (12 413 [50.2%]) reported caring for patients with COVID-19 or working in COVID-19–designated units." We receive no discussion on this. This points to confirmation bias. The study's regression model results do not discuss this discrepancy, given that they write: "HCP who reported having contact with a person known to have or suspected of having COVID-19 in the community had substantially increased odds of seropositivity compared with HCP with no known COVID-19 contacts outside of work (aOR, 3.5; 95% CI, 2.9-4.1). Zip code–based COVID-19 cumulative incidence (log 10) was also associated with increased odds of seropositivity (aOR, 1.8; 95% CI, 1.3-2.6)," (page 7).

- The study relies on seropositivity as a perfect indicator of past infection. This is despite the fact that we know antibody levels fade in many individuals. One study found that 60 percent of health care workers became sero-negative within 60 days after testing positive for antibodies.[212] The study collected data on seropositivity from April to August 2020- a time period over which a proportion of health care workers may have converted from seropositivity to sero-negativity. Further, researchers relied on serology testing at each particular site, rather than using a standardized serology test. This is problematic because, as the authors point out, laboratory methods differed across sites and could result in different overall positivity rates than would have been estimated if methods were standardized across sites.

- The study's exposure measurement was inaccurate and flawed. Questionnaires were not standardized across study sites. The researchers write, "In addition, we were unable to assess risk associated with exposure to an HCP with SARS-CoV-2 infection in the workplace because not all sites asked about such exposures" (page 11). But that is the whole point of the study.

[212] Patel, M.M., N.J. Thornburg, et al., "Change in Antibodies to SARS-CoV-2 Over 60 Days Among Health Care Personnel in Nashville, Tennessee," JAMA, September 17, 2020, doi:10.1001/jama.2020.18796.

- According to the study, "Each site independently designed and conducted a voluntary HCP serological survey…At the time of specimen collection, HCP completed a site-specific survey, including occupational activities and possible exposures to individuals with SARS-CoV-2 infection both inside and outside the workplace." This is problematic because exposure answers were self-reported. It is entirely probable that a healthcare professional was exposed at work but was never informed – whether because a patient or visitor was asymptomatic or because it was assumed the professional had not been in direct contact with the positive individual.

- Because the questionnaires were not standardized, the researchers only included risk factors in the multivariable model that were able to be mapped from all sites. Thus, if a risk factor was not present in all questionnaires, it was excluded from the model (pages 10-11). This is a significant methodological problem because some of these risk factors could alter the findings dramatically. Moreover, the researchers only provided two examples of such instances (see below), but we do not know how many of these instances there were. Thus, a lot of what was not mapped could hold significant information regarding exposure in the workplace and, again, could alter the findings dramatically.
    - Example 1: The researchers were unable to assess risk associated with participation in aerosol-generating procedures because these data were only available from three of the four health care system surveys. But this is a key way that Covid-19 could be spread.
    - Example 2: Because infection control practices were not standardized across all sites and the practices changed during the study period, researchers did not assess the association of specific infection control practices with seropositivity rates. But such practices, or lack thereof, are exactly how and why Covid-19 is spreading in healthcare settings.
    - In reference to Example 2, the researchers write, "however, we did observe similar HCP seropositivity rates despite institutional differences in personal protective equipment guidelines," but this is not the same thing as looking at infection control practices.

- The way the study measured community exposure was to take zip codes where healthcare workers lived and to assign them a level of community exposure, with no regard to individual risks except self-reported close contact with a known Covid case. More Covid in the community means more Covid patients in the hospital, which means more exposure to health care workers at work; but this is not accounted for in this study.

- The researchers grouped staff with patient contact and no patient contact into the same categories: "Workplace location was categorized as emergency department,

inpatient (regardless of direct care of patients with Covid-19), other locations (ambulatory, perioperative, surgical, rehabilitation or post-acute care, no patient contact, worked from home), or unknown location."

- The way the researchers combined data from different facilities and conducted their statistical analysis hides differences in infection control practices between facilities, including ventilation, patient screening and placement, and other factors that impact exposure risk to nurses and health care workers. They reported on limited information about PPE policies at these facilities in the appendix but reuse of N95s, which we know has been and continues to be widespread, is not discussed.

- The researchers found that those younger than 30 years (nearly 20 percent of surveyed health care workers) had slightly increased risk of seropositivity. The researchers assume this is because, "Younger HCP may be more likely to congregate in groups socially, have children in school or daycare, and have contact with other younger persons who may have fewer symptoms with infection." But this result may be due to other factors, such as how the survey was handed out or disseminated. Moreover, the text about gathering in groups and daycare highlights the study's confirmation bias. The authors offered no evidence to support these assertions.

- The researchers write that, "We found that the higher the cumulative incidence of COVID-19 until the week prior to the antibody test, the higher the risk of the HCP being antibody positive," (page 13). But it is reasonable to conclude that if the community has a higher rate, than the hospitals and health care settings have higher volumes of positive patients. Thus, the healthcare provider could have reasonably caught Covid-19 at work. This discrepancy is not accounted for in the researchers' analysis.

A study published by the CDC in its *Morbidity and Mortality Weekly Report*[213] similarly had several methodological issues, perpetuating industry narrative of blaming nurses and other health care workers for exposures and infections, including:

- The study appears to cover only 9 percent (373) of the known health care worker infections in Minnesota reported by mid-July (4,232).[214] Extrapolation from that 9 percent is irresponsible and misguided.

[213] Fell et al., "SARS-CoV-2 Exposure and Infection Among Health Care Personnel — Minnesota, March 6–July 11, 2020," MMWR, 69(43): 1605-10, Oct 30, 2020.

[214] Minnesota Department of Health, WEEKLY COVID-19 REPORT 12/10/2020, https://www.health.state.mn.us/diseases/coronavirus/stats/covidweekly50.pdf, accessed 12/15/20; Minnesota Department of Health, WEEKLY COVID-19 REPORT 7/16/2020 https://www.health.state.mn.us/diseases/coronavirus/stats/covidweekly29.pdf, accessed 12/15/20.

- Minnesota Department of Health's website listed UNKNOWN source of infection as far and away the largest source of infections.[215] It is unclear how sources of health care worker infections appear to be completely accounted for (work-related vs. non-work-related) in the publication and in the weekly reporting (here they are referred to as "likely exposures").[216] How is it that in the specific case of health care workers there are suddenly no unknowns? In the absence of full-scale genetic testing, it is an absurdity to suggest the state or hospital industry can know with any certainty the source of infection for healthcare workers, while simultaneously admitting the main source of infection is unknown for the state's population as a whole.

- The authors lump exposures to coworkers together with household and social contacts as "non patient care interactions" to make their conclusions. However, interacting with coworkers is a necessary and important part of providing health care- both in break rooms and in the course of providing care. It is deceptive and inappropriate to lump these exposures into the same category.
- Of the higher-risk exposures, the study indicates that 19 percent of health care providers were infected from outside of work setting, "household/social." That means that 81 percent were infected at work, which seems like an overwhelmingly large percentage.

- The authors lump exposures from coworkers together with those from households and social contacts as "nonpatient care interactions," and thus make the statement that only 66 percent of exposures involved direct patient care. Interacting with coworkers is a basic and necessary part of providing patient care. While certainly not all coworker interactions happen while providing direct patient care, they all happen as a part of the provision of patient care. To put exposures from coworkers into the same category as community exposures seems illogical and deceptive.

- The authors do not separate out health care provider occupations, rather lumping together job titles with frequent patient contact (such as nurses) with many other job titles who do not have patient contact (clerical staff, engineering and facilities management, and administrative and billing staff).

- The authors report symptom-based testing, meaning they could have missed up to half of all true infections following exposures. Additionally, given the lack of testing of health care workers in general, and the large proportion of likely Covid-positive individuals who are asymptomatic and never tested, there is always a possibility that a healthcare worker was infected at work, regardless of other exposures. (See

[215] Ibid.

[216] Minnesota Department of Health, WEEKLY COVID-19 REPORT 7/16/2020 https://www.health.state.mn.us/diseases/coronavirus/stats/covidweekly29.pdf, accessed 12/15/20.

NNU survey results).[217] In fact, the study gives a sense of the outrageously minimal level of testing for health care providers: Overall, only 30 percent of health care providers with higher-risk exposures were tested, and barely one in four were tested in acute settings. The numbers are likely even lower for those with less than "higher-risk" exposures.

- The report relies upon the CDC's definition of exposure, which treats a face mask as the same as a respirator. We know it is not. However, the CDC's definition of exposure rejects this scientific evidence and muddies the waters on interpreting this exposure data.
    - The study only looks at 25 percent of reported health care worker exposures. As the remaining unexamined exposures are of a lower-risk type, they are likely different than the ones discussed in the report and may or may not be more concentrated in patient care settings. There is plenty of evidence at this point indicating that lower-risk exposures can lead to infection spread.
    - Data on higher risk exposures is self-reported from the healthcare facilities: Hospitals and other facilities have an interest in not reporting exposures, especially those occurring in patient care and work settings, as they may be concerned about losing workers through quarantine requirements or future liability issues. This dynamic can lead to a distortion of the data.

- Reporting does not include all facilities, some participating facilities did not submit data, and some exposed workers did not participate in the monitoring. Those facilities not submitting reports may not be complying with infection control recommendations at the same levels as those that are reporting. It may be worth looking into what proportion of facilities were not involved in the study, and how many exposed workers were not accessed.

