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The Honorable Douglas Parker, Assistant Secretary
Occupational Safety and Health Administration
Department of Labor
200 Constitution Avenue, NW
Washington, D.C. 20210

Dear Assistant Secretary Parker:

As the largest labor union and professional association for registered nurses (RNs) in the United States, representing nearly 225,000 members who work in states across the nation, National Nurses United (NNU) closely tracks scientific developments that impact the safety and health of our members and their patients. In recent years, there have been significant developments in scientific research regarding the transmission of infectious diseases, which are a significant occupational hazard impacting health care workers.

Since the beginning of the Covid-19 pandemic, NNU has repeatedly urged the Occupational Safety and Health Administration (OSHA) to recognize updated science on aerosol transmission of infectious diseases in the agency's rulemaking and other efforts to protect workers from Covid-19.[1,2,3,4,5] We are writing today to urge OSHA to ensure that the latest available scientific research regarding infectious disease transmission and prevention is relied upon in OSHA's Infectious Diseases Rulemaking impacting health care workers. NNU cautions the agency that it cannot uphold its statutory obligations if it defers to outdated, inaccurate guidance from the Centers for Disease Control and Prevention (CDC).

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[1] Castillo, B., Letter to Secretary of Labor and Federal OSHA, "RE: National Nurses United Petitions OSHA for an Emergency Temporary Standard on Emerging Infectious Diseases in Response to COVID-19," March 4, 2020, Available at https://www.nationalnursesunited.org/sites/default/files/nnu/graphics/documents/NNUPetitionOSHA03042020.pdf (Accessed June 28, 2024).

[2] National Nurses United, "Nurses urge that OSHA adopts permanent Covid-19 and infectious disease protections for health care workers," November 3, 2021, https://www.nationalnursesunited.org/press/nurses-urge-osha-adopts-permanent-covid-19-and-infectious-disease-protections (Accessed June 28, 2024).

[3] National Nurses United, "Citing new Omicron variant, nurses say permanent OSHA Covid-19 standard for health care workers badly needed," December 2, 2021, https://www.nationalnursesunited.org/press/nurses-say-permanent-osha-covid-19-standard-needed-for-health-care-workers (Accessed June 28, 2024).

[4] National Nurses United, "Unions, public health, and occupational safety organizations call for permanent OSHA Covid-19 standards for health care and other workers," December 16, 2021, https://www.nationalnursesunited.org/press/unions-public-health-and-occupational-safety-organizations-call-for-permanent-osha-standards (Accessed June 28, 2024).

[5] National Nurses United, "National Nurses United testifies at OSHA's hearing on occupational exposure to Covid-19 in healthcare settings," April 28, 2022, https://www.nationalnursesunited.org/press/nnu-testifies-at-osha-hearing-on-occupational-exposure-covid-19 (Accessed June 28, 2024).

I. OSHA cannot simply defer to CDC guidance on infection control and prevention in health care settings because such guidance is outdated and based on flawed and disproven science.

A. OSHA has a legal obligation to weigh the best and latest available evidence when developing new standards.

The Occupational Safety and Health Act (OSH Act) directs OSHA's work to develop new standards, which are a key piece of OSHA's ability to uphold its mission to protect the health and safety of working people in the United States. The OSH Act includes specific considerations that OSHA must weigh when developing standards dealing with "toxic materials or harmful physical agents,"[6] or health hazards, including pathogens that transmit infectious diseases. When promulgating such health standards, OSHA:[7]

> …shall set the standard which most adequately assures, to the extent feasible, *on the basis of the best available evidence,* that no employee will suffer material impairment of health or functional capacity even if such employee has regular exposure to the hazard dealt with by such standard for the period of his working life. Development of standards under this subsection *shall be based upon research, demonstrations, experiments, and such other information as may be appropriate*. In addition to the attainment of the highest degree of health and safety protection for the employee, other considerations shall be the *latest available scientific data* in the field, the feasibility of the standards, and experience gained under this and other health and safety laws… [emphasis added].

The OSH Act clearly requires that, when developing health standards, OSHA *must* base such standards on the "best available evidence." Indeed, the courts have upheld that "so long as they are supported by a body of reputable scientific thought, the Agency is free to use conservative assumptions in interpreting data," with respect to health hazards, "risking error on the side of overprotection rather than underprotection."[8]

It is also clear that OSHA is required to consider the "latest available scientific data in the field" when developing such standards.[9] The D.C. Circuit has stated that when there is disputed scientific evidence in the record, OSHA must review the evidence on both sides and "reasonably resolve" the dispute.[10] OSHA's health standards must also attain the "highest degree of health and safety protection for the employee."

As a result of these statutory obligations, OSHA cannot simply defer to CDC guidance on infection control and prevention in health care settings because such guidance is outdated and based on flawed and disproven science.

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[6] 29 USC §655(b)(5)
[7] 29 USC §655(b)(5)
[8] *AFL-CIO v. Am. Petroleum Inst.,* 448 U.S. 607, 656, 100 S. Ct. 2844, 65 L. Ed. 2d 1010 (1980) ("Benzene")
[9] 29 USC §655(b)(5)
[10] *Pub. Citizen Health Research Grp. V. Tyson,* 796 F.2d 1479, 1500 (D.C. Cir. 1986)

B. Current CDC infection control guidance is outdated and based on flawed and disproven science on infectious disease transmission and prevention.

The CDC has multiple guideline documents that address infection control and prevention programs for hospitals and other health care facilities. Several of these documents describe an understanding of mechanisms and modes for infectious diseases transmission, which informs the precautions and recommendations included in the guideline. Chief among them, the CDC's 2007 *Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings* (2007 Isolation Precautions Guideline) reviews scientific data regarding the transmission of infectious agents in health care settings, discusses fundamental elements of infection control and prevention programs, and provides specific recommendations for health care facilities to prevent transmission of infectious diseases between staff and patients.[11] The 2007 Isolation Precautions Guideline serves as a resource regarding the CDC's understanding of infectious disease transmission mechanisms and application of measures to prevent transmission in health care settings. It describes three principal routes of transmission—contact, droplet, and airborne—and prescribes the types of personal protective equipment (PPE) to be used to protect against each type of transmission, amongst other measures:

- Contact transmission: The CDC states that contact transmission occurs when a microorganism is transferred from one infected person to another, either directly or via an intermediate object or person. Contact precautions include use of gown and gloves by health care workers for all interactions that may involve contact with the patient or potentially contaminated areas in the patient's environment.
- Droplet transmission: The CDC states that droplet transmission occurs when "respiratory droplets [defined as being >5 μm in size] carrying infectious pathogen transmit infection when they travel directly from the respiratory tract of the infectious individual to susceptible mucosal surfaces of the recipient, generally over short distances…." A distance of three to six feet from the infectious source has been defined as the "area of defined risk" for droplet transmission. Droplet precautions include use of "a mask (a respirator is not necessary) for close contact with infectious patient," and no special air handling or ventilation.[12]
- Airborne transmission: The CDC states that airborne transmission occurs "by dissemination of either airborne droplet nuclei or small particles in the respirable size range containing infectious agents that remain infective over time and distance." Airborne precautions include patient placement in an airborne infection

[11] Siegel, J.D., E. Rhinehart, et al, "2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings," last updated July 2023, Available at https://www.cdc.gov/infection-control/hcp/isolation-precautions/index.html (Accessed June 12, 2024).

[12] Siegel, J.D., E. Rhinehart, et al, "2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings," last updated July 2023, Available at https://www.cdc.gov/infection-control/hcp/isolation-precautions/index.html (Accessed June 12, 2024).

isolation room (AIIR), and use of a mask or respirator by health care workers, depending on disease-specific recommendations, donned prior to room entry.

The CDC also maintains additional guidance documents that pertain to infection prevention and control, including *Infection Control in Healthcare Personnel: Infrastructure and Routine Practices for Occupational Infection Prevention and Control Services*, updated in 2019,[13] and *Environmental Infection Control Guidelines*, published in 2003.[14] The CDC's *Environmental Infection Control Guidelines* includes a chapter on "Air," which describes droplet and airborne transmission similarly to the 2007 Isolation Precautions Guideline.

The CDC's description of transmission modes and precautions was written decades ago and last updated over 15 years ago. Even prior to publication of the 2007 Isolation Precautions Guideline, there was research into aerosol generation, particle dynamics, and infectious disease transmission that called into question the accuracy of CDC's transmission modes and droplet and airborne precautions.[15,16,17] In the intervening years, research has emerged that indicates that the CDC's distinction between droplet and airborne transmission is incorrect and based on historical errors and inaccurate assumptions. For a detailed description of this history, see the articles, *What were the historical reasons for the resistance to recognizing airborne transmission during the COVID-19 pandemic?*, published in 2022 in Indoor Air[18] and *How did we get here: what are droplets and aerosols and how far do they go? A historical perspective on the transmission of respiratory infectious diseases*, published in 2021 in Interface Focus.[19]

Briefly, investigation to understand the mechanisms of infectious disease transmission dates back thousands of years. The development of germ theory in the second half of the 19th century was a significant advancement in explaining how diseases spread, including through the air. In the following decades, research into infectious disease transmission intensified. A prominent epidemiologist, Charles Chapin, had lasting influence on how much of this research was interpreted—inaccurately.

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[13] Kuhar, D.T., R. Carrico, et al., "Infection Control in Healthcare Personnel: Infrastructure and Routine Practices for Occupational Infection Prevention and Control Services," October 25, 2019, Available at https://www.cdc.gov/infection-control/hcp/healthcare-personnel-infrastructure-routine-practices/index.html (Accessed June 28, 2024).

[14] Sehulster, L., R.Y.W. Chinn, et al. "Guidelines for Environmental Infection Control in Health-Care Facilities (2003)," Centers for Disease Control and Prevention, 2003, Available at https://www.cdc.gov/infection-control/hcp/environmental-control/index.html (Accessed June 21, 2024).

[15] Roy, C.J. and D.K. Milton, "Airborne Transmission of Communicable Infection—The Elusive Pathway," NEJM, 2004, 350(17): 1710-2.