In November 2020, the Cleveland Clinic made statements in the media that health care workers were infected with Covid-19 because of community exposures but offered no supporting evidence.[218] The Cleveland Clinic later announced that the N95 respirators they had been providing to their staff were counterfeit and did not offer sufficient protection.[219] These counterfeit, faulty respirators were provided to staff during the same time period as the high number of Covid cases among staff. However, the Cleveland Clinic has yet to

[217] National Nurses United, "National RN survey highlights continued hospital failures to prioritize nurse and patient safety during pandemic," March 10, 2021, https://www.nationalnursesunited.org/press/fifth-survey-of-national-nurses-highlights-continued-hospital-failures

[218] Justice, C., "Northeast Ohio healthcare workers getting COVID from community spread, Cleveland Clinic doctor says," News 5 Cleveland, Nov 9, 2020, https://www.news5cleveland.com/news/continuing-coverage/coronavirus/local-coronavirus-news/northeast-ohio-healthcare-workers-getting-covid-from-community-spread-cleveland-clinic-doctor-says.

[219] Fields, C., "Cleveland Clinic finds portion of its N95 masks were counterfeit and not effective," Cleveland.com, Jan 27, 2021, https://www.cleveland.com/coronavirus/2021/01/cleveland-clinic-finds-portion-of-its-n95-masks-were-counterfeit-and-not-effective.html.

acknowledge this significant workplace exposure that occurred among its staff while claiming that they were infected in the community.[220]

When employers say health care workers are more likely to be infected in the community than during patient care, they are, in effect, blaming health care workers for workplace exposures and infections. In reality, nearly three years into the pandemic, nurses and other health care workers still do not have the protections they need to care for Covid-19 patients safely.

Despite the undeniable threat of the Covid pandemic to frontline health care workers, there remains insufficient data regarding health care worker infections and outbreaks within health care facilities. The CDC still reports that only a small fraction (13.52 percent) of Covid case reports have any data on whether the individual was a health care worker.[221] There are likely more Covid outbreaks than we have known about.

Some employers say they have data that indicates that staff infections happen in break rooms and community settings, but little of that data has been shared publicly and there is a common flaw in the data that has been shared:

- Employers use the CDC's definition of exposure, but this definition denies science and is constructed in such a way that it allows health care employers to avoid tracking and recording Covid exposures and infections that happen in the workplace:
    - According to the CDC, a health care worker is considered to have a higher-risk exposure if they had a prolonged close contact with a confirmed Covid individual for a cumulative total of 15 minutes or more within six feet IF:[222]
        - The health care provider was not wearing a respirator or face mask;
        - The health care provider was not wearing eye protection if the person with Covid-19 was not wearing a face covering; or
        - The health care provider was not wearing all recommended PPE (gown, gloves, eye protection, respirator) while present in the room for an aerosol-generating procedure.

[220] National Nurses United, "Sins of Omission: How Government Failures to Track Covid-19 Data Have Led to more Than 3,200 Health Care Worker Deaths and Jeopardize Public Health," March 2021, https://www.nationalnursesunited.org/sites/default/files/nnu/documents/0321_Covid19_SinsOfOmission_Data_Report.pdf.

[221] U.S. Centers for Disease Control and Prevention, "COVID Data Tracker: Cases & Deaths among Healthcare Personnel," updated Dec 15, 2022, https://covid.cdc.gov/covid-data-tracker/#health-care-personnel

[222] U.S. CDC, "Interim Guidance for Managing Healthcare Personnel with SARS-CoV-2 Infection or Exposure to SARS-CoV-2," last updated September 23, 2022, https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-risk-assesment-hcp.html.

- Work restriction is no longer required for asymptomatic health care workers following a higher-risk workplace exposure, regardless of vaccination status, if they do not develop symptoms or test positive for SARS-CoV-2.[223]

- But we know that:
  - The CDC's 15-minute timeframe for Covid exposure is arbitrary. There are multiple reports of infections that occurred with exposure for less than 15 minutes.[224]
  - The CDC's 6-foot distance is also arbitrary and does not account for the scientific evidence on aerosol transmission. SARS-CoV-2 is transmitted via infectious aerosols emitted when people who are infected breathe, speak, cough, sneeze, sing, or have aerosol-generating procedures performed. These aerosols range from very small to large and can travel long distances (up to about 27 feet) and stay suspended in the air.[225]
  - A face mask does NOT provide adequate protection from Covid-19. Infectious aerosols can travel around and through a face mask.[226] SARS-CoV-2 transmission has been documented in a pediatric hospital in Israel[227] and in a Vermont correctional facility[228] even where surgical masks and physical distancing measures were observed. A

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[223] Ibid.

[224] de Oliveira, P.M., L.C.C. Mesquita, et al., "Evolution of spray and aerosol from respiratory releases: theoretical estimates for insight on viral transmission," Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, January 2021, https://doi.org/10.1098/rspa.2020.0584

Kwon, K.S., J.I. Park, et al., "Evidence of Long-Distance Droplet Transmission of SARS-CoV-2 by Direct Air Flow in a Restaurant in Korea," Journal of Korean Medical Science, November 2020, https://doi.org/10.3346/jkms.2020.35.e415.

Mack, C.D., E.B. Wasserman, et al., "Implementation and Evolution of Mitigation Measures, Testing, and Contact Tracing in the National Football League, August 9–November 21, 2020," MMWR Early Release, January 2021, http://dx.doi.org/10.15585/mmwr.mm7004e2.

Pringle, J.C., J. Leikauskas, et al. COVID-19 in a Correctional Facility Employee Following Multiple Brief Exposures to Persons with COVID-19 — Vermont, July–August 2020. MMWR Morb Mortal Wkly Rep 2020;69:1569–1570. DOI: http://dx.doi.org/10.15585/mmwr.mm6943e1.

[225] National Nurses United, "Droplet vs. Airborne: How is SARS-CoV-2 Transmitted?" February 2022, https://www.nationalnursesunited.org/sites/default/files/nnu/documents/0222_Covid19_AerosolTransmission_FactSheet.pdf

[226] Oberg, T. and L.M. Brosseau, "Surgical mask filter and fit performance," Am J Infect Control, 2008, 36(4): 276-82, https://doi.org/10.1016/j.ajic.2007.07.008.

[227] Goldberg, L., Y. Levinsky, et al., "SARS-CoV-2 Infection Among Health Care Workers Despite the Use of Surgical Masks and Physical Distancing—the Role of Airborne Transmission," Open Forum Infectious Diseases, Jan 27, 2021, https://doi.org/10.1093/ofid/ofab036.

[228] Pringle, J.C., J. Leikauskas, et al., "COVID-19 in a Correctional Facility Employee Following Multiple Brief Exposures to Persons with COVID-19 — Vermont, July–August 2020," MMWR Early Release, Oct 21, 2020, https://www.cdc.gov/mmwr/volumes/69/wr/mm6943e1.htm. http://dx.doi.org/10.15585/mmwr.mm6943e1.

respirator at least as protective as an N95, in addition to other PPE, is necessary to protect nurses and health care workers from Covid-19.

OSHA should strengthen the definition of exposure in the permanent Covid-19 standard to reflect the available scientific evidence regarding aerosol transmission. CDC's definition of close contact exposure is based on arbitrary assumptions, not scientific data regarding SARS-CoV-2 aerosol/airborne transmission or the precautionary principle.

Appendices

Appendix 1: Selection of Major Impacts of Long Covid

Organ system	Selection of Major Impacts of Long Covid
Cardiovascular	• In the 30 days after Covid infection, there is a 5-fold increase in deep vein thrombosis risk, a 33-fold increase in risk of pulmonary embolism, and a 2-fold increase in risk of bleeding.[229] • In the year after Covid infection, there is a 72 percent increase in heart failure risk, a 63 percent increase in heart attack risk, and a 52 percent increase in stroke risk, even when infections were mild, for those under 65 years of age, and for those without underlying risk factors.[230] • Compared to uninfected controls, risks of venous thromboembolism were 2.74 times higher and all-cause mortality was 10.23 times higher for non-hospitalized Covid-19 cases in the first 30 days after infection, and risks remained elevated following that period.[231] For hospitalized Covid cases, risks of several cardiovascular outcomes were significantly increased in the 30 days after infection and remained elevated: myocardial infarction (9.9x), stroke (17.5x), heart failure (21.6x), venous thromboembolism (27.6x), pericarditis (13.6x), and all-cause mortality (118.01x).
Pulmonary	• Three months after a Covid infection, health care professionals had significant persistent complaints (47%) and low diffusing lung capacity for carbon monoxide levels (40%).[232] • Small airway disease occurred in Covid survivors, regardless of initial infection severity.[233] • A study looking at different outcomes in the year following a Covid infection found the highest risks were for pulmonary conditions. For adults aged 18 to 64 years, the risks for pulmonary embolism and respiratory symptoms were 2.1 times higher compared to controls with a healthcare visit in the same month but no recorded SARS-CoV-2 infection.[234]

[229] Katsoularis, I., O. Fonseca-Rodríguez, et al., "Risks of deep vein thrombosis, pulmonary embolism, and bleeding after covid-19: nationwide self-controlled cases series and matched cohort study," BMJ, April 6, 2022, https://doi.org/10.1136/bmj-2021-069590.

[230] Xie, Y., B. Bowe, and Z. Al-Aly, "Long-term cardiovascular outcomes of COVID-19," Nature Medicine, Feb 7, 2022, https://doi.org/10.1038/s41591-022-01689-3.

[231] Raisi-Estabragh, Z., J. Cooper, et al., "Cardiovascular disease and mortality sequelae of COVID-19 in the UK Biobank," Heart, Oct 24, 2022, https://heart.bmj.com/content/early/2022/09/21/heartjnl-2022-321492.

[232] Gülhan, P.Y., P.M. Arbak, et al., "An assessment of post-COVID infection pulmonary functions in healthcare professionals," Am J Infection Control, July 19, 2022, https://doi.org/10.1016/j.ajic.2022.07.003.

[233] Cho, J.L., R. Villacreses, et al., "Quantitative Chest CT Assessments of Small Airways Disease in Post-Acute SARS-CoV-2 Infection," Mar 15, 2022, https://doi.org/10.1148/radiol.212170.

[234] Bull-Otterson, L., S. Baca, et al., "Post-COVID Conditions Among Adult COVID-19 Survivors Aged 18-64 and ≥65 Years – United States, March 2020-November 2021," MMWR, May 27, 2022, http://dx.doi.org/10.15585/mmwr.mm7121e1.

Neurological	• A U.K. Biobank brain imaging study of 400 individuals who had mild to moderate or asymptomatic Covid-19 had significant reduction in grey matter thickness in several regions of the brain, reduction in global brain size, and larger cognitive decline.[235] • Nine months after Covid infection, 19 percent of patients had clinically relevant fatigue compared to 8 percent of pre-pandemic controls. About one-quarter (26 percent) of people with Covid had mild cognitive impairment and 1 percent had moderate cognitive impairment nine months after infection.[236] • A large study from the U.S. Department of Veterans Affairs databases examined brain health over a year-long period and found a 42 percent greater risk of neurological sequelae at 12 months following acute Covid infection.[237] Neurological sequelae included ischemic and hemorrhagic stroke, cognition and memory disorders, peripheral nervous system disorders, episodic disorders, and others. • Cognitive impairment associated with Covid-19 has similar pathological changes as Alzheimer's disease.[238] Adults aged 65 years or older had a 69 percent higher risk of a new diagnosis of Alzheimer's disease within a year of initial Covid diagnosis, compared to uninfected controls.[239] (Noting that 13.9 percent of Registered Nurses are 65 years or older).[240]
Gastrointestinal	• Twenty-two percent of patients with long Covid have gastrointestinal (GI) symptoms.[241] The most common symptoms associated with long Covid: loss of appetite (20 percent), dyspepsia (20 percent), loss of taste (17 percent), abdominal pain (14 percent).

[235] Douaud, G., Lee, S., Alfaro-Almagro, F. et al., "SARS-CoV-2 is associated with changes in brain structure in UK Biobank," Nature, March 7, 2022, https://doi.org/10.1038/s41586-022-04569-5.

[236] Hartung, T.J., C. Neumann, et al., "Fatigue and cognitive impairment after COVID-19: A prospective multicentre study," eClinical Medicine (The Lancet), Sept 17, 2022, https://doi.org/10.1016/j.eclinm.2022.101651.

[237] Xu, E., Y. Xie, and Z. Al-Aly, "Long-term neurologic outcomes of COVID-19," Nature Medicine, Sept 22, 2022, https://doi.org/10.1038/s41591-022-02001-z.

[238] Reiken, S., L. Sittenfield, et al., "Alzheimer's-like signaling in brains of COVID-19 patients," Alzheimer's & Dementia, Feb 3, 2022, https://doi.org/10.1002/alz.12558.

[239] Wang, L., P.B. Davis, et al,. "Association of COVID-19 with New-Onset Alzheimer's Disease," J Alzheimer's Disease, July 29, 2022, https://content.iospress.com/download/journal-of-alzheimers-disease/jad220717?id=journal-of-alzheimers-disease%2Fjad220717.

[240] Health Resources & Services Administration, "Detailed Description of Distribution of Registered Nurses by Age," page last reviewed Aug 2022, https://bhw.hrsa.gov/data-research/access-data-tools/national-sample-survey-registered-nurses/detailed-description-rn-by-age (Accessed Dec 13, 2022).

[241] Choudhury, A., R. Tariq, et al., "Gastrointestinal manifestations of long COVID: A systematic review and meta-analysis," Therap Adv Gastroenterol, Aug 19, 2022, https://doi.org/10.1177/17562848221118403.

	• Six months after Covid diagnosis, 29 percent of patients reported at least one new GI symptom, with 10 percent of patients reporting a GI symptom as the most bothersome Covid-related condition.[242]
Metabolic	• A U.S. Department of Veterans Affairs cohort study of more than 8.5 million people found that Covid-19 survivors had a 40 percent increased risk of new onset diabetes at least one year after infection. The risk was evident even among those who had mild infections and no previous risk factors for developing diabetes.[243] • Thirty-day survivors of Covid were at higher risk of having any kidney disease.[244] While people with acute kidney injury during infection were at higher risk of post-infection kidney outcomes, kidney function declined even among those people with a mild Covid infection.
Immunological	• Prolonged immune activation and systemic inflammation were seen for three months after mild or asymptomatic SARS-CoV-2 infections.[245] • The number and function of dendritic cells is reduced after SARS-CoV-2 infection.[246] Seven months after infection, dendritic cells remain impaired, which was associated with long Covid. • Eight months after Covid infection, sustained inflammatory response and immunological dysfunction was found, even following mild-to-moderate acute Covid-19.[247] • Following Covid (mild and severe), gene expression related to the immune system was dysregulated for weeks to months.[248]

[242] Blackett, J.W., M. Wainberg, et al., "Potential Long Coronavirus Disease 2019 Gastrointestinal Symptoms 6 Months After Coronavirus Infection Are Associated With Mental Health Symptoms," Gastroenterology, Feb 2022, https://doi.org/10.1053/j.gastro.2021.10.040.

[243] Xie and Al-Aly, "Risks and burdens of incident diabetes in long COVID: a cohort study," The Lancet Diabetes & Endocrinology, March 21, 2022, https://doi.org/10.1016/S2213-8587(22)00044-4.

[244] Bowe, B., Y. Xie, et al., "Kidney Outcomes in Long COVID," J Am Society Nephrology, Nov 2021, https://doi.org/10.1681/ASN.2021060734.

[245] Kennedy, A.E., L. Cook, et al., "Lasting Changes to Circulating Leukocytes in People with Mild SARS-CoV-2 Infections," Viruses, Nov 8, 2021, https://doi.org/10.3390/v13112239.

[246] Chang, T., J. Yang, et al., "Depletion and Dysfunction of Dendritic Cells: Understanding SARS-CoV-2 Infection," Frontiers in Immunology, Feb 21, 2022, https://doi.org/10.3389%2Ffimmu.2022.843342.

[247] Phetsouphanh, C., D.R. Darley, et al., "Immunological dysfunction persists for 8 months following initial mild-to-moderate SARS-CoV-2 infection," Nature Immunology, Jan 13, 2022, https://doi.org/10.1038/s41590-021-01113-x.

[248] Ryan, F.J., C.M. Hope, et al., "Long-term perturbation of the peripheral immune system months after SARS-CoV-2 infection," BMC Medicine, Jan 14, 2022, https://doi.org/10.1186/s12916-021-02228-6.

	• T-cell exhaustion 7 months after initial infection found in patients who were hospitalized for Covid-19.[249] • Immune responses and dysregulation due to SARS-CoV-2 infection may be linked with development of post-acute sequelae.[250]

[249] Pérez-Gómez, A., C. Gasca-Capote, et al., "Deciphering the quality of SARS-CoV-2 specific T-cell response associated with disease severity, immune memory and heterologous response," Clinical and Translational Medicine, April 12, 2022, https://doi.org/10.1002/ctm2.802.

[250] Peluso, M.J., A.N. Deitchman, et al., "Long-term SARS-CoV-2-specific immune and inflammatory responses in individuals recovering from COVID-19 with and without post-acute symptoms," Cell Rep, Aug 10, 2021, https://doi.org/10.1016/j.celrep.2021.109518.

Appendix 2: Summary of NNU Complaints to OSHA and Responses

Facility	Date of Complaint	Complaint	Response	Notes
Corpus Christi Medical Center – Doctor's Regional Medical Center (Corpus Christi, TX)	Oct 5, 2021	Hazards: Covid written plan is incomplete and did not involve nurses; Covid-19 patients not isolated; failure to fit-test nurses for N95s; passive screening of visitors.	The employer responded that its policies followed CDC guidance and the Respiratory Protection Program, and OSHA concluded that a hazard did not exist.	Demonstrates the danger of relying on CDC guidance and the inadequacy of the respirator protection standard alone to protect workers.
HCA Fawcett (Port Charlotte, FL)	Aug 2020	Hazards: lack of accurate Covid-19 exposure records; lack of testing of exposed employees; lack of contact tracing; employer permitting workers with suspected and confirmed Covid-19 exposures to work without quarantine.	OSHA rejected complaints due to employer adherence to CDC guidance.	Demonstrates the danger of relying on CDC guidance to protect workers.
Valley Regional Medical Center (Brownsville, TX)	Oct 5, 2021	Hazards: Covid-19 written plan is incomplete and did not involve nurses; failure to fit-test nurses for N95s; passive screening of visitors.	The employer responded that its policies followed CDC guidance and the Respiratory Protection Program, and OSHA concluded that a hazard did not exist.	Demonstrates the danger of relying on CDC guidance and the inadequacy of the respirator protection standard alone to protect workers.

Facility	Date of Complaint	Complaint	Response	Notes
HCA Multifacility (FL, MO, TX, KS)	Aug 2020	Hazards: workers who are or may be Covid-19-positive return to work; failure to notify employees of exposures; failure to test asymptomatic workers; workers with positive Covid-19 tests were instructed to return to work without a negative test.	OSHA rejected complaints due to employer adherence to CDC guidelines.	Demonstrates the danger of relying on CDC guidance to protect workers.
Research Medical Center (Kansas City, MO)	March 2020	Hazards: lack of fit testing; lack of PPE for worker caring for patient with Covid-19 symptoms; nurses provided with only a single surgical mask when treating suspected or confirmed Covid-19 patients.	OSHA rejected complaints because there was no applicable standard and the employer complied with CDC guidance.	Demonstrates the danger of relying on CDC guidance to protect workers and the importance of a Covid19 standard. Celia Yap-Banago, a nurse mentioned in this complaint who cared for a patient with Covid-19 symptoms without adequate PPE, died of Covid19 soon after.[251]

[251] Smith A, "A Kansas City Nurse Who Raised Concerns About A Lack Of Protective Equipment Dies Of COVID-19," KCUR, April 22, 2020, https://www.kcur.org/2020-04-22/a-kansas-city-nurse-who-raised-concerns-about-a-lack-of-protective-equipment-dies-of-covid-19.