[16] Tang, J.W., Y. Li, et al.,. "Factors involved in the aerosol transmission of infection and control of ventilation in healthcare premises," J Hospital Infection, 2006, 64(2): 100-14.

[17] Li, Y., X. Huang, et al., "Role of air distribution in SARS transmission during the largest nosocomial outbreak in Hong Kong," Indoor Air, 2005, 15(2): 83.

[18] 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, August 21, 2022.

[19] Randall, K., E.T. Ewing, et al., "How did we get here: what are droplets and aerosols and how far do they go? A historical perspective on the transmission of respiratory infectious diseases," Interface Focus, October 12, 2021.

Specifically, Chapin conceptualized "contact infection," where transmission occurred between people through direct contact or close proximity. He hypothesized that droplet spray better explained transmission in close proximity and that contact was more important than other modes of transmission. Chapin frequently downplayed the importance of airborne transmission, which was possible in close contact, but which he denied with no supporting evidence, conflating lack of evidence with evidence of absence. Ultimately, Chapin never proved his hypothesis that ease of infection in close proximity should be taken as proof of transmission by sprayed droplets, and yet his views were embraced by leadership at the newly formed CDC and became dominant over the next century.

William Wells, an engineer, and physician Mildred Wells were the first to rigorously study the behavior of spray-borne droplets vs airborne aerosols. In the first part of the 20th century, Wells and Wells conducted multiple studies that built clear evidence for airborne transmission of multiple diseases. In 1962, Wells, Cretyl Mills, and Richard Riley demonstrated airborne transmission of tuberculosis (TB) in a study of guinea pigs exposed to air from a hospital TB ward. This study led to TB being the first disease to be accepted as airborne in modern times. And yet there remained resistance to the idea of airborne transmission overall. There were disparate standards of evidence for different routes of transmission with many diseases being accepted as droplet without any substantive proof while establishing airborne transmission required extensive research on a case-by-case basis for each disease.

In the 1930's, Wells correctly identified 100 microns as the boundary between particles that fall to the ground quickly (>100 microns) versus those that remain aloft (<100 microns). However, the CDC and other public health agencies have long held 5 microns as the boundary—a major error. The scientists who uncovered these historical errors describe the source of these errors as follows:[20]

> In sum, tracing the origins of the 5 μm threshold, as cited in public health literature ultimately revealed a conflation between various understandings and definitions of 'aerosols'. Most contemporary sources use this threshold only to explain which particles stay suspended in the air for longer times, yet the 5 μm distinction is clearly *not* based on what *stays airborne* but on what *reaches deepest in the lungs, irrespective of a pathogen's tropism*. It is this conflation of particle transport through the air and particle deposition in the lungs that appears to be the source of the error in distinguishing between droplet and aerosol transmission routes as defined by a 5 μm threshold.

The source of this error originates in the 1960s when TB was the only accepted airborne infection, which led CDC leadership to incorrectly conflate the particle size that penetrates deep into the lungs, and is necessary for TB infection, with that which falls to the ground quickly. The persistence of this error continues through to the 21st century and has had

[20] Randall, K., E.T. Ewing, et al., "How did we get here: what are droplets and aerosols and how far do they go? A historical perspective on the transmission of respiratory infectious diseases," Interface Focus, October 12, 2021.

multiple negative consequences that have inhibited the effectiveness of dominant infection prevention and control paradigms, including those of the CDC:

> The problems created by this conflation are many. First, it fosters a misunderstanding among health professionals about most infectious particles (such as those carrying SARS-CoV-2) not remaining airborne. Second, it codifies a particle size based on the pathogenesis for TB that research shows does *not* apply to other infectious diseases. Viral receptors for SARS-CoV-2 are located throughout the respiratory tract for example, and initiation of infection in the nose and upper respiratory tract is thought to be important. Therefore, unlike for TB, aerosols of sizes all the way up to the inhalable limit of 100 μm are capable of initiating infection. Third, the size of a droplet upon emission is not necessarily the size upon inhalation and is not a size that necessarily remains constant after exhalation and inhalation, due to evaporation and rehydration. If a reference to a specific droplet size needs to be made, a standardized procedure for such measurement is key. A size cut-off and dichotomy are useful for general conceptualization and broad understanding of the route of exposure and control measures. However, a detailed understanding of the droplet size physics, the flow dynamics (in space and time), and their measurement are critical to providing sound scientific underpinning of interventions and to eliminating inconsistencies in public health guidelines and associated false debates.

Thus, it is clear that the CDC's current droplet/airborne paradigm to describe infectious disease transmission modes between people and to prescribe the precautions necessary to prevent transmission is outdated and based on significant scientific errors. Therefore, OSHA cannot rely on CDC's current infection control and prevention guidance when crafting an Infectious Diseases standard to protect health care workers.

II. OSHA must follow the best and latest available evidence on infectious disease transmission mechanisms, which differs substantially from CDC's current infection control guidance.

Ample scientific evidence indicates that infectious disease transmission cannot be split into two distinct modes (droplet vs airborne) but exists along a continuum. Consensus among scientific experts in a variety of disciplines is that a more accurate depiction of the evidence on infectious disease transmission would be a single category of aerosol transmission or inhalation transmission through the air.

Indeed, the World Health Organization assembled a group of scientific experts to formulate a new terminology and description of infectious disease transmission through the air. This group, which was comprised of experts in diverse fields including epidemiology, microbiology, clinical management, infection prevention and control, bioengineering, physics, air pollution, aerosol science, aerobiology, public health and social measures, occupational health, and social science, authored a global technical consultation report that

was published on April 18, 2024.[21] The report reviews updated science on infectious diseases transmission and proposes a new terminology for infectious diseases that transmit through the air.

The WHO's report represents significant progress in recognizing the science on aerosol transmission of infectious diseases and, importantly, finally leaves behind the faulty, disproven droplet-airborne dichotomy. Specifically, the WHO report proposes a new descriptor, "through the air," to characterize an infectious disease where the main mode of transmission involves the pathogen traveling through or being suspended in the air—similar to the use of the terms waterborne and bloodborne to describe general transmission modes for infectious diseases. Under this new umbrella term, there are two descriptors:

- Airborne transmission/inhalation transmission occurs when infectious respiratory particles—which are generated by an infected individual when they breathe, speak, sing, cough, sneeze, etc.—enter the respiratory tract of another person and cause infection, regardless of the size of the particles or distance travelled.
- Direct deposition describes when infectious particles are deposited directly on the exposed facial mucosal surfaces (i.e., eyes, nose, mouth) of another person and then cause infection, again regardless of particle size.

These terms explicitly move away from the size-based droplet-airborne paradigm, which is an essential step forward in recognizing the most up-to-date scientific research on infectious disease transmission. While the WHO report does not deal with how the new terminology should shape protective measures, such as what types of PPE should be used by health care workers caring for patients infected with pathogens that transmit through the air, the WHO report does better recognize the scientific research that has found that respiratory particles are emitted in a wide range of sizes and can remain suspended in and travel through the air for long times and distances. The WHO report also provides better recognition of the multitude of factors that can influence transmission through the air, such as temperature, humidity, time, dose/concentration, and ventilation or removal rate. Additionally, many organizations have weighed in on the issue as it applies to SARS-CoV-2/Covid-19 because it became clear early in the Covid-19 pandemic that the CDC's droplet-airborne paradigm and underlying assumptions led them to recommend inadequate protective measures for the virus. Organizations that have advocated for better recognition of aerosol/inhalation transmission include:

- In 2021, National Nurses United and 44 allied unions and organizations sent a petition urging the CDC to update its Covid-19 guidance to fully reflect the latest scientific evidence regarding SARS-CoV-2 transmission through aerosols that

[21] World Health Organization, "Global technical consultation report on proposed terminology for pathogens that transmit through the air," April 18, 2024, Available at https://www.who.int/publications/m/item/global-technical-consultation-report-on-proposed-terminology-for-pathogens-that-transmit-through-the-air (Accessed June 21, 2024).

infected people emit when they breathe, speak, cough, sneeze, or sing.[22] Over 12,000 individuals signed this petition.

- A group of experts sent a letter in 2021 urging the White House, CDC, and National Institutes of Health (NIH) to take immediate action to address SARS-CoV-2 inhalation exposure.[23]
- The American Industrial Hygiene Association published a joint consensus statement[24] to call on the CDC and the Occupational Safety and Health Administration (OSHA) to issue guidance preventing occupational exposures due to aerosol transmission of SARS-CoV-2. Below are co-sponsors of the statement.
    - American Conference of Governmental Industrial Hygienists
    - American Association of Aerosol Research
    - Association of Occupational Health Professionals in Healthcare
    - American Thoracic Society
    - Association of Schools & Programs of Public Health
    - National Association of Occupational Health Professionals
    - Occupational Health Clinics for Ontario Workers, Inc.
    - Organization for Safety Asepsis and Prevention
    - Society of Critical Care Medicine
- ASHRAE released new guidance in 2021 to address control of airborne infectious aerosol exposure.[25]
- The American Public Health Association (APHA) sent a letter to the U.S. Subcommittee on Workforce Protections on March 10, 2021, urging the CDC to update its guidelines that are consistent with the scientific evidence of inhalation risk. "The best scientific evidence indicates that inhalation is the primary route of transmission of SARS-CoV-2. OSHA standards and CDC guidelines must be updated to fully recognize the significant risk of exposure to the virus through inhalation."

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

[23] Bright, R., L.M. Brosseau, et al., "Re: Immediate Action is Needed to Address SARS-CoV-2 Inhalation Exposure," February 15, 2021, Available at https://aiha-assets.sfo2.digitaloceanspaces.com/AIHA/uploads/PressReleases/Immediate-Action-to-Address-Inhalation-Exposure-to-SARS-CoV-2_2142021.pdf (Accessed August 28, 2024).

[24] 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, February 1, 2021, Available at 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 (Accessed August 28, 2024).

[25] ASHRAE Epidemic Task Force, "Core Recommendations for Reducing Airborne Infectious Aerosol Exposure," January 6, 2021, Available at https://www.ashrae.org/file%20library/technical%20resources/covid-19/core-recommendations-for-reducing-airborne-infectious-aerosol-exposure.pdf (Accessed August 28, 2024).