Facility	Date of Complaint	Complaint	Response	Notes
University of Chicago Medical Center (Chicago, IL)	Dec 2021	Hazards: Employees with positive Covid-19 tests and suspected exposure returned to work without quarantine.	Employer response claims that their policies meet or exceed CDC guidance.	Demonstrates that employers institute unsafe policies when following CDC guidance.
Hospitals of Providence East and Sierra Campuses (El Paso, TX)	Inspection: Sept 24, 2021; Oct 4, 2021 Citation: Feb 2, 2022	OSHA cited these hospitals for failure to screen and triage all non-employees entering direct patient care settings for symptoms of Covid-19.	OSHA citation.	These citations show that employers will not enact safe practices without clear, enforced, standards, and that an active Covid-19 standard allows OSHA to enforce safe practices.
Largo Medical Center (Largo, FL)	Sept 23, 2021	Hazards: numerous hazards related to lack of screening, PPE, planning, exposure notifications, isolation, and ventilation.	Employer responded in part by justifying use of passive screening by reference to CDC guidelines.	Demonstrates that employers change policies in response to weakened CDC guidance and leave workers at risk

Appendix 3: NNU Covid-19 Survey Results

In 2020, NNU's four surveys covered hospitals' lack of preparedness for Covid-19 (March); government and employers' disregard for nurse and patient safety (May); the devastating impact of reopening too soon (July); and hospitals' and health care employers' lack of preparation for the fall/winter surge, despite more knowledge about the dangers of the virus and effective measures to prevent spread (November). In 2021, NNU's March 2021 survey highlighted the continuing disregard of hospitals and health care employers for the safety of nurses and health care workers. The September 2021 survey revealed that employers must do more to be fully compliant with the Occupational Safety and Health Administration emergency temporary standard to protect nurses and other health care workers. The April 2022 survey revealed significant increases in unsafe staffing, workplace violence, and moral distress and showed that hospitals were still not adequately prepared for a Covid-19 surge.

NNU's most recent (8th) survey, published on December 13, 2022, revealed continued significant issues related to staffing, workplace violence, Covid precautions, and other issues.

NNU Covid Survey #1: **Survey of Nation's Frontline Registered Nurses Shows Hospitals Unprepared For COVID-19** (published March 5, 2020)

Results confirm little planning, poor communication, and shortage of equipment, National Nurses United petitions U.S. OSHA to act

A nationwide survey National Nurses United (NNU) conducted of registered nurses, the country's frontline health care staff, reveals that the vast majority of United States hospitals and health care facilities are unprepared to handle and contain cases of COVID-19.

On Wednesday, NNU petitioned the U.S. Occupational Safety and Health Administration to adopt an emergency temporary standard to protect health care workers, patients, and the public. Currently, no enforceable OSHA infectious diseases standard exists nationally.

And in recent days, NNU has heard discussion about the Centers for Disease Control (CDC) weakening its current guidance even further, including recommending surgical masks instead of respirators for nurses providing care to patients with COVID-19. NNU is opposed to these changes.

"Nurses are confident we can care for COVID-19 patients, and even help *stop* the spread of this virus, IF we are given the protections and resources we need to do our jobs," said Bonnie Castillo, RN and executive director of National Nurses United and the California Nurses Association. "This is not the time to relax our approach or weaken existing state or federal regulations. This is the time to step up all of our efforts."

While the survey is ongoing, results as of March 3, tallying responses from more than 6,500 nurses in 48 states, including the District of Columbia and the Virgin Islands, show that high percentages of hospitals do not have plans, isolation procedures, and policies in place for COVID-19; that communication to staff by employers is poor or nonexistent; that hospitals are lacking sufficient stocks of personal protective equipment (PPE) or are not making current stocks available to staff; and have not provided training and practice to staff on how to properly use PPE.

Nurses at the press conference shared on-the-ground experiences that confirmed the lack of readiness indicated by the survey results. “The lines of communication between our employers and frontline staff on protocols for coronavirus and suspected coronavirus patients are not open for all shifts and all units,” said Cathy Kennedy, a neonatal intensive care unit RN and NNU vice president who works at Kaiser Permanente in Roseville, Calif., where the first California COVID-19 patient just died. “What happens when there is a lack of clear communication both ways between staff and management? Rumor and falsehoods fill the void, stoking unnecessary fear and anxiety. And the information nurses do get is contradictory.”

Deborah Burger, RN and an NNU president, read a statement by a quarantined Northern California Kaiser Permanente nurse who cared for a confirmed COVID-19 patient and has become symptomatic, but has run into numerous delays in getting tested for COVID-19. When her physician and the county health department agreed she should be tested, the CDC at first refused, saying that since she was wearing PPE, she couldn’t have the virus. “What kind of science-based answer is that?” questioned the RN in her statement. Then, the CDC found other excuses. “[The CDC] claim[s] they prioritize running samples by illness severity and that there are only so many to give out each day. So I have to wait in line to find out the results. This is not the ticket dispenser at the deli counter; it’s a public health emergency! I am a registered nurse, and I need to know if I am positive before going back to caring for patients. I am appalled at the level of bureaucracy that’s preventing nurses from getting tested. That is a health care decision my doctor and my county health department agree with. Delaying this test puts the whole community at risk.”

Some highlights from the survey include:

- Only 44% report that their employer has provided them information about novel coronavirus and how to recognize and respond to possible cases.
- Only 29% report that there is a plan in place to isolate a patient with a possible novel coronavirus infection. 23% report they don't know if there is a plan.
- Only 63% of nurses report having access to N95 respirators on their units. 27% have access to PAPRs.
- Only 30% report that their employer has sufficient PPE stock on hand to protect staff if there is a rapid surge in patients with possible coronavirus infections. 38% don't know.
- Only 65% report having been trained on safely donning and doffing PPE in the previous year.

- 66% have been fit tested in the previous year; 33% have not been fit tested in the previous year.
- Only 14% report that their employer has an overflow plan to place additional, trained staff to enable safe care provision to patients on isolation for possible novel coronavirus. 43% report they don't know.
- Only 19% report that their employer has a policy to address employees with suspected or known exposure to novel coronavirus. 43% don't know.

NNU nurses have been demanding that health care facility employers, the presidential administration, and federal and state and health officials and regulatory bodies follow the precautionary principle in their response to COVID-19, meaning that they act to protect workers, patients, and the public even before they know for certain that something is harmful.

Of employers, NNU is asking the following:

1. Employers shall implement plans and protocols in response to COVID-19 based on the precautionary principle, which holds that lacking scientific consensus that a proposed action, policy, or act is not harmful – particularly if that harm has the potential to be catastrophic – such action, policy, or act should not be implemented and the maximum safeguards should be pursued.
2. Employers shall clearly communicate with all RNs/health care workers, including notifying nurses when there is a possible or confirmed COVID-19 case.
3. Employers shall provide education and training for all RNs/health care workers, including on protective gear, donning and doffing, and all other protocols relating to COVID-19.
4. Employers shall provide the highest level of protection, including functioning negative pressure rooms and personal protective equipment for nurses providing care to possible and confirmed COVID-19 cases. Employers must ensure negative pressure rooms remain functional at all times during use. Highest level of PPE must include PAPR (powered air-purifying respirator), coveralls meeting ASTM (American Standard for Testing and Materials) standard, gloves, temporary scrubs, and other protections.
5. Employers shall plan for surge of patients with possible or confirmed COVID-19, including plans to isolate, cohort, and to provide safe staffing.
6. Employers shall conduct a thorough investigation after a COVID patient is identified to ensure all staff and individuals who were exposed are identified and notified. Any nurse/health care worker who is exposed to COVID-19 will be placed on precautionary leave for at least 14 days and will maintain pay and other benefits during the full length of that leave.

Of government, NNU is asking the following:

7. All registered nurses and other health care workers must receive the highest level of protection in their workplaces, as determined by the precautionary principle.

8. The CDC must improve screening criteria and testing capacity to ensure prompt recognition of and response to COVID-19 cases.
9. The Occupational Safety and Health Administration must promulgate an Emergency Temporary Standard to protect healthcare workers from emerging infectious diseases like COVID-19 as soon as possible.
10. Congress and the administration must ensure that any vaccine or treatment for COVID-19 that is developed with U.S. taxpayer dollars is provided to the American public when needed for free.
11. Congress must act immediately to pass an emergency spending package to fund the emergency response to the COVID-19 outbreak.

NNU Covid Survey #2: New survey of nurses provides frontline proof of widespread employer, government disregard for nurse and patient safety, mainly through lack of optimal PPE (published May 20, 2020)

Nurses report extremely high rates of PPE reuse, putting nurses and the patients they come into contact with at risk, while Congress and President Trump continue to resist its mass production

National Nurses United (NNU) has released data from its new nationwide survey of nearly 23,000 nurses, revealing that dangerous health care workplace conditions have become the norm since COVID-19 struck the United States, which nurses say shows a complete disregard for worker and public health on the part of health care employers and the government. The main way nurses and patients are put at risk is through lack of optimal personal protective equipment (PPE).