- In October 2023, multiple organizations cosponsored a workshop examining the science on aerosol transmission and discussing the need for CDC to fully recognize that science in order to protect health care workers.[26] Sponsoring organizations include:
    - AFL-CIO
    - AIHA
    - APHA-Occupational Health and Safety Section
    - Association of Occupational and Environmental Clinics
    - Association of Occupational Health Professionals in Healthcare
    - Canadian Aerosol Transmission Coalition
    - Center for Infectious Disease Research and Policy (CIDRAP)
    - Health Watch USA
    - National Emerging Special Pathogens Training & Education Center
    - People's CDC
    - University of Maryland School of Public Health
- In 2023, National Nurses United and over 50 allied unions and organizations sent a petition urging the CDC's Healthcare Infection Control Practices Advisory Committee (HICPAC) to fully recognize the science on aerosol transmission of SARS-CoV-2 and other respiratory pathogens.[27] Over 10,000 individuals signed this petition.
- In 2024, a group of nearly 500 experts and 57 organizations endorsed a Joint Consensus Statement urging the CDC's HICPAC to follow the science on aerosol transmission and respiratory protection and protect health care workers.[28]

It is clear that there is scientific consensus that the outdated, flawed airborne-droplet paradigm must be replaced with an updated understanding of the available scientific evidence on aerosol/inhalation transmission of infectious diseases.

Furthermore, OSHA has a statutory obligation to review the best available evidence pertaining to health standards, which clearly applies to its Infectious Diseases standard for health care. Below is a survey of some key publications to support OSHA's review of the best available evidence pertaining to infectious disease transmission in health care settings.

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[26] Rutgers School of Public Health, "Preventing Aerosol Transmissible Diseases: The Need for Protective Guidelines and Standards," October 13, 2023, https://rutgerstraining.sph.rutgers.edu/PreventATD/ (Accessed August 28, 2024).

[27] National Nurses United, "RE: HICPAC and the CDC Must Fully Recognize Aerosol Transmission and Protect Health Care Workers and Patients," August 21, 2023, Available at https://www.nationalnursesunited.org/sites/default/files/nnu/documents/NNU_petition_to_HICPAC_aerosol_transmission_and_HCW_and_patient_protections_08212023.pdf (Accessed August 28, 2024).

[28] "Joint Consensus Statement: Public Health Experts Urge CDC's Advisory Committee on Healthcare Infection Control Practices (HICPAC) to Follow the Science and Protect Health Care Workers and Patients," April 18, 2024, Available at https://www.nationalnursesunited.org/sites/default/files/nnu/documents/0424_APHA-AIHA_workgroup_on_HICPAC_final_statement_with_endorsements_04182024.pdf (Accessed August 28, 2024).

This list is not exhaustive; rather it centers literature reviews, studies, and other articles that focus on the general concepts of aerosol/inhalation transmission and particle dynamics and which provide a coherent synthesis of some of the best available research on these topics.

- Wang et al. provide a coherent overview of the available evidence supporting airborne transmission of multiple respiratory viruses, including aerosol generation, transport, and deposition. The article also discusses factors affecting the relative contributions of droplet-spray deposition versus aerosol inhalation.[29]
- Drossinos, Weber, and Stilianakis discuss technical issues with the droplet-airborne dichotomy, including multiple important factors that impact transmission risk that are ignored in this paradigm.[30]
- Tang, Tellier, and Li review evidence for aerosol transmission of different respiratory viruses and the implications of this evidence for infection control.[31]
- Drossinos and Stilianakis provide a brief overview of aerosol physics and its application to pathogen transmission through the air, which "are in conflict with the standard demarcation of the three respiratory pathogen transmission modes used in the medical literature [contact/droplet/airborne], whereby droplet transmission is viewed as distinct from airborne transmission."[32]
- Sun et al. discuss research into how human thermal plumes impact the dispersion and transport of aerosols in indoor spaces and likely impact transmission of infectious diseases through the air.[33] The research into human thermal plumes clearly illuminates the ways in which the CDC's description of transmission modes (droplet/airborne) are inaccurate in describing transmission dynamics.
- Bourouiba outlines research that has found that respiratory emissions are comprised both of mucosalivary particles and a multiphase turbulent gas cloud, which has significant implications for how and to where infectious particles may be transported.[34] Specifically, the author states that, "the locally moist and warm atmosphere within the turbulent gas cloud allows the contained droplets to evade evaporation for much longer than occurs with isolated droplets. Under these conditions, the lifetime of a droplet could be considerably extended by a factor of up to 1000, from a fraction of a second to minutes." The settling out and transport of

[29] Wang, C.C., K.A. Prather, et al., "Airborne transmission of respiratory viruses," Science, 2021, 373(6558).

[30] Drossinos, Y., T.P. Weber, Nikolaos I. Stilianakis, "Droplets and aerosols: An artificial dichotomy in respiratory virus transmission," Health Science Reports, 2021, 4(2): e275.

[31] Tang, J.W., R. Tellier, and Y. Li, "Hypothesis: All respiratory viruses (including SARS-CoV-2) are aerosol-transmitted," Indoor Air, January 31, 2022.

[32] Drossinos, Y. and N.I. Stilianakis, "What aerosol physics tells us about airborne pathogen transmission," Aerosol Science and Technology, 2020, 54(6): 639-43.

[33] Sun, S., J. Li, and J. Han, "How human thermal plume influences near-human transport of respiratory droplets and airborne particles: a review," Environmental Chemistry Letters, 2021, 19: 1971-82.

[34] Bourouiba, L., "Turbulent Gas Clouds and Respiratory Pathogen Emissions: Potential Implications for Reducing Transmission of COVID-19," JAMA, March 26, 2020 323(18): 1837-8.

respiratory particles depends on a multitude of factors, not just their size, but also the degree of turbulence, speed of the gas cloud, and ambient environmental factors.

- Rezaei and Netz provide a detailed overview of factors impacting water evaporation from respiratory droplets, which impacts the length of time they remain suspended in the air and has implications for transmission modes through the air for infectious diseases.[35]
- Zuo, Uspal, and Wei review the pathway of airborne transmission, including the mechanisms by which aerosols disperse through the air as well as lung deposition and related mechanics.[36] While the article has a focus on SARS-CoV-2, much of the science applies to other pathogens.
- Scheuch provides a review of the evidence regarding spread of viruses via patient's exhalations via breathing (in absence of cough or sneeze).[37]
- Gralton et al. reports on results finding that a majority of individuals with symptomatic respiratory infections, including influenza A and B, and human metapneumovirus, produced both large (>5 um) and small (≤5 um) particles containing viral RNA.[38]
- Jones and Brosseau analyze the literature and propose a category of "aerosol transmission," which would more accurately reflect the scientific evidence than the droplet-airborne paradigm.[39] They propose criteria to establish biological plausibility for aerosol transmission of pathogens.
- Wei and Li discuss the research on the production and release of respiratory aerosols, their transport and dispersion in indoor environments, and exposure to susceptible hosts.[40]

There is ample scientific literature underlining the need to redefine transmission of infectious diseases to replace the droplet-airborne dichotomy. Such a redefinition is essential to formulating effective control measures to protect worker health and safety.

[35] Rezaei, M. and R.R. Netz, "Airborne virus transmission via respiratory droplets: Effects of droplet evaporation and sedimentation," Current Opinion in Colloid & Interface Science, 2021, 55: 101471.

[36] Zuo, Y.Y., W.E. Upsal, and T. Wei, "Airborne Transmission of COVID-19: Aerosol Dispersion, LungDeposition, and Virus Receptor Interactions," ACS Nano, 2020, 14: 16502-24.

[37] Scheuch, G., "Breathing Is Enough: For the Spread of Influenza Virus and SARS-CoV-2 by Breathing Only," J Aerosol Medicine and Pulmonary Drug Delivery, 2020, 33(4).

[38] Gralton, J., E.R. Tovey, et al., "Respiratory virus RNA is detectable in airborne and droplet particles," J Medical Virology, 2013, 85(12): 2151-9.

[39] Jones, R. and L. Brosseau, "Aerosol Transmission of Infectious Disease," J Occupational and Environmental Medicine, 2015, 57(5): 501-8.

[40] Wei, J. and Y. Li, "Airborne spread of infectious agents in the indoor environment," Am J Infection Control, 2016, 44(9): S102-6.

III. When the best available science is followed, multiple measures become essential to protect health care workers from infectious diseases, but these measures are not effectively addressed by CDC's current guidance.

OSHA has an obligation to establish new health standards "on the basis of the best available evidence."[41] It is clearly established that the CDC's current description of transmission modes for infectious diseases (droplet-airborne paradigm) does not reflect the best available evidence regarding infectious disease transmission and, indeed, is contradicted by much of it. When the best available science on aerosol/inhalation transmission is recognized, the following control measures are necessary—in combination—to prevent exposures to and transmission of infectious diseases to health care workers:

- Ventilation and air cleaning in all areas of the facility, in addition to airborne infection isolation rooms—to reduce concentration of infectious aerosols.
- Source control, including robust procedures to proactively identify and promptly isolate infectious/potentially infectious individuals—to reduce and prevent emission of infectious aerosols into the air.
- PPE, including the importance of NIOSH-approved, fit-tested respirators used within an OSHA-compliant respiratory protection program—to protect health care workers who may be exposed to infectious aerosols while providing patient care or performing other job duties.
- Exposure surveillance and notification and contact tracing—to promptly identify cases among employees to enable action to prevent onward transmission and to provide employees the ability to promptly access to treatment.
- Paid sick leave and medical removal benefits—to ensure that employees who are infected are able to remain out of the workplace to prevent onward transmission without loss of pay or other benefits.
- Access to vaccinations, which may reduce the risk of infection, transmission, and serious illness (depending on the type of vaccine)—to ensure that employees are able to access this protection free of charge.

Further, when the best available science is applied in the selection of control measures to prevent infectious diseases exposures and transmissions to health care workers, it becomes clear that the CDC's current infection control and prevention guidance falls far short of achieving "the attainment of the highest degree of health and safety protection for the employee"—the standard to which OSHA is held.[42]

As described as follows, CDC's current infection prevention and control guidance does not adequately address these prevention measures. Thus, OSHA cannot simply rely upon CDC's current infection prevention and control guidance and uphold the agency's statutory obligations.

[41] 29 USC §655(b)(5)
[42] 29 USC §655(b)(5)

III.A. Ventilation is an essential prevention measure, but CDC's guidance on ventilation to prevent infectious disease transmission is outdated and inadequate.

Ventilation is an important prevention measure because it can significantly reduce the concentration of infectious aerosols in indoor spaces, which reduces transmission risk. Ventilation provides clean air, either outdoor air or air that has been cleaned via filtration or other methods, which dilutes air contaminated with infectious aerosols and/or other contaminants. Higher concentrations of infectious aerosols can increase the risk of transmission, especially in health care settings where there are, by default, populations vulnerable to infection and serious disease (e.g., patients who are immunocompromised, patients who have received organ transplants, patients undergoing cancer treatment, etc.). Many health care workers may also be at higher risk of infection or severe disease due to age, immunocompromise status, or other factors.

Studies have documented the importance of ventilation to controlling infectious disease transmission. For example:

- A systematic review conducted by a multidisciplinary panel of medical and engineering experts evaluated the literature and concluded that "there is strong and sufficient evidence to demonstrate the association between ventilation and the control of airflow directions in buildings and the transmission and spread of infectious diseases such as measles, TB, chickenpox, anthrax, influenza, smallpox, and SARS."[43]
- One study modeled short-range airborne transmission of SARS-CoV-2, which has been generally accepted as a major contributor to transmission of the virus.[44] They found that ventilation was an essential component for minimizing infection risk in indoor spaces, especially those with high-intensity activity or densely populated spaces.
- Another modeling study found that, where ventilation is poor and/or the environment is crowded, airborne transmission can occur at longer distances than would occur with good ventilation.[45] The study utilized exposure models and applied them to multiple case studies of SARS-CoV-2 outbreaks. Essentially, they found that poor ventilation can, in effect, put people in close contact with each other via air even if they are physically far apart.

CDC's current guidance that addresses ventilation for infection control is insufficient and outdated. The main CDC guidance document that addresses ventilation—*Guidelines for*

[43] Li, Y., G.M. Leung, et al., "Role of ventilation in airborne transmission of infectious agents in the built environment—a multidisciplinary systematic review," Indoor Air 2007, 17: 2-18.

[44] Jia, W., J. Wei, et al., "Exposure and respiratory infection risk via the short-range airborne route," Building and Environment, 2022, 219: 109166.

[45] Chen, W., H. Qian, et al., "Extended short-range airborne transmission of respiratory infections," J Hazardous Materials, 2022, 422(15): 126837.

Environmental Infection Control in Health-Care Facilities—was last updated in 2003.[46] In this document, the CDC takes a very narrow view of which pathogens are transmissible through air. Additionally, this document recommends that health care facilities follow guidance on ventilation that was published in 2001 by the American Institute of Architects (AIA). This is reference is out of date and no longer applicable. AIA no longer publishes these guidelines—the Facility Guidelines Institute (FGI) does.[47] FGI has updated the document five times in the intervening years. Beginning in 2010, FGI incorporates ASHRAE's Standard 170- Ventilation of Health Care Facilities, which addresses health care ventilation standards and is continuously updated.[48,49] CDC's current guidance regarding ventilation for preventing and controlling infectious disease transmission is outdated and inadequate.

III.B. Source Control, Including Screening, Isolation, and Masks, is essential to prevent infectious disease transmission, but CDC's current guidance is inadequate.

Effective source control in health care facilities involves multiple measures to identify infectious/potentially infectious cases and prevent emission of infectious aerosols into air shared with susceptible individuals. Source control includes measures like patient and visitor screening, isolation, and mask use. The consequences of inadequate source control can be significant for patients and health care workers. For example, a study examining a large dataset from the UK found that hospital-onset patient Covid-19 cases resulted in substantially more onward transmission compared to community-acquired cases among hospitalized patients.[50]

Timely and thorough patient and visitor screening is essential to promptly identify infectious/potentially infectious cases, which is necessary to enable implementation of measures to prevent onward transmission, such as isolation. Experiences in health care facilities throughout the Covid-19 pandemic have underlined the importance of prompt identification and isolation. Transmission has occurred frequently where infectious Covid-19 cases were not promptly identified. For example, epidemiologic analysis and genome sequencing found that unidentified cases—such as health care workers or asymptomatic

[46] Sehulster, L.M., R.Y.W. Chinn, et al., "Guidelines for Environmental Infection Control in Health-Care Facilities," Centers for Disease Control and Prevention, Healthcare Infection Control Practices Advisory Committee, 2003, Available at https://www.cdc.gov/infection-control/hcp/environmental-control/index.html (Accessed August 28, 2024).

[47] Facility Guidelines Institute, "FGI *Guidelines* Documents," https://www.fgiguidelines.org/guidelines/editions/ (Accessed July 19, 2024).

[48] Facility Guidelines Institute, "Major Additions and Revisions," 2022 https://fgiguidelines.org/wp-content/uploads/2022/10/2022-Hosp-Major-additions-and-revisions.pdf (Accessed July 19, 2024).

[49] ANSI/ASHRAE/ASHE Standard 170-2017, Ventilation of Health Care Facilities," https://www.ashrae.org/technical-resources/standards-and-guidelines/standards-addenda/ansi-ashrae-ashe-standard-170-2017-ventilation-of-health-care-facilities (Accessed July 19, 2024).

[50] Lindsey, B.B., C.J. Villabona-Arenas, et al., "Characterising within-hospital SARS-CoV-2 transmission events using epidemiological and viral genomic data across two pandemic waves," Nature Communications, 2022, 13: 671.

patients—were important vectors of transmission in health care settings.[51] Similarly, another study found that a third of hospital-acquired Covid-19 cases were traceable back to cases where acquisition was from a community Covid-19 case where the diagnosis had not been made within 48 hours of admission to the hospital.[52]

This issue does not exist solely with Covid-19. In fact, for TB, there are likely many unrecognized exposures to both patients and health care workers because cases are always not identified in a timely fashion. One study found that 15.9 percent of newly diagnosed TB patients had a prior respiratory-related visit to a hospital or emergency department within the previous 30 days in California and 25.7 percent had a visit in the previous 90 days.[53] An important consideration for patient and visitor screening is that symptom screening alone will not detect all cases for at least some common pathogens. Asymptomatic and presymptomatic cases and transmission occur frequently with SARS-CoV-2/Covid-19, influenza, and RSV.[54,55,56,57,58] Exposure history and other risk factors should also be screened.

Once patients who are or may be infectious are identified, then measures need to be put in place to prevent emission of infectious aerosols into air shared with other patients, visitors, and health care workers. These measures include isolation and implementation of transmission-based precautions, including PPE for health care workers providing care for the infectious/potentially infectious patient. Engineering controls exist to aid in source control, including airborne infection isolation rooms (AIIRs), portable HEPA filters, and others. AIIRs are specially designed rooms with ventilation systems that provide negative pressure to surrounding areas and either exhaust room air directly outdoors or filter air through a HEPA filter prior to recirculation. These measures help contain infectious aerosols and prevent spread to other areas of the facility, though continued maintenance and verification of negative pressure are important.

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[51] Snell, L.B., C.L. Fisher, et al., "Combined epidemiological and genomic analysis of nosocomial SARS-CoV-2 infection early in the pandemic and the role of unidentified cases in transmission," Clinical Microbiology and Infection, 2022, 28(1): 93-100.

[52] Khonyongwa, K., S.K. Taori, et al., "Incidence and outcomes of healthcare-associated COVID-19 infections: significance of delayed diagnosis and correlation with staff absence," The Journal of Hospital Infection, October 2020, 106(4): 663-72.

[53] Miller, A.C., L.A. Polgreen, et al., "Missed Opportunities to Diagnose Tuberculosis are Common Among Hospitalized Patients and Patients Seen in Emergency Departments," Open Forum Infectious Diseases, 2015, 2(4): ofv171.

[54] Arons, M.M., K.M. Hatfield, et al., "Presymptomatic SARS-CoV-2 Infections and Transmission in a Skilled Nursing Facility," NEJM, May 28, 2020, 382(22): 2081.

[55] Cohen, C., J. Kleynhans, et al., "Asymptomatic transmission and high community burden of seasonal influenza in an urban and a rural community in South Africa, 2017–18 (PHIRST): a population cohort study," The Lancet Global health, 2021, 9(6): 863-74.

[56] Elder, A.G., E.A.B. McCruden, and W.F. Carman, "Incidence and recall of influenza in a cohort of Glasgow healthcare workers during the 1993–4 epidemic: results of serum testing and questionnaire," BMJ, 1996, 313:1241.

[57] Moreira, L.P., A.S.A. Watanabe, et al., "Respiratory syncytial virus evaluation among asymptomatic and symptomatic subjects in a university hospital in Sao Paulo, Brazil, in the period of 2009-2013," Influenza and Other Respir Viruses, 2018, 12(3): 326-30.

[58] Inkster, T., K. Ferguson, et al., "Consecutive yearly outbreaks of respiratory syncytial virus in a haemato-oncology ward and efficacy of infection control measures," Journal of Hospital Infection, 2017, 96(4): 353-9.