"Months into the pandemic, the virus continues to threaten communities across the country, and more than 100 nurses have died of COVID-19. This new survey shows that nurses are still fighting today for optimal personal protective equipment (PPE), fighting to get tested, and fighting for their own lives, and their patients' lives," said NNU Executive Director Bonnie Castillo, RN.

Nurses and other health care workers continue to find themselves abandoned at COVID-19's front lines, without PPE. Despite nurses' demands, President Trump has made no effort to mass produce N95 respirators using the Defense Production Act. Many hospitals still keep PPE under lock and key when they have it, and the Occupational Safety and Health Administration never addressed nurses' demands to pass emergency temporary standards that would have mandated employers provide optimal PPE.

"Dr. Rick Bright's testimony to Congress last week came as no surprise to us. Nurses on the front lines are dying as evidence of it. He calls it indifference – we call it willful negligence," says Castillo. "We can't even say they failed, because that would imply they tried."

The survey results were gathered from both NNU unionized nurse members as well as nonunion nurses in all 50 states plus Washington, D.C. and four U.S. territories. The preliminary results cover the period April 15 to May 10 and include:

- **Nurses reported extremely high rates of reusing PPE**: 87% of respondents reported having to reuse a single-use disposable respirator or mask with a COVID-19 patient. Reusing single-use PPE increases exposures to patients, nurses, and other staff; and is improper infection control that would not have been allowed prior to the pandemic, say nurses.
- **More than a quarter—28%—of respondents had to reuse a so-called 'decontaminated' respirator with confirmed COVID-19 patients**. Decontamination of respirators has not been shown to be safe or effective, can degrade the respirator so that it no longer offers protection, and some methods use chemicals that are toxic to breathe, say nurses, who emphasize employers are increasingly implementing PPE decontamination to save money.
- **72% of nurses reported having exposed skin or clothing when caring for suspected or confirmed COVID-19 patients**, leaving patients, nurses, and other health care workers at risk of being exposed to the virus.
- **27% of nurses providing care to confirmed COVID-19 patients reported having been exposed without the appropriate PPE and having worked within 14 days of exposure**. This puts their coworkers, and their patients, in danger, say nurses, who continue to demand that employers provide protections at work.

Survey results also show that after nurses are exposed to the virus in dangerous working conditions, a lack of testing or paid time off further jeopardizes their health and safety, and their ability to protect their patients and families:

- **Some 84% of nurses reported they have not yet been tested**: only about 16% of respondents have been tested for COVID-19.
- **Of those nurses who have been tested, more than 500 nurses reported a positive result** with another 500-plus nurses still waiting for results when taking the survey.
- **A third of nurses reported that their employer requires them to use their own sick leave, vacation, or paid time off if a nurse gets COVID-19 or is exposed to COVID-19** and needs to self-quarantine. If a nurse contracts COVID-19, the illness should be presumed to be work-related and covered by workers' compensation, say nurses, who call for states to pass bills ensuring that nurses are protected with presumptive eligibility for COVID-19.

Nurses say that these current unsafe conditions were preventable. Other countries, including Taiwan and South Korea, have shown that implementing immediate protective measures and widespread testing can limit patients', nurses', and other health care workers' infection and death rates.

"The richest country in the world will call nurses heroes without even bothering to invest in mass producing N95 respirators and other equipment to keep nurses alive," says

Castillo. “Nurses signed up to care for their patients. They did not sign up to die needlessly on the front lines of a pandemic. Our message to employers and the Trump administration is: Platitudes are empty without protections. For our sake, for the public’s sake—give us PPE.”

During this epidemic, NNU has been the leading nursing organization advocating for both union and nonunion RNs, including outreach by text to more than 1.4 million non-member nurses across the country to provide information and resources on COVID-19.

NNU Covid Survey #3: National nurse survey reveals devastating impact of reopening too soon (published July 28, 2020)

RNs forced to reuse PPE and work in unsafe conditions

As many states have moved to reopen, a new groundbreaking survey of more than 21,200 nurses reveals that health care workplace conditions remain dangerous and nurses are afraid of infecting their families with COVID-19, announced National Nurses United (NNU) today. The safety of nurses is essential to a safe reopening.

Only 24 percent of nurses surveyed think their employer is providing a safe workplace. Nurses are at risk of exposure to the virus for many reasons, including reuse of personal protective equipment (PPE), patients and nurses not being tested, and lack of dedicated COVID-19 units. One result of these unsafe practices is that 43 percent of nurses reported that they are afraid of infecting their families.

Some 87 percent of hospital nurses reported reusing at least one type of single-use PPE, such as an N95 respirator or a face shield. Reusing single-use PPE is a dangerous practice that can increase exposures to nurses, other staff, and to patients.
“Nurses warned about reopening too early, and now this survey shows that nurses are bearing the brunt of premature relaxing of shelter-in-place orders,” said NNU Executive Director Bonnie Castillo, RN. “We are facing a record-breaking number of infections everyday across the country, and more than 165 nurses have died of COVID-19.”

Months into the pandemic, only 23 percent of nurses reported being tested. Yet 85 percent of nurses who work in hospitals reported that their facility has restarted elective procedures. The lack of testing jeopardizes nurses’ health and safety and their ability to protect their patients and families.

“One of the only agreed-upon criteria for reopening has been robust, reliable testing,” Castillo said. “Nurses and other health care workers must be prioritized for testing. It is a travesty that only a fraction of health care workers have been tested. Nurses do not have the access to testing that they need. We have seen how essential nurses' contributions are, so it is essential that they are both protected and their voices heard as they insist on science-based interventions to mitigate the spread of COVID-19. “

"At a time when the skills of registered nurses and other health care workers are most needed, it is unconscionable that they are being treated as if their lives are worth less than others with this utter disregard for their safety. Nurses are willing to be at the bedside caring for COVID-19 patients; their employers should be willing to protect them. Sadly, that's not the case.

"This is why we need the Occupational Safety and Health Administration (OSHA) to pass an emergency temporary standard for infectious diseases to mandate that healthcare employers provide protections needed for COVID-19. We also need President Trump to use the Defense Production Act (DPA) to order the mass production of PPE now. And, finally, we need the Senate to pass the HEROES Act, which contains language on the DPA and mandates an OSHA standard on infectious diseases."

The survey results were gathered from both NNU unionized nurse members as well as nonunion nurses in all 50 states plus Washington, D.C. and three U.S. territories. The preliminary results cover the period July 7 to July 27.

Workplace Safety

Only 24 percent of nurses think their employer is providing a safe workplace. Health care facilities should have designated, separate zones for COVID-19 patients, persons under investigation, and patients for whom COVID-19 has been ruled out. Facilities should be isolating COVID-19 and suspected COVID-19 patients in a negative pressure room. But only 15 percent of nurses reported that COVID-19 patients were always placed in a negative pressure room and just 18 percent reported that they were sometimes placed in a negative pressure room.

- 32 percent of nurses reported that their facility does not have a dedicated COVID-19 area or unit; 68 percent of respondents have a dedicated area. Commingling patients increases the risk of cross infection.
- Only 31 percent of nurses report that every patient is screened for COVID-19. Screening is a critical part of infection control and reducing exposure to the virus.
- 16 percent reported that their facility did not have a negative pressure room.
- 36 percent of nurses who work in hospitals reported that they are afraid of catching COVID-19 and 43 percent are afraid of infecting a family member."

Personal Protective Equipment

Overall, 87 percent of nurses who work in hospitals report reusing at least one piece of PPE. Here's the breakdown by type of PPE for nurses who work in hospitals:

- 53 percent reported they had to reuse single-use N95 respirators
- 36 percent said they had to reuse single-use face shields
- 37 percent reported they had to reuse single-use surgical masks
- Only 9 percent said they did not have to reuse single-use PPE

So-called decontamination of single-use PPE has increased. About 54 percent of nurses who work in hospitals say their employer has implemented a program to "clean" single-use PPE, such as N95 respirators, between uses. This is nearly double from NNU's May survey

of nurses, when 28 percent of nurses reported using these so-called decontaminated N95s. "Decontamination" of single-use PPE has not been proven to be safe or effective. If a facility reprocesses PPE, the FDA requires notification as part of the authorization for these systems to be used in healthcare settings. Yet **only 12 percent of hospital nurses were notified by their employer of the risks associated with using so-called decontaminated PPE**. Health care employers' use of unproven "decontamination" systems means they are experimenting on their employees without consent.

COVID-19 Testing
Only 23 percent of nurses reported being tested.

Staffing
Staffing at some hospitals is at a crisis level due to the pandemic, with short staffing and nurses being reassigned to areas where they do not have clinical competencies, which puts patient safety at risk.

- 27 percent of nurses who work in hospitals reported that staffing has gotten much worse recently. Short staffing is unsafe for patients and nurses. The likelihood of patient death increases by 7 percent for every additional patient in the average nurse's workload in the hospital.
- 30 percent of nurses who work in hospitals reported that they had been reassigned to a clinical care area where they were expected to care for patients that require new skills or competencies; of those nurses,42 percent said this reassignment limited their ability to practice safe nursing care.

Mental Health
The pandemic has had a negative impact on the mental health of nurses who work in hospitals. Registered nursing is a stressful occupation; the COVID-19 pandemic has amplified that stress. The lack of care for nurses only magnifies that stress further as the results of the survey illustrate.

- 42 percent report feeling stressed more often than before the pandemic.
- 38 percent feel more anxious than they did before the pandemic.
- 29 percent feel sad or depressed more often.

The survey results underline the impact of reopening too soon. NNU issued a statement on April 28 that reopening was "premature when the threat of the virus causing COVID-19 is not yet behind us." Then on June 2, NNU issued a joint statement with other nurses unions warning against early reopening without meeting certain criteria, including nurses having optimal PPE.