During the Covid-19 pandemic, additional engineering controls have received increased attention. Portable HEPA filters can provide additional air cleaning to remove infectious aerosols from shared air to reduce the risk of onward transmission. For example, studies have found that the use of portable HEPA filters can effectively decrease the particle concentration and spread in hospital wards.[59,60] Another study found significantly reduced invasive aspergillosis infections among hospitalized patients in wards with portable HEPA filters compared to those without (adjusted odds ratio 0.49, 95%CI 0.28-0.85).[61] Ventilated headboards have been evaluated by the National Institute for Occupational Safety and Health (NIOSH) and can help capture infectious aerosols near the site of generation (i.e., near the patient's respiratory tract).[62]

Additionally, use of masks to aid in source control has gained recognition throughout the Covid-19 pandemic as an effective strategy. Indeed, evidence has grown to support the effectiveness of mask-use by all individuals present in a shared space to reduce emissions of infectious aerosols in order to reduce transmission risk. For example:

- Transmission in hospitals occurred more frequently when there was prolonged close contact with unmasked, unrecognized infectious individuals.[63]
- Use of face masks by health care workers reduced respiratory infections among hospitalized neonates.[64]
- A systematic review found that patient mask use decreased the detection of SARS-CoV-2 aerosols in air and on surfaces in a hospital setting.[65]
- A study found that requiring all staff to wear masks during influenza season led to reduced influenza transmission when there were at least three influenza patients in the ward at the same time. Years with strict universal masking had about 50 percent reduction in nosocomial influenza rates and 85 percent reduction in nosocomial mortality.[66]

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[59] Qian, H., Y. Li, et al., "Particle removal efficiency of the portable HEPA air cleaner in a simulated hospital ward," Building Simulation, 2010, 3: 215-24.

[60] Buising, K.L., R. Schofield, et al., "Use of portable air cleaners to reduce aerosol transmission on a hospital coronavirus disease 2019 (COVID-19) ward," Infection Control & Hospital Epidemiology, 2021, 43(8).

[61] Salam, Z.-H.A., R.B. Karlin, et al., "The impact of portable high-efficiency particulate air filters on the incidence of invasive aspergillosis in a large acute tertiary-care hospital," Am J Infection Control, 2010, 38(4): e1-e7.

[62] Mead, K.R., "NIOSH Ventilated Headboard Provides Solution to Patient Isolation During an Epidemic," April 14, 2020, https://blogs.cdc.gov/niosh-science-blog/2020/04/14/ventilated-headboard/ (Accessed July 25, 2024).

[63] Smith, L., C.P. Morris, et al., "Severe acute respiratory coronavirus virus 2 (SARS-CoV-2) exposure investigations using genomic sequencing among healthcare workers and patients in a large academic center," Infection Control and Hospital Epidemiology, May 2023, 44(5).

[64] Altmann, T., S. Zuhairy, et al., "Use of face masks reduces the rate of neonatal respiratory infections," J Hospital Infection, May 12, 2023, 138: 94-6.

[65] Ribaric, N.L., C. Vincent, et al., "Hidden hazards of SARS-CoV-2 transmission in hospitals: A systematic review," Indoor Air, Dec 4, 2021.

[66] Ambrosch, A., D. Luber, et al., "A strict mask policy for hospital staff effectively prevents from nosocomial influenza infections and mortality: monocentric data from five consecutive influenza seasons," J Hospital Infection, Dec 17, 2021, 121: 82-90.

- Comparison of secondary attack rates with Covid-19 after masked and unmasked exposures found that mask use by both parties reduced the secondary attack rate by about half.[67]
- Close contacts with unmasked exposure had about 40 percent higher odds of infection compared to those with only masked exposures.[68]
- Masks reduced the exhaled viral load in subjects infected with SARS-CoV-2.[69] N95 respirators provided superior source control to cloth and surgical masks.
- Lab studies have also found that mask use reduces aerosol emissions.[70]

CDC's 2007 Isolation Precautions guidance falls far short of what is needed to adequately address source control. The current guidance includes a discussion of the importance of surveillance for health care-associated infections, including case-finding of single patients or clusters who are infected or colonized with "epidemiologically important organisms" for which transmission-based precautions may be required.[71] There is also a recommendation for health care facilities to "develop and implement systems for early detection and management… of potentially infectious persons at initial points of patient encounter… and at times of admission."[72] These are important considerations, but the current guidance is primarily focused on symptom screening and does not fully recognize the important role that asymptomatic/presymptomatic transmission plays for multiple common pathogens, like Covid-19, influenza, RSV, etc.

CDC's current guidance makes recommendations for placement of patients who may pose a transmission risk to others.[73] The CDC's guidance states that infectious patients should be placed in a single room, if one is available, and provides considerations for cohorting if a single room is not available. For pathogens categorized as droplet-transmitted, current CDC guidance recommends that facilities ensure that cohorted patients are physically separated by a curtain and at least three feet. These recommendations are clearly insufficient to

[67] Riley, J., J.M. Huntley, et al., "Mask Effectiveness for Preventing Secondary Cases of COVID-19, Johnson County, Iowa, USA," Emerging Infectious Diseases, Jan 2022, 28(1): 69-75.

[68] Rebmann, T., T.M. Loux, et al., "SARS-CoV-2 Transmission to Masked and Unmasked Close Contacts of University Students with COVID-19 — St. Louis, Missouri, January–May 2021," MMWR, Sept 10, 2021, 70(36): 1245-8.

[69] Lai, J., K.K. Coleman, et al., "Relative efficacy of masks and respirators as source control for viral aerosol shedding from people infected with SARS-CoV-2: a controlled human exhaled breath aerosol experimental study," eBioMedicine, 2024, 104: 105157.

[70] Lindsley, W.G., D.H. Beezhold, et al., "Efficacy of universal masking for source control and personal protection from simulated cough and exhaled aerosols in a room," J Occup Environ Hyg, Aug 2021, 18(8): 409-22.

[71] Siegel, J.D., E. Rhinehart, et al, "2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings," last updated July 2023, Available at https://www.cdc.gov/infection-control/hcp/isolation-precautions/index.html (Accessed June 12, 2024).

[72] Siegel, J.D., E. Rhinehart, et al, "2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings," last updated July 2023, Available at https://www.cdc.gov/infection-control/hcp/isolation-precautions/index.html (Accessed June 12, 2024).

[73] Siegel, J.D., E. Rhinehart, et al, "2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings," last updated July 2023, Available at https://www.cdc.gov/infection-control/hcp/isolation-precautions/index.html (Accessed June 12, 2024).

reduce transmission given evidence on transmission of pathogens through the air discussed above.

Similarly, the CDC's current guidance only recommends AIIR use for a limited set of pathogens classified as airborne-transmitted. Recommendations on other engineering controls, such as portable HEPA filters, are limited or non-existent. The scientific evidence discussed above underlines the ability of many more pathogens to transmit through the air than have been identified by the CDC, necessitating expanded use of engineering controls beyond current, limited CDC recommendations.

Additionally, current CDC guidance recommends respiratory hygiene/cough etiquette/source control, which is aimed only at patients with signs and symptoms of a respiratory infection and is mostly focused on covering coughs and sneezes.[74] CDC's recommendations around mask use for source control are inadequate, especially to respond to the role that asymptomatic/presymptomatic transmission plays in transmission of multiple pathogens.

CDC's guidance on source control, including patient and visitor screening, isolation, and mask use, are not based on the best available science and are inadequate to meet OSHA's standard to prevent "material impairment of health or functional capacity."[75]

III.C. Respiratory Protection and Other PPE are essential to protect health care workers from infectious diseases, but CDC's current guidance is outdated and inadequate.

PPE is commonly used in health care settings to prevent health care worker exposures to infectious diseases. There are multiple types of PPE available, such as gloves, gowns, coveralls, respirators, and masks. The best available science regarding aerosol/inhalation transmission of infectious diseases underlines the particular importance and necessity of utilizing respirators to prevent exposure to infectious aerosols to health care workers. Respirators are designed to filter the air breathed in by the wearer. There are different levels of respirators that are approved by NIOSH to meet required performance criteria.[76] Importantly, surgical and medical masks are designed to provide facial protection from splashes and sprays, not respiratory protection.[77] Surgical/medical masks do not provide the fit and filtration levels that are necessary to provide protection against inhaling infectious aerosols. For example, a case-control study found that no surgical masks passed

[74] Siegel, J.D., E. Rhinehart, et al, "2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings," last updated July 2023, Available at https://www.cdc.gov/infection-control/hcp/isolation-precautions/index.html (Accessed June 12, 2024).

[75] 29 USC §655(b)(5)

[76] National Institute for Occupational Safety and Health, National Personal Protective Technology Laboratory (NPPTL), "Respirator Approval Program," updated July 26, 2021, https://www.cdc.gov/niosh/npptl/respmanuf.html (Accessed July 23, 2024).

[77] Food and Drug Administration, "N95 Respirators, Surgical Masks, Face Masks, and Barrier Face Coverings," March 10, 2023, https://www.fda.gov/medical-devices/personal-protective-equipment-infection-control/n95-respirators-surgical-masks-face-masks-and-barrier-face-coverings (Accessed July 23, 2024).

fit tests on a group of male and female nurses.[78] Studies have found that surgical masks do not provide filtration of aerosols at comparable levels to respirators.[79] Surgical/medical masks cannot be used to protect health care workers from infectious aerosols; NIOSH-approved respirators are required.

Robust exposure and risk assessments are required to determine the situations in which respirators are necessary to prevent exposure and transmission risk to health care workers. Such assessments should evaluate multiple factors, such as what other control measures are in place (e.g., ventilation, how patients and visitors are being screened for infectious diseases and whether some infections, such as asymptomatic or presymptomatic infections, are likely to be missed, isolation protocols, etc.) and when, how, and for how long health care workers may be exposed to infectious aerosols. Respirators are needed to protect health care workers from inhaling infectious aerosols where there may be high enough concentrations to cause infection in workers, including workers who may be more vulnerable to infection/severe disease (e.g., older age, immunocompromised, pregnant, etc.).

Many health care employers are not conducting effective exposure and risk assessments. For example, one study evaluated respiratory protection programs at 28 hospitals in the Midwest.[80] Many hospitals' programs were missing a comprehensive risk assessment for aerosol/inhalation transmission of infectious diseases, with tuberculosis often being the only pathogen addressed. Plans also lacked adequate details about medical evaluation, fit testing, training, and program administrators. When health care employers do not conduct robust exposure and risk assessments, it means that protections, including respirators, are not effectively implemented and health care workers are not fully protected.