NNU Covid Survey #4: National nurse survey exposes hospitals' knowing failure to prepare for a Covid-19 surge during flu season (published November 12, 2020)

11 months into pandemic and entering the cold and flu season, nurses say there are no excuses for the continued lack of PPE, testing, and workplace protections

National Nurses United's new nationwide survey of more than 15,000 registered nurses reveals that 11 months into the pandemic, hospitals are failing to prepare for a surge of Covid-19 cases during flu season and that basic infection control and prevention measures are still lacking. Nurses cite the health care industry's inappropriate pursuit of profit during this public health crisis as the main reason for its failure to follow the proper infection control measures that nurses have been demanding since the beginning of the pandemic. This survey is the fourth national survey of nurses during the pandemic by NNU, the nation's largest and fastest-growing union of registered nurses. NNU's latest survey also reveals that nurses face ongoing issues of not getting tested, not being notified in a timely manner when they are exposed, inadequate personal protective equipment (PPE), unsafe staffing, mental health impacts, and increasing workplace violence.

The country is heading into flu season, yet only 18 percent of RNs in hospitals report any preparation for surge capacity and planning. Meanwhile, just 16.5 percent of RNs in hospitals report they have universal personal protective equipment (PPE) in the emergency department, where patients may not be screened for Covid-19 before receiving care. Only one in five nurses report that all patients are screened for respiratory symptoms to identify and distinguish between Covid-19 and other illnesses before admission to a health care facility -- an important step to stop infectious disease transmission within health care facilities. (See below for more data on the lack of preparation.)

Fewer than half of RNs who work in hospitals (43.6 percent) report that all patients are screened for Covid-19. All patients should be screened for Covid-19. Hospitals are failing to implement proven measures to prevent the spread of Covid-19 within the facility: Only 60 percent of RNs who work in hospitals report that their facility has a dedicated Covid unit or area. Strikingly, 8 percent of RNs who work in hospitals report that their facilities shut down their Covid unit or area.

"Hospitals are continuing to fail when it comes to preparation for Covid-19, even as flu season begins," said NNU Executive Director Bonnie Castillo, RN. "They have had nearly a year to get their act together. We should not still be operating under crisis standards of care. Their lack of preparation means they are knowingly sacrificing the lives of nurses and other health care workers. More than 240 registered nurses have died from Covid-19. Enough is enough. Nurses need PPE now to do their jobs safely. We know that President-Elect Joe Biden is committed to using the Defense Production Act to get PPE mass produced in this country and to pass an OSHA Emergency Temporary Standard to protect nurses and other workers."

Nurses are not getting tested and they are not being informed in a timely manner when they are exposed to Covid-19 at work. Only one-third of RNs overall and fewer than half (42 percent) of RNs in hospitals report that they have ever been tested for Covid-19. This is an increase from the last survey in July, when just 23 percent of RNs overall reported being tested, but does not go far enough. RNs must have access to testing and employers must take seriously the task of identifying and responding to exposures, including conducting contact tracing and informing staff of exposure. Over 70 percent of nurses say their employers do not inform them of exposures in a timely manner.

Employers are not providing RNs with the necessary PPE to do their jobs safely. More than 80 percent of nurses report they are reusing at least one type of single-use PPE. About 20 percent of nurses in hospitals report that their employer has recently limited the use of N95 respirator masks. In addition, fewer than half of nurses in hospitals report not using respiratory protection when caring for patients who might have Covid-19 but who have not been tested or whose test results are pending. In comparison, more than 70 percent of hospital RNs report using N95s for Covid-19 patients. In order to protect nurses and other patients, hospitals must ensure that patients who are suspected of having Covid-19 have the same precautions in place as confirmed Covid-19 patients.

Short staffing is increasingly an even bigger problem in hospitals, with 30 percent of nurses reporting that it is their number one safety concern. Nearly half of hospital nurses (42 percent) report that staffing has gotten slightly or much worse recently. In addition, 20 percent of nurses report being reassigned to units where new skills or competencies are required, without adequate training.

Employers are forcing nurses to go to work sick, rather than stay home. Paid sick leave is an important and proven measure to protect the health of nurses, other health care workers, and their patients. But only 36 percent of hospital RNs reported always being able to stay home when they have influenza or Covid-like symptoms.

Covid-19 is having a deep impact on the mental health of nurses, with more than 70 percent of nurses in hospitals reporting that they are afraid of getting Covid-19 and 80 percent fearing that they will infect a family member.

- Half of hospital nurses report they have more difficulty sleeping than before the pandemic.
- Nearly 80 percent of hospital RNs report feeling more stressed than before the pandemic.
- Nearly three-quarters of nurses report feeling more anxious.
- 62 percent report feeling more sad or depressed.

About 20 percent of nurses report facing increased workplace violence on the job, which they attribute to decreasing staffing levels, changes in the patient population, and visitor restrictions.

Lack of preparation for influenza season
Health care facilities are not prepared for a Covid-19 surge during flu season:

- Just 18 percent of RNs in hospitals report any preparation for surge capacity and planning.
- Only 17 percent of hospital RNs report universal PPE use in emergency departments.
- 8.6 percent of hospital nurses report plans for outdoor triage for patients with respiratory symptoms.
- Only 20 percent of nurses report screening of all patients for respiratory symptoms before admission; 27 percent of hospital RNs report this.
- Only 12 percent of RNs report their employer has increased PPE stock and supply in preparation for flu season/Covid-19 surge.
- 11 percent of RNs report receiving staff education on recognizing respiratory infections.

NNU's first survey in March focused on hospitals' lack of preparedness for Covid-19; the second survey in May highlighted government and employers' disregard for nurse and patient safety; and the third survey in July revealed the devastating impact of reopening too soon. This fourth survey demonstrates clearly the continuing disregard that hospitals and health care employers show for the safety of nurses and health care workers.

The survey results were gathered from both NNU unionized nurse members as well as nonunion nurses in all 50 states plus Washington, D.C. and two U.S. territories. The preliminary results cover the period Oct. 16 to Nov. 9.

NNU Covid Survey #5: National RN survey highlights continued hospital failures to prioritize nurse and patient safety during pandemic (published March 10, 2021)

Results show that at pandemic's one-year marker, employers are still failing to provide safe staffing, optimal PPE, and testing

National Nurses United's (NNU) new nationwide survey of more than 9,200 registered nurses reveals that a year into the pandemic, registered nurses are still being placed in harm's way. RNs face continued issues ranging from unsafe staffing levels to hospital administrators failing to observe basic infection control and prevention measures — such as forced reuse of personal protective equipment (PPE) despite manufacturers confirming adequate supplies.

This survey is the fifth national survey of nurses during the pandemic by NNU, the nation's largest and fastest-growing union of registered nurses. NNU's latest survey also reveals that in addition to the unsafe reuse of single-use PPE, nurses continue to experience challenges getting tested, are not being notified in a timely manner when they are exposed, are suffering mental health impacts, and are enduring increasing workplace violence.

"We are a year into this deadly pandemic and hospitals are still failing to provide the vital resources needed to ensure safety for nurses, patients, and health care staff," said NNU Executive Director Bonnie Castillo, RN. "This survey shines light on how hospital administrators are continuing to jeopardize one of society's most valuable workforces during Covid-19, registered nurses, by prioritizing profits over basic safety and infection control measures. Testing health care workers and patients for Covid-19, providing optimal PPE, and ensuring safe staffing is a no-brainer to help combat this pandemic."

Short staffing remains a major problem in hospitals, with nearly 53 percent of nurses reporting that it is their top safety concern. Nearly half of hospital nurses (47 percent) report that staffing has gotten slightly or much worse recently. In addition, 26 percent of nurses report being reassigned to units where new skills or competencies are required, often without adequate training.

Employers fail to provide RNs with the optimal PPE to do their job safely. A total of 81 percent of nurses report they are forced to reuse single-use PPE, which is practically unchanged from the more than 80 percent who reported having to do so in our November survey. The virus that causes Covid-19 is transmitted through infectious aerosols that are emitted when Covid-positive individuals breathe, vocalize, cough, or sneeze. Optimal PPE—including respiratory protection at least as protective as an N95—is an essential measure to battle this pandemic. Recent reports indicate that there is substantial N95 supply; which means these survey data indicate that hospitals are choosing to maintain crisis standards of care in order to cut costs. The health care model should focus on human needs, not profit margins.

Slightly more than half of the RNs who work in hospitals (52 percent) report that all patients are screened for Covid-19. This falls short of the necessity that all patients should be screened for Covid-19. Hospitals are failing to implement proven measures to prevent the spread of Covid-19 within the facility: Only 66 percent of RNs who work in hospitals report that their facility has a dedicated Covid unit or area.

Nurses are still not all getting tested and they are not being informed in a timely manner when they are exposed to Covid-19 at work. Slightly more than half (54 percent) of RNs overall and over half (61 percent) of RNs in hospitals report that they have ever been tested for Covid-19. This is an increase from the last survey in November, when just a third of RNs overall reported being tested, but again still falls short of the regular and on-demand testing that nurses should be able to access. Administrators must take seriously the task of identifying and responding to exposures in a timely manner, including conducting contact tracing and informing staff of exposure. But less than a third of hospital nurses (32 percent) say their employers inform them of exposures in a timely manner.

Covid-19 continues to harm the mental health of nurses, with the survey signaling that huge numbers of nurses are suffering the moral distress and injury that comes from knowing the right thing to do but receiving no support from employers to do it or even being prevented by employers from doing it.