Yet, there is clear evidence of the need for respirators to protect heath care workers from inhaling infectious aerosols. A recently published meta-analysis provides an excellent overview of randomized control trials (RCTs) examining the use of respirators in health care settings.[81] This meta-analysis, which utilized a more robust approach to account for methodological concerns in reviewed studies than existing analyses, found that incidence of influenza-like illness among health care workers was significantly lower with use of an N95 respirator than a surgical mask (relative risk 0.80, 95% CI 0.65-0.99). Notably, continuous N95 respirator use—that is use during all possible exposures—was substantially more protective against clinical respiratory illness than medical masks (relative risk 0.48, 95%CI 0.35-0.65).

[78] De-Yñingo-Mojado, B., J. Madera-García, et al., "Fit factor compliance of masks and FFP3 respirators in nurses: A case-control gender study," J Adv Nurs, 2021, 77(7): 3073-82.

[79] Oberg, T. and L.M. Brosseau, "Surgical mask filter and fit performance," Am J Infection Control, 2008, 36(4): 276-82.

[80] Brosseau, L.M., L.M. Conroy, et al., "Evaluation of Minnesota and Illinois Hospital Respiratory Protection Programs and Health Care Worker Respirator Use," J Occup and Environ Hygiene, 2015, 12(1): 1-15.

[81] Greenhalgh, T., C.R. MacIntyre, et al., "Masks and respirators for prevention of respiratory infections: a state of the science review," Clinical Microbiology Reviews, 2024, 37(2): e00124-23.

CDC's current guidance fails to recognize this evidence. CDC's 2007 Isolation Precautions guidance only recommends use of respirators for a small number of select pathogens classified as airborne—primarily measles, varicella zoster, and TB. Surgical masks are recommended for pathogens that are classified as droplet-transmitted, such as influenza and pertussis, even though there is clear evidence for aerosol/inhalation transmission for these pathogens.[82,83] There are even some respiratory infectious diseases that the CDC has classified as contact-transmitted with no mask or respirator recommendation, such as RSV, despite evidence on aerosol/inhalation transmission and potential to cause severe disease.[84,85] It is abundantly clear that many more pathogens are capable of transmitting through the air, and thus require a respirator to fully protect health care workers, than CDC currently recognizes.

Fundamentally, CDC's recommendation to use a surgical mask to protect health care workers from droplet-transmitted pathogens fails to account for the best available science. CDC's conceptualization of droplet transmission occurs at close range and focuses exclusively on large aerosols or particles emitted by infectious individuals. Scientific research indicates that droplet transmission (i.e., the impaction of large particles on a susceptible individual's mucous membranes, which can only occur at close range) does not occur in the absence of inhalation of smaller aerosols.[86] CDC's recommendation to use a surgical masks in these situations fails to account for that science and ignores the fact that surgical masks are not designed to provide inhalation protection to the wearer. CDC's current guidance fails to recognize the best available science regarding respiratory protection.

III.D. Exposure Surveillance, Notification, and Follow-Up are essential to prevent infectious disease transmission, but CDC's current guidance is inadequate.

Exposure surveillance, notification, and follow up are important to ensure that health care workers who are exposed to infectious diseases are able to isolate, get tested, and access treatment as appropriate. Exposure surveillance and notification needs to include exposures to infectious patients, visitors, and other health care workers. The importance of exposure surveillance and contact tracing has been underlined during the Covid-19 pandemic, where transmission within hospitals has contributed substantially to onward transmission and pandemic burden.[87]

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[82] Tellier, R., "Aerosol transmission of influenza A virus: a review of new studies," Interface Focus, 2009, 6(6).

[83] Warfel, J.M., J. Beren, and T.J. Merkel, "Airborne Transmission of Bordetella pertussis," J Infectious Diseases, 2012, 206(6): 902-6.

[84] Kulkarni, H., C.M. Smith, et al., "Evidence of Respiratory Syncytial Virus Spread by Aerosol. Time to Revisit Infection Control Strategies?," Am J Respiratory and Crit Care Med, 2016, 194(3).

[85] Belongia, E.A., J.P. King, et al., "Clinical Features, Severity, and Incidence of RSV Illness During 12 Consecutive Seasons in a Community Cohort of Adults ≥60 Years Old," Open Forum Infectious Diseases, 2018, 5(12): ofy316.

[86] Chen, W., N. Zhang, et al., "Short-range airborne route dominates exposure of respiratory infection during close contact," Building and Environment, 2020, 176: 106859.

[87] Cooper, B.S., S. Evans, et al., "The burden and dynamics of hospital-acquired SARS-CoV-2 in England," Nature, 2023, 623: 132-8.

NNU members have observed significant issues when it comes to exposure surveillance and notification, which can result in onward transmission. Specifically, NNU members have frequently observed a lack of follow up when patients are identified as infectious after they have been in the health care setting for some time. Nurses report that their employers often do not officially inform the nurse they were exposed to the patient, even though they provided care to the patient while the patient was infectious. It is often only through word-of-mouth from other coworkers that nurses learn about these exposures. This can result in transmission to the nurse and onward transmission to other patients, health care workers, and the nurse's family if the employer fails to notify them of the exposure promptly.

Additionally, paid sick leave and maintenance of pay and benefits if a worker is removed from the workplace due to an exposure or infection are important measures to ensuring the health and safety of health care workers. Transmission can occur between patients and from patient to health care worker as well as between health care workers. Paid sick leave and medical removal benefits are important to preventing onward transmission to others because they enable health care workers to stay out of work without penalty when exposed or infected.

CDC's current guidance on exposure surveillance, notification, and follow up is inadequate.[88] While CDC's guidance includes important considerations that employers develop sick leave policies that encourage and enable employees to use them and to establish non-punitive reporting processes, the CDC's guidance does not sufficiently address the importance of conducting investigations to identify exposures when a patient is identified as infectious and notifying health care workers of those exposures. Additionally, the CDC's guidance does not provide for the fact that, if a health care worker is exposed at work, the employer must pay them lost time if they are restricted from the workplace due to the exposure.

It is clear that CDC's current guidance does not adequately address exposure surveillance, notification, follow-up, or other measures which are necessary to prevent infectious disease transmission in health care facilities.

IV. Even though the CDC is working to update its infection prevention and control guidance, there are significant issues and concerns with CDC's process and the proposed content; thus, OSHA cannot follow CDC guidance and must rely upon the best available science to uphold its statutory obligations when developing an Infectious Diseases standard to protect health care workers.

Recently, the CDC tasked its Healthcare Infection Control Practices Advisory Committee (HICPAC) with updating infection control guidance, beginning with the 2007 Isolation

[88] Centers for Disease Control and Prevention, "Infection Control in Healthcare Personnel: Infrastructure and Routine Practices for Occupational Infection Prevention and Control Services," 2019, Available at https://www.cdc.gov/infection-control/hcp/healthcare-personnel-infrastructure-routine-practices/exposure-managment.html (Accessed July 23, 2024).

Precautions guidance. HICPAC is a federal advisory committee with fourteen members as well as non-voting ex officio members and liaisons from various organizations.[89] Currently, there are eight members listed on the HICPAC roster who are primarily infection prevention managers.[90] HICPAC is governed by the Federal Advisories Committee Act.[91] HICPAC has established an Isolation Precautions Guideline Workgroup (IP Workgroup) to formulate proposals to update CDC's 2007 Isolation Precautions guidance.[92]

HICPAC's process has been marked by concerns about transparency and lack of essential expertise.[93] The IP Workgroup proceedings are closed to the public and meeting summaries have only been made available in response to multiple public information requests.[94] Public comment is invited at full HICPAC membership meetings, which are open to the public, but the number of commenters and time available for public comment has been restricted.[95] Based on publicly available information, it is clear that HICPAC's updates are based on goals and principles that run counter to OSHA's mission and statutory obligations, specifically:

- While HICPAC and its IP Workgroup have recognized the need to redefine the existing droplet-airborne paradigm based on updated science, HICPAC and its IP Workgroup have repeatedly referenced an orientation towards maintaining current/past practice around transmission-based precautions and basing recommendations on their members' opinions, rather than fully evaluating the updated scientific evidence.[96] For example, in the IP Workgroup meeting held on July 21, 2022, the Workgroup recognized that it is not possible, based on updated evidence, to establish where far vs near range is in terms of infectious disease

[89] Centers for Disease Control and Prevention, "HICPAC Charter," April 15, 2024, https://www.cdc.gov/hicpac/php/about/charter.html (Accessed July 29, 2024).

[90] Centers for Disease Control and Prevention, "HICPAC Roster," July 25, 2024, https://www.cdc.gov/hicpac/php/roster/index.html (Accessed July 29, 2024).

[91] U.S. General Services Administration, "Federal Advisory Committee Act (FACA) Management Overview," February 28, 2024, https://www.gsa.gov/policy-regulations/policy/federal-advisory-committee-management (Accessed July 29, 2024).

[92] Healthcare Infection Control Practices Advisory Committee, "Record of the Proceedings, March 24, 2022," Available at https://www.cdc.gov/hicpac/media/pdfs/2022-March-HICPAC-Summary-508.pdf (accessed July 29, 2024).

[93] National Nurses United, "Updates on the CDC Advisory Committee's efforts to weaken infection control guidance for health care," https://www.nationalnursesunited.org/cdc-and-hicpac (Accessed July 25, 2024).

[94] National Nurses United, "CDC Work Group is focused on weakening protections for health care workers and patients to create more flexibility for employers to prioritize profits," https://www.nationalnursesunited.org/cdc-hicpac-work-group (Accessed July 29, 2024).

[95] National Nurses United, "Updates on the CDC Advisory Committee's efforts to weaken infection control guidance for health care," https://www.nationalnursesunited.org/cdc-and-hicpac (Accessed July 25, 2024).