- A total of 43 percent of hospital RNs say they have more trouble sleeping than before the pandemic.
- More than 61 percent of hospital RNs report feeling more stressed than before the pandemic.
- A total of 57 percent of hospital RNs report feeling more anxious.
- 51 percent report feeling more sad or depressed.
- More than 58 percent of hospital nurses who answered the survey said they fear that they will contract the virus and infect a family member.

About 22 percent of nurses report facing increased workplace violence on the job, which they attribute to decreasing staffing levels, changes in the patient population, and visitor restrictions.

This data comes as NNU recently endorsed the recent re-introduction of the Workplace Violence Prevention for Health Care and Social Service Workers Act (H.R.1195). The federal legislation, reintroduced by U.S. Rep. Joe Courtney (CT-2), would mandate that the federal Occupational Safety and Health Administration (OSHA) create a national standard requiring health care and social service employers to develop and implement a comprehensive workplace violence prevention plan.

This legislation is especially important given that health care and social service workers faced extremely high rates of workplace violence prior to the pandemic, and growing rates during the pandemic.

NNU's first survey in March focused on hospitals' lack of preparedness for Covid-19; the second survey in May highlighted government and employers' disregard for nurse and patient safety; and the third survey in July revealed the devastating impact of reopening too soon. The fourth survey in November showed hospitals and health care employers' lack of preparation for the fall/winter surge, despite more knowledge about the dangers of the virus and effective measures to prevent spread. This fifth survey shows the continuing disregard that hospitals and health care employers show for the safety of nurses and health care workers as we mark the one-year anniversary of the Covid pandemic.

The survey results were gathered from both NNU unionized nurse members as well as non-union nurses in all 50 states plus Washington, D.C. and three U.S. territories. The preliminary results cover the period Feb. 2 to Feb. 28.

NNU Covid Survey #6: National nurse survey reveals that health care employers need to do more to comply with OSHA emergency temporary standard (published September 27, 2021)

National Nurses United calls on OSHA to do robust enforcement during the pandemic.

National Nurses United's (NNU) new nationwide survey of more than 5,000 registered nurses reveals that employers must do more to be fully compliant with the Occupational Safety and Health Administration (OSHA) emergency temporary standard (ETS) and to implement optimal standards to protect nurses and other health care workers from Covid-19.

This survey is the sixth national survey of nurses during the pandemic by NNU, the nation's largest and fastest-growing union of registered nurses. Most of the requirements for the ETS went into effect on July 6 and all requirements went into effect on July 21. The ETS is the first-in-the-nation enforceable federal Covid-19 standard, which nurses fought for since the beginning of the pandemic. The ETS includes requirements on personal protective equipment (PPE), patient and visitor screening, and employee notification within 24 hours of the employer becoming aware of the exposure.

"We are more than 18 months into the pandemic, yet hospitals are still not doing enough to ensure the safety of nurses, patients, and other health care workers," said NNU Executive Director Bonnie Castillo, RN. "Covid cases are surging to their highest levels yet in some areas of the country, and some ICUs are over capacity. Nurses need optimal personal protective equipment. Health care employers must notify nurses as soon as possible when they are exposed and make it easier for RNs and other health care workers to get tested." NNU's latest survey reveals that nurses still face problems with access to testing, being notified in a timely manner when they are exposed, inadequate respiratory protection, unsafe staffing, mental health, and workplace violence. RNs also reported inadequate Covid screening and testing rates for patients who enter or are admitted to a health care facility and a decrease in dedicated Covid units compared to the last survey (March 2021).

More than 75 percent of hospital nurses are not being notified of exposures to Covid in a timely way. Only 23 percent of hospital RNs reported timely notification of exposure by their employers, down from 31.6 percent reported in March 2021. Prompt notification is essential for hospital infection control.

Access to testing is an issue at some hospitals. About 41 percent of RNs at hospitals reported that any staff who asks for testing has access; nearly 20 percent said access to testing is limited at their facility; and 7 percent said testing is not available where they work. Of the nurses who answered additional questions on employer testing, 58 percent said that only staff who are symptomatic can get tested, a troubling statistic as scientific research has found that about half of all Covid transmissions are from asymptomatic and pre-symptomatic individuals who were infected.

Not all patients and visitors are screened for Covid. Only two-thirds of hospital RNs report that all patients are screened for Covid-19 signs and symptoms before or upon arrival at the facility. Less than a third of hospital RNs reported that every patient is tested for Covid before or upon arrival at the facility. For visitors, screening and testing was reported to occur at even lower rates: Only 53 percent of hospital RNs report that every visitor is screened for Covid-19 signs and symptoms before or upon arrival at the facility and a mere 4 percent of RNs reported that all visitors are tested for Covid before or upon arrival. Screening for Covid-19 symptoms, in combination with reliable diagnostic testing and screening for recent exposure history, is necessary to effectively identify and isolate individuals who may be infectious to prevent spread of the virus within health care facilities.

Hospital nurses are still not provided optimal PPE when caring for Covid-positive patients or patients suspected of having Covid. About 61 percent of hospital RNs reported wearing a respirator for every Covid-positive patient encounter, down from nearly 75 percent in our March 2021 survey. In addition, only 40 percent of hospital RNs reported that respirators are worn when they are caring for patients who are suspected of having Covid or whose tests results are not completed; and about 62 percent reported using surgical masks for patients suspected of having Covid or awaiting test results. All nurses should be wearing a respirator for every encounter with a Covid-positive or suspected Covid-positive patient, in addition to eye protection, isolation gown or coveralls, and medical grade gloves.

Nurses diagnosed with Covid have faced lasting symptoms. Nearly a quarter of RNs who contracted Covid experienced symptoms from zero to three months, a third had symptoms lasting three to nine months, 12 percent had symptoms lasting nine to 12 months, and 12 percent more than a year. The most common symptoms reported included tiredness or fatigue, joint or muscle pain, memory or concentration difficulties, headaches or migraines, and difficulty breathing or shortness of breath.

Short staffing remains a persistent problem in hospitals, with more than 57 percent of RNs reporting that staffing has gotten slightly or much worse, up from 47 percent of nurses in our March 2021 survey. Also, nearly half of hospital RNs (49 percent) reported that their facility is using excessive overtime to staff units.

Covid-19 is still having a deep impact on the mental health of hospital nurses, who continue to face moral distress and moral injury at work:

- Nearly 42 percent of hospital RNs fear they will contract Covid.
- Slightly more than 50 percent are afraid they will infect a family member.
- More than a third (35.1 percent) are having more difficulty sleeping.
- More than half (53.5 percent) feel stressed more often than before the pandemic.
- About 42 percent feel sad or depressed more often than they did before the pandemic.
- More than a third feel traumatized by their experiences caring for patients.

Hospital RNs reported an increase in workplace violence. About 31 percent of hospital RNs said that they faced a small or significant increase in workplace violence, up from 22 percent in our March 2021 survey. RNs attribute the increase in workplace violence to decreased staffing levels, changes in the patient population, and fewer visitor restrictions. NNU's four surveys in 2020 covered hospitals' lack of preparedness for Covid-19 (March); government and employers' disregard for nurse and patient safety (May); the devastating impact of reopening too soon (July); and hospitals' and health care employers' lack of preparation for the fall/winter surge, despite more knowledge about the dangers of the virus and effective measures to prevent spread (November). The fifth survey (March 2021) highlighted the continuing disregard that hospitals and health care employers show for the safety of nurses and health care workers, more than one year into the pandemic.

The sixth survey results were gathered from both NNU unionized nurse members as well as non-union nurses in all 50 states plus Washington, D.C. and Puerto Rico. The results cover the period June 1 to July 21, 2021.

NNU Covid Survey #7: National nurse survey reveals significant increases in unsafe staffing, workplace violence, and moral distress (published April 14, 2022)

National Nurses United calls on Congress to pass federal safe staffing legislation

National Nurses United's (NNU) new nationwide survey of more than 2,500 registered nurses reveals significant increases in staffing issues, workplace violence, and moral distress compared to NNU's previous survey results released on Sept. 27, 2021. Hospital RNs also reported that their hospitals are still not adequately prepared for a Covid-19 surge.

This survey is the seventh national survey of nurses during the pandemic by NNU, the nation's largest and fastest-growing union of registered nurses.

"We are now more than three years into the pandemic and not only is staffing worse, but workplace violence is increasing," said Zenei Triunfo-Cortez, RN and a president of National Nurses United. "Nurses are experiencing alarming levels of moral distress and moral injury due to the unsafe working conditions. Since our last survey in September 2021, even more nurses have reported feeling more stress and anxiety as well as feeling traumatized by their experiences caring for patients.

"In addition, many nurses reported that their hospitals do not have surge plans or enough personal protective equipment in stock to protect staff during a surge," said Triunfo-Cortez.

"It is unconscionable that some RNs are still reusing single-use PPE and putting their health and well-being at risk.

"Despite these challenges, nurses have continued to fight for safe working conditions and patient safety and they are organizing," said Triunfo-Cortez. "During the pandemic, nurses at Mission Hospital in Asheville, North Carolina, Maine Medical Center in Portland, Maine, and Longmont United Hospital in Longmont, Colorado, organized and voted to join affiliates of National Nurses United. We have also been strongly advocating for federal RN-to-patient ratios legislation and for the Occupational Safety and Health Administration to issue a permanent standard to protect nurses and other health care workers from Covid-19 in the workplace."

Here are the responses from 2,575 nurses, gathered from both NNU union nurses and nonunion nurses in all 50 states plus Washington, D.C. The results cover the period Feb. 2, 2022 to March 20, 2022.

Staffing Issues

Hospital RNs reported that staffing is worse: 69 percent reported that staffing has gotten slightly or much worse recently, a 20.2 percent increase from NNU's September 2021 survey and a 47.8 percent increase from our March 2021 survey.

More than a quarter of nurses (26.5 percent) reported being "floated" or reassigned to care for patients in a clinical care area that required new skills or was outside of their competency, up from 17.8 percent reported in September 2021. Meanwhile, 46 percent of hospital RNs reported that they did not receive any education or preparation before being floated to units outside of their expertise, up from 44.3 percent reported in Sept. 2021.

Excessive overtime and use of travel nurses:

- 64.5 percent of hospital nurses reported that their facilities are using excessive overtime to staff units, up from 49.3 percent, a significant increase from our September survey.
- 72.3 percent hospital RNs reported an increase in the use of travel nurses in the prior month.

Workplace violence on the rise

Nearly half of hospital nurses (48 percent) reported a small or significant increase in workplace violence, up from 30.6 percent in September 2021 and 21.9 percent in our March 2021 survey. This is a nearly 57 percent increase from September 2021 and a 119 percent increase from March 2021.

Alarming evidence of moral distress and mental health

Covid-19 is still having a deep impact on the mental health of hospital nurses, who continue to face moral distress and moral injury at work. There are significant increases in all of the mental health impacts reported in our September 2021 survey.

- 66.8 percent of hospital RNs fear they will contract Covid, a 59.4 percent increase from September.
- Nearly three-quarters (74.6 percent) are afraid they will infect a family member, a 47.4 percent increase from September.

- Nearly 60 percent (58.4 percent) are having more difficulty sleeping, a 66.4 percent increase from September.
- 83.5 percent feel stressed more often than before the pandemic, a 56.1 percent increase.
- 77.2 percent feel anxious more often than they did before the pandemic, a 53.2 percent increase from September.
- 68.7 percent feel sad or depressed more often than they did before the pandemic, a 64.6 percent increase from September.
- More than half (56 percent) feel traumatized by their experiences caring for patients, a 65.7 percent increase from September.
- 23 percent sought treatment for a mental health condition related to caring for patients during the pandemic, a whopping 87 percent increase from September.

Personal protective equipment

- Only 71.8 percent of hospital RNs reported wearing a respirator for every Covid-positive patient encounter, up from 60.8 percent in our September 2021 survey. Meanwhile, 62 percent of hospital RNs reported having to reuse single-use PPE, an unsafe practice.
- Only 32 percent of hospital nurses report that their employer has sufficient PPE stock to protect staff from a rapid Covid surge. (For more on surge plans, see "Surge preparedness" section below.)

Exposure, testing, and screening

- Nearly a quarter (24 percent) of hospital RNs reported that their employer notifies them of Covid exposures in a timely manner. Meanwhile, 29 percent of hospital RNs reported that nurses are informed of exposures but not in a timely fashion. Prompt notification is essential for infection control.
- Access to testing is still an issue at some hospitals: 17.8 percent of RNs report that access to testing has declined since the beginning of the pandemic.
- Only 56.8 percent of hospital RNs report that every patient is screened for recent exposure history to covid, down from 61.7 percent in our September survey. Screening of visitors has also gone down since our last survey: 48.6 percent of hospital nurses reported that all visitors are screened for Covid signs and symptoms at their facility, down from 52.7 percent in our September survey.
- Only 23.8 percent of hospital RNs report that every visitor is screened for recent Covid exposure history at their facility, down from 38.5 percent in our September survey.

Woefully inadequate surge preparedness

Only 24 percent of hospital RNs reported that their employer has an overflow plan to place additional, trained staff to safely care for Covid patients on isolation. This is a decrease from our first Covid survey in March 2020 when 29 percent reported that there was a plan in place to isolate patients with possible novel coronavirus infection.

NNU Covid Survey #8: Year Three: Acute and Long Covid, A Double Public Health and Occupational Health Crisis (published December 13, 2022)

National Nurses United's (NNU) new nationwide survey of more than 2,800 registered nurses reveals continued significant issues related to staffing, workplace violence, Covid precautions, and other issues. This survey is the eighth national survey of nurses during the pandemic by NNU.

Responses were gathered from 2,825 nurses, from both NNU union nurses and nonunion nurses in 46 states plus Washington, D.C. The results cover the period September 22 through November 28, 2022.

Covid-19: Testing and Screening

- Only 33.5 percent of nurses report that all nurses are informed of exposures in a timely fashion. 31.7 percent of nurses report that nurses are informed of exposures but not in a timely fashion. Nearly 20 percent (18.6 percent) of nurses report that nurses are not informed of exposures at all. Timely notification of an exposure to Covid-19 is essential for preventing onward transmission.
- While 71.8 percent of nurses report that patients are always screened for Covid signs and symptoms, only 37.2 percent of nurses report that visitors are always screened for Covid signs and symptoms. Even fewer nurses report that patients (49.6 percent) and visitors (7.1 percent) are always tested for Covid, despite the fact that a majority of transmission occurs before symptoms develop.

Covid-19: Personal Protective Equipment (PPE)

- Only 67.0 percent of nurses report having access to a sufficient supply of N95 or other kinds of respirators on their unit. 20.7 percent of nurses report they have access to N95 respirators on their unit but supply is not always sufficient. Ready access to PPE, including N95 respirators, is a necessary element in keeping nurses and other health care workers safe from Covid exposure.
- Only 66.3 percent of nurses report wearing a respirator for every encounter with a Covid-positive patient. It is scientifically clear that Covid-19 is transmitted through respiratory aerosols created when people infected with the virus breath, speak, cough, sneeze, etc. and that respiratory protection is a necessary element in keeping RNs and other health care workers safe from Covid-19.
- 42.8 percent of hospital nurses report having to reuse single-use PPE. While this is a decline from the April 2022 survey, which found that 62 percent of hospital nurses reported reusing single-use PPE, reusing single-use PPE is an unsafe practice that should never occur.

Long Covid

- 69.8 percent of nurses report having been diagnosed with Covid-19.

- Of those who reported having had Covid, 68.4 percent had Covid once, 22.0 percent twice, 4.9 percent three times, 1.0 percent four times, and 0.14 percent five or more times.
- After recovery from Covid-19, nurses experienced the following symptoms: tiredness or fatigue (80.7 percent), memory or concentration difficulties (52.5 percent), joint or muscle pain (51.5 percent), headaches or migraines (48.8 percent), difficulty breathing or shortness of breath (35.9 percent), symptoms that get worse after physical or mental activities (32.8 percent), heart palpitations (27.8 percent), chest pain (16.6 percent). Long Covid occurs when symptoms persist for weeks to months or new symptoms appear following a Covid infection.
- For nurses experiencing long Covid, these symptoms have lasted: 0-3 months for 31.4 percent of nurses, 4-6 months for 16.2 percent of nurses, 7-9 months for 8.1 percent of nurses, 10-12 months for 7.2 percent of nurses, and more than 12 months for 17.9 percent of nurses.
- A majority of nurses (59.9 percent) took time off work to recover from post-Covid or long Covid symptoms. 39.6 percent took less than one month off work, 5.3 percent took 1-2 months, 2.6 percent took 3-4 months, 0.45 percent took 5-6 months, and 0.98 percent took more than 6 months. About two percent (2.4 percent) are not yet back at work.
- A majority of nurses experiencing long Covid have not sought treatment for long Covid (78.2 percent). Of those who have sought treatment, only 51.2 percent have received it. The most common barrier to long Covid treatment reported was not being believed about my symptoms.
- For 37.5 percent of nurses, their long Covid symptoms have affected their ability to work. And for 55.7 percent of nurses, their long Covid symptoms have impacted their daily activities outside of work.
- Most nurses experiencing long Covid have not made a reasonable workplace accommodation request (78.2 percent). Only 6.7 percent of nurses have made a reasonable accommodation request where it was granted. For 5.1 percent of nurses, they made a request but it was denied.

Staffing

- 56.8 percent of hospital nurses report that staffing has gotten slightly or much worse recently.
- 48.5 percent of hospital nurses report an increase in the use of travelers in the past month.
- 21.7 percent of hospital nurses report floating to/being reassigned to a clinical care area where they were expected to care for patients that required new skills or competencies. Only 16.2 percent of hospital nurses reported receiving all the clinical and educational support that they needed to practice safely and competently. Most nurses received either no education or preparation (43.7 percent) or “just in time” or “emergency” competency education (32.1 percent). These results are nearly

unchanged from the April 2022 survey, indicating that hospitals continue to rely on unsafe measures to staff units.
- 10.0 percent of hospital nurses report that their facility has introduced new models of nursing, e.g., team nursing, or other "crisis staffing standards" in the past month.
- Nearly half (49.2 percent) of hospital nurses report that their facility is using excessive overtime to staff units.

Workplace Violence

- 40.5 percent of hospital nurses report a small or significant increase in workplace violence incidents recently. This is a similar level as the April 2022 survey.

Impacts of the Pandemic

Covid-19 continues to have a deep impact on the mental health of nurses, who continue to face moral distress and moral injury at work.

- 62.3 percent of nurses report they are afraid they will catch Covid-19.
- 72.1 percent of nurses report they are afraid they will infect a family member with Covid-19.
- 50.7 percent of nurses report having more difficulty sleeping than they did before the pandemic.
- 72.0 percent of nurses report feeling stressed more often than they did before the pandemic.
- 68.6 percent of nurses report feeling anxious more often than they did before the pandemic.
- 57.6 percent of nurses report feeling sad or depressed more often than they did before the pandemic.
- 47.1 percent of nurses report feeling traumatized by their experiences caring for patients during the pandemic.
- 21.9 percent of nurses report having sought treatment for a mental health condition related to caring for patients during the pandemic.
- 35.0 percent of nurses report that they are seeking or have gotten a different job.
- 55.5 percent of nurses have thought about leaving nursing.
- 75.9 percent of nurses know coworker(s) who have left nursing.