[96] Healthcare Infection Control Practices Advisory Committee, Centers for Disease Control and Prevention, "Record of the Proceedings: June 2, 2022," Available at https://www.cdc.gov/hicpac/media/pdfs/2022-June-HICPAC-Summary-508.pdf (Accessed August 28, 2024).
Meetings of the Healthcare Infection Control Practices Advisory Committee's Isolation Precautions Guideline Workgroup for the following dates: May 11, 2022, May 24, 2022, October 13, 2022, January 5, 2023, January 19, 2023, February 2, 2023, Available at https://www.nationalnursesunited.org/cdc-hicpac-work-group (Accessed August 28, 2024).

transmission, and yet, the Workgroup went on to use distance as a defining criteria for when respirators vs surgical masks would be used in their draft presented to HICPAC in November 2023.[97] This runs counter to OSHA's statutory obligation to establish standards dealing with toxic materials or harmful physical agents "on the basis of the best available evidence."[98]

- Early on in their discussions, the IP Workgroup established goals to reduce the use of certain control measures and proceeded to make recommendations based on those goals rather than based on hazard assessments and the evaluation of updated scientific evidence. For example, IP Workgroup members stated they had a goal to delink use of airborne infection isolation rooms (AIIRs) from PPE use and, based on information that has been made public available, have not conducted a hazard assessment or evaluated applicable scientific research.[99] This runs counter to OSHA's obligation to craft standards in a manner that ensure that "no employee will suffer material impairment of health or functional capacity even if such employee has regular exposure to the hazard dealt with by such standard for the period of [their] working life," which necessitates a hazard assessment and orientation towards worker protection.[100]
- HICPAC and its IP Workgroup have repeatedly stated their intention for updated guidance to recommend a minimal standard, which would maximize "flexibility" for health care employers and would enable employers to prioritize profits over protecting heath care workers and patients.[101] While OSHA's standards must require actions that are feasible for employers to take, OSHA's obligation is to ensure protections for workers.
- The draft that was unanimously approved by HICPAC in November 2023 indicates that the IP Workgroup and HICPAC are focused only on preventing "more than mild

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[97] Isolation Precautions Guideline Workgroup, Healthcare Infection Control Practices Advisory Committee, Centers for Disease Control and Prevention, Meeting summary for July 21, 2022, Available at https://www.nationalnursesunited.org/cdc-hicpac-work-group (Accessed August 28, 2024).

Healthcare Infection Control Practices Advisory Committee, Centers for Disease Control and Prevention, Meeting Materials for November 2-3, 2023, Available at https://www.cdc.gov/hicpac/php/meeting-materials/index.html (Accessed August 28, 2024).

[98] 29 USC §655(b)(5)

[99] Isolation Precautions Guideline Workgroup, Healthcare Infection Control Practices Advisory Committee, Centers for Disease Control and Prevention, Meeting summary for July 14, 2022, Available at https://www.nationalnursesunited.org/cdc-hicpac-work-group (Accessed August 28, 2024).

[100] 29 USC §655(b)(5)

[101] Healthcare Infection Control Practices Advisory Committee, Centers for Disease Control and Prevention, "Record of the Proceedings: November 3, 2022," Available at https://www.cdc.gov/hicpac/media/pdfs/2022-November-HICPAC-Summary-508.pdf (Accessed August 28, 2024).

Meetings of the Healthcare Infection Control Practices Advisory Committee's Isolation Precautions Guideline Workgroup for the following dates: August 18, 2022, September 15, 2022, November 17, 2022, February 16, 2023, Available at https://www.nationalnursesunited.org/cdc-hicpac-work-group (Accessed August 28, 2024).

illness," [102] which does not meet OSHA's statutory standard to prevent "material impairment of health or functional capacity" to employees.[103]

- HICPAC and the IP Workgroup have proposed to utilize face masks as protection against inhalation of hazardous aerosols for health care workers.[104] This would violate OSHA's Respiratory Protection Program Standard, which requires the use of NIOSH-approved respirators to protect employees from breathing contaminated air when engineering controls are not sufficient.[105]
- HICPAC and its IP Workgroup have discussed ways to reduce the amount of fit-testing required of health care employers, including by incorporating barrier face coverings as an intermediate level of mask. In 2022, a new consensus standard was developed to establish baseline standards for masks used for source control.[106] NIOSH has posted terminology to its website labeling masks meeting ASTM Standard F3502-21 as "Enhanced Performance" or "Enhanced Performance Plus" barrier face coverings.[107] NIOSH is explicit that these masks are for source control and cannot be used to replace NIOSH-approved respirators. And yet, HICPAC and its IP Workgroup have had explicit discussions regarding members' desire to incorporate Enhanced Performance/Enhanced Performance Plus barrier face coverings into health care workplaces.[108] To do so would enable health care employers to lower the floor on respiratory protection and would violate OSHA's Respiratory Protection Program standard, which mandates the use of NIOSH-approved respirators where needed to protect employees from inhalation hazards.

For these reasons, if OSHA were to follow, incorporate, or adopt CDC guidance—even updated guidance that is currently being developed by HICPAC—it would violate OSHA's statutory obligations. Thus, OSHA must follow the best available evidence to craft a

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[102] Healthcare Infection Control Practices Advisory Committee, Centers for Disease Control and Prevention, Meeting Materials for November 2-3, 2023, Available at https://www.cdc.gov/hicpac/php/meeting-materials/index.html (Accessed August 28, 2024).

[103] 29 USC §655(b)(5)

[104] Healthcare Infection Control Practices Advisory Committee, Centers for Disease Control and Prevention, Meeting Materials for November 2-3, 2023, Available at https://www.cdc.gov/hicpac/php/meeting-materials/index.html (Accessed August 28, 2024).

[105] 29 CFR 1910.134

[106] ASTM F3502-21, Standard Specification for Barrier Face Coverings, July 20, 2022, https://www.astm.org/f3502-21.html (Accessed July 29, 2024).

[107] National Institute for Occupational Safety and Health, "Making Enhanced Performance Barrier Face Coverings," June 2023, https://www.cdc.gov/niosh/topics/publicppe/barrier-face-coverings.html (Accessed July 29, 2024).

[108] Healthcare Infection Control Practices Advisory Committee, Centers for Disease Control and Prevention, Meeting Materials for November 2-3, 2023, Available at https://www.cdc.gov/hicpac/php/meeting-materials/index.html (Accessed August 28, 2024).

Meetings of the Healthcare Infection Control Practices Advisory Committee's Isolation Precautions Guideline Workgroup for the following dates: October 13, 2022, October 27, 2022, Available at https://www.nationalnursesunited.org/cdc-hicpac-work-group (Accessed August 28, 2024).

standard that protects health care workers from material impairment of health or functional capacity.

V. Health care employers are not effectively protecting health care workers from infectious diseases; thus, action is required to hold health care employers accountable to protecting the health and safety of workers.

Data from multiple sources indicates that health care employers are not effectively protecting health care workers from infectious diseases. In the spring of 2024, NNU conducted a nationwide survey regarding infectious disease practices in health care facilities.[109] This survey found that health care employers across the country are neglecting essential elements of infection prevention. For example:

- Only 12.5 percent of RNs report that patients are always screened for respiratory infectious disease at the point of entry to their health care facilities (e.g., TB, influenza, Covid-19, RSV, etc.). Nearly one in six RNs report that patients are never screened.
- A majority of RNs report inconsistent isolation of patients who have or might have a respiratory infectious disease; only 38.5 percent of RNs report that infectious/potentially infectious patients are always isolated.
- Many RNs report inadequate PPE usage at their health care facilities. Only 67.2 percent of RNs report that their facility uses a respirator for patients with TB, even though TB is well-recognized as aerosol transmitted and that a NIOSH-approved respirator is necessary for protection. Similarly, only 63.3 percent of RNs report that their facility uses a respirator for patients with Covid-19, which is aerosol-transmitted and requires a respirator.
- A very low proportion of nurses (15.4 percent) report that they are always notified of exposures to infectious diseases in a timely fashion.

As a result, RNs have experienced a high rate of work-related infections—64.9 percent of RNs report that they have sustained at least one infection from work, including the common cold, influenza, Covid-19, methicillin-resistant *Staphylococcus aureus* (MRSA), TB, other respiratory illnesses, shingles, norovirus, and other infections.

NNU's survey also found that RNs who work in California—the only state in the nation with an enforceable Aerosol Transmissible Diseases Standard—report higher utilization of protective measures and lower work-related infections than RNs working in other states. For example, RNs in California report more consistent screening (67.8 percent report "always," "often," or "sometimes") than in other states (61.3 percent) and more consistent

[109] National Nurses United, "NNU Infectious Diseases Survey Final Results: Health Care Employers Across the Country Neglect Essential Infection Prevention Measures; Strong Standards and Robust Enforcement are key to Protecting Health Care Workers and Patients," May 2024, Available at https://www.nationalnursesunited.org/sites/default/files/nnu/documents/0524_NNU_InfectiousDiseasesSurvey_Report.pdf (Accessed July 25, 2024).

isolation practices (84.2 percent report "always," "usually," or "sometimes") than other states (78.5 percent). Significantly higher proportions of RNs in California report respirator usage than in other states for TB (78.0 vs 62.6 percent), measles (40.0 vs 26.9 percent), Covid-19 (74.2 vs 58.4 percent), and pertussis (23.7 vs 13.4 percent). Only 60.7 percent of RNs working in California report ever having sustained an infection at work compared to 68.2 percent in other states. It is clear that having an enforceable standard in California has contributed to improved protections for health care workers, though ongoing enforcement in California is still required.

Indeed, other studies and surveys have documented similar issues related to lacking infection prevention and control protections in health care setting, high rates of work-related infections among health care workers, and burden of infections on health care workers. For example:

- It is estimated that at least 34,150 to 151,300 occupationally acquired influenza infections occur among health care workers annually in the United States.[110] These infections result in an estimated 60,520 symptomatic infections, resulting in 13,617 cases seeking ambulatory care, 605 cases seeking emergency department care, and 91 hospitalizations per year among health care workers. These estimates are for a small epidemic year; large epidemic years would see estimates three to four-fold higher.
- Rhinovirus infections are common among health care workers (37.7 percent in flu-negative samples among health care workers at one hospital over a two-year period).[111]
- Health care workers with influenza reported impairment of activities of daily living and missed work (average 12.1 hours).[112]
- Between 2001 and 2014, 6 percent of TB cases in New York City occurred among health care personnel.[113] Health care personnel with TB were more likely than other adults to have an isolate with multidrug resistance and to report a previous history of latent TB infection.
- Even in a hospital with few admissions due to TB, health care worker conversions occurred.[114] Health care workers in wards treating TB patients were over six times more likely to convert than those working on wards with no TB patients. In the

[110] Jones, R.M., and Y. Xia, "Annual Burden of Occupationally-Acquired Influenza Infections in Hospitals and Emergency Departments in the United States," Risk Analysis, 2018, 38(3): 442-53.

[111] Bellei, N., E. Carraro, et al., "Influenza and rhinovirus infections among health-care workers," Respirology, 2007, 12(1): 100-3.

[112] Henkle, E., S.A. Irving, et al., "Comparison of laboratory-confirmed influenza and noninfluenza acute respiratory illness in healthcare personnel during the 2010-2011 influenza season," Infect Control Hosp Epidemiol, 2014, 35(5): 538-46.

[113] Proops, D.C., J.A. Knorr, et al., "Epidemiology of tuberculosis among healthcare personnel in New York City," Internat J TB and Lung Disease, 2020, 24(6): 619-25.

[114] Liss, G.M., R. Khan, et al., "Tuberculosis infection among staff at a Canadian community hospital," Infect Control Hosp Epidemiol, 1996, 17(1): 29-35.

Emergency Department, which treated the greatest number of TB patients, at least 5 percent of staff converted. In the instances where conversions were associated with exposure to a specific TB patient, the involved patients had been in the hospital for at least four days prior to being isolated.

- Health care workers are estimated to be at 25 times greater risk of developing meningococcal disease than the general population.[115]
- Health care workers are estimated to have a 1.7 times higher risk of pertussis than the general population.[116]
- A literature review found a pooled MRSA colonization rate of 4.4 percent for health care workers, with the highest among nursing staff (6.9 percent).[117] These rates are substantially elevated compared to colonization rates of 1.3 percent in community members and 0.2 percent among community members when persons with health care contacts were excluded.[118]

Underreporting continues to be a significant issue in health care, especially related to infectious disease exposures and infections. The lack of exposure surveillance and notification in health care limits health care workers' ability to establish connections between their work-related exposures and infections, including for workers compensation cases. It is highly likely that the true toll of work-related infections on health care workers is much higher than the available data indicate.

Further, inadequate responses to the Covid-19 pandemic by health care employers have illuminated multiple issues in infection prevention and control in health care settings that must be addressed. NNU has conducted multiple national surveys of RNs regarding their working conditions during the Covid-19 pandemic. These surveys have repeatedly identified the failures of health care employers to effectively prepare for and respond to surges in Covid-19 patients requiring health care.[119]

In fact, many of the ways in which health care employers have failed to protect health care workers and patients from Covid-19 can be traced to inadequate CDC guidance that ignored available science. Early in 2020, CDC changed its infection prevention and control guidance for Covid-19 in health care settings and introduced the crisis and contingency standards.[120] It was abundantly clear, even at this early juncture, that the CDC's guidance

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[115] Gilmore, A., J. Stuart, and N. Andrews, "Risk of secondary meningococcal disease in health-care workers," Lancet, 2000, 356(9242): 1654-5.

[116] De Serres, G., R. Shadmani, et al., "Morbidity of Pertussis in Adolescents and Adults," J Infectious Diseases, 2000, 182(1): 174-9.

[117] Dulon, M., C. Peters, et al., "MRSA carriage among healthcare workers in non-outbreak settings in Europe and the United States: a systematic review," BMC Infectious Diseases, 2014, 14(363).

[118] Salgado, C.D., B.M. Farr, and D.P. Calfee, "Community-Acquired Methicillin-Resistant Staphylococcus aureus: A Meta-Analysis of Prevalence and Risk Factors," Clinical Infectious Diseases, 2003, 36(2): 131-9.

[119] National Nurses United, "Covid-19 and Infectious Diseases Surveys," https://www.nationalnursesunited.org/covid-19-and-infectious-disease-surveys (Accessed July 29, 2024).

[120] National Nurses United, "As CDC further weakens COVID-19 guidance, nurses outraged by failed federal, state, local, employer efforts stage day of action Wednesday to demand protections for nurses, patients,

was not based on the best available science, which had already begun to indicate that SARS-CoV-2 was aerosol transmitted. Subsequently, NNU members across the country witnessed their employers gathering up all available PPE, locking it up, and restricting RNs' access to it. In many cases, RNs who were caring for known Covid-positive patients were denied access to respirators, despite the employer reporting an adequate supply. When pressed, employers reported that CDC guidance allowed it.[121,122]

The toll of the failures of health care employers to protect health care workers from Covid-19 is staggering. There has been widespread resistance on the part of the health care industry to transparently provide information on health care worker infections and fatalities due to Covid-19. At the same time, federal, state, and local governments have failed to compel heath care facilities to provide this data. Studies have found that health care workers have experienced higher infection and severe illness rates than the general population.[123,124] NNU tracked health care worker fatalities due to Covid-19 using publicly available data sources. As of May 19, 2023, at least 5,752 health care workers, including 499 RNs, have died from Covid-19.[125]

The health care industry has experienced high turnover rates in recent years.[126] Many health care workers have cited working conditions, including lack of protections at work, and disregard for their health and safety by their employers as major reasons contributing to their decisions to leave their jobs.[127]

In addition, long Covid has exacted a significant toll on the nation's health care workers. Studies have documented high rates of long Covid among health care workers.[128] NNU's

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public," March 10, 2020, https://www.nationalnursesunited.org/press/cdc-further-weakens-covid-19-guidance-nurses-outraged-failed-federal-state-local-employer (Accessed July 29, 2024).

[121] 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, Available at https://democrats-edworkforce.house.gov/imo/media/doc/MuhinduraPascalineTestimony03112021.pdf (Accessed July 29, 2024).

[122] National Nurses United, "Deadly Shame: Redressing the Devaluation of Registered Nurse Labor Through Pandemic Equity," December 2020, Available at https://www.nationalnursesunited.org/sites/default/files/nnu/graphics/documents/1220_Covid19_DeadlyShame_PandemicEquity_WhitePaper_FINAL.pdf (Accessed July 29, 2024).

[123] 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 31, 2020, 5(9): e475-83.

[124] Mutambudzi, M., C. Niedwiedz, et al., "Occupation and risk of severe COVID-19: prospective cohort study of 120 075 UK Biobank participants," Occup Environ Med, 2020, 78(5): 307-14.

[125] 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, Available at https://www.nationalnursesunited.org/sites/default/files/nnu/documents/0321_Covid19_SinsOfOmission_Data_Report.pdf (Accessed July 29, 2024).

[126] Shen, K., J.C.P. Eddelbuettel, and M.D. Eisenberg, "Job Flows Into and Out of Health Care Before and After the COVID-19 Pandemic," JAMA Health Forum, 2024, 5(1): e234964.

[127] Minnesota Nurses Association, "Why We Left: Nursing Workforce Report," 2023, https://mnnurses.org/issues-advocacy/issues/why-we-left-nursing-workforce-report/ (Accessed July 29, 2024).

[128] U.K. Office for National Statistics, Table 4, March 2023, https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/datasets/alldatarelatingtoprevalenceofongoingsymptomsfollowingcoronaviruscovid19infectionintheuk (Accessed July 29, 2024).

January 2024 Covid-19 survey documented significant impacts, including tiredness or fatigue, memory or concentration difficulties, joint or muscle pain, headaches or migraines, difficulty breathing or shortness of breath, and other symptoms.[129] For nearly half of nurses with long Covid (41.3 percent), these symptoms lasted longer than six months. A majority of RNs who had Covid-19 at least once required time off to recover from post-Covid symptoms (58.4 percent). More than half of RNs who had Covid (53.1 percent) reported that their long Covid symptoms have affected their ability to work.

It is clear that infectious diseases place a tremendous burden on health care workers as a result of health care employers' neglect of prevention measures. CDC's guidance fails to effectively address the most up-to-date scientific evidence regarding infectious disease transmission and control. Thus, it is imperative that OSHA upholds its statutory obligation to craft standards based on the best available science, not CDC's guidance, in order to protect health care workers from infectious diseases.

Conclusion

RNs and other health care workers play a vital role in combatting infectious disease outbreaks—both on a daily basis and during worldwide pandemics. In these roles, RNs and other health care workers are exposed to a wide range of pathogens. And yet health care employers fail to fully protect health care workers from these hazards.

OSHA has begun the process to develop a standard to address these hazards in health care settings and has slated a notice of proposed rulemaking in the agency's Regulatory Agenda for November 2024.[130] OSHA has a clear statutory obligation when setting standards dealing with toxic materials or harmful physical agents to "set the standard which most adequately, to the extent feasible, on the basis of the best available evidence, that no employee will suffer material impairment of health or functional capacity even if such employee has regular exposure to the hazard dealt with by such standard for the period of [their] working life."[131] To meet these standards, OSHA must depart from CDC's current guidance, which is outdated and based on flawed, disproven paradigms. OSHA must evaluate the best available evidence and require robust protections for health care workers, including regarding ventilation, source control, respiratory protection, and exposure surveillance and notification.

NNU strongly urges OSHA to expediently publish the proposal on infectious diseases in health care settings and to ensure that such a proposal is based on a robust assessment of the most up-to-date and best available science.

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[129] National Nurses United, "Nurses face worsening working conditions amid winter surge in Covid and other respiratory viruses, as CDC looks to weaken infection control guidance," January 17, 2024, https://www.nationalnursesunited.org/ninth-covid-survey-nurses-face-worsening-working-conditions (Accessed July 29, 2024).

[130] DOL/OSHA Spring 2024 Regulatory Agenda (RIN:1218-AC46), https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202404&RIN=1218-AC46 (Accessed July 29, 2024).

[131] 29 USC §655(b)(5)

Sincerely,

Nancy Hagans, RN, BSN, CCRN
President, National Nurses United

cc: The Honorable Julie A. Su, Acting Secretary of U.S. Department of Labor

Senator Bernard Sanders, Chairman of the U.S. Senate Committee on Health, Education, Labor, and Pensions

Congressman Robert C. "Bobby" Scott, Ranking Member of the U.S. House of Representatives Committee on Education and Workforce