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**Written Testimony of Talisa Hardin, RN
Before the Select Subcommittee on the Coronavirus Crisis
of the House Oversight Committee
May 21st, 2020**

Briefing on: "Heroes of the Coronavirus Crisis: Protecting Front-line and Essential Workers During the Pandemic"

Good morning and thank you, Chairman Clyburn, Ranking Member Scalise, and members of the committee, for giving me the opportunity to share my experiences with you today. My name is Talisa Hardin, and I am a registered nurse at the University of Chicago Medical Center in Chicago, Illinois, and I am a proud member of National Nurses United, the largest union of registered nurses in the United States.

For the past two months, I have been taking care of patients with coronavirus. I am an ICU nurse, and work in the burn ICU. Since the beginning of the COVID-19 outbreak, our burn unit has been operating as a PUI unit – persons under investigation for COVID-19. Patients come to our unit when they are being tested for coronavirus. When they test positive for the coronavirus, they are sent to the COVID unit.

As a result, our unit is a revolving door for patients with coronavirus. The percentage of patients under investigation who eventually test positive for the virus is very high, but our hospital management has consistently refused to give nurses in my unit the protections that we need to avoid exposure and infection.

Before I tell you about my experiences as a nurse in the PUI unit of my hospital, I want to explain what the correct personal protective equipment for nurses and health care workers is for an emerging infectious disease. It is imperative that for any virus that may be transmissible through airborne particles, that all workers wear respirators. At minimum, we need N95 respirator masks, which must be fit tested to ensure adequate protection. N95s should not be reused between patients, they are single use respirators. Reuse of N95s greatly increases the likelihood of exposure. Increased protection is offered by powered air purifying respirators, PAPRs, which are necessary for aerosol generating procedures and are an effective and preferred alternative to N95s as they provide a higher level of protection, are reusable, and do not require fit testing. Additionally, we need face shields or goggles, gloves, coveralls and gowns. These materials must be impermeable to viral penetration, and fluid resistant or fluid impermeable. The use of surgical masks does not protect workers from airborne transmission of the virus.

Before the pandemic, nurses in the Burn ICU could access personal protective equipment and other supplies from the Kanban System. There is a supply room with supplies including N95 respirators, surgical masks, and bleach wipes. When the pandemic hit, hospital management took all of the supplies out of the room and told us that they wouldn't be stocked anymore.

At the beginning of the outbreak in Chicago, the hospital told us that nurses in the PUI unit did not need N95s, and that we would only be given surgical masks. They made this decision when the CDC weakened their guidance on health care worker protections. When the CDC recommended the use of surgical masks or cloth masks for health care workers, our hospital used that to justify the confiscation of N95s from our unit.

The nurses in my union immediately mobilized to demand the proper protections from our hospital. For the first three weeks of the crisis, nurses in the PUI unit, who were definitely caring for patients with coronavirus, were only provided with surgical masks. After three weeks of pressure from our union, the hospital capitulated slightly and allowed us to use N95s during aerosol generating procedures. But we were required to keep that N95 in a brown paper bag or an envelope, and to reuse it for additional aerosol generating procedures, putting nurses at increased risk of exposure.

Nurses continued to raise the alarm with management, and we had many conversations with management about the science that showed airborne transmission and the need for respirators at all times. As a nurse, it was deeply disappointing to listen to hospital attorneys, people who have zero experience with medical or nursing care, refuse to listen to health care professionals in their hospital. Management was consistently condescending and patronizing to our nurses.

The hospital management told us that they wouldn't give out N95s because they didn't want to run out of N95s before the end of the pandemic. They didn't have a shortage of N95s at the time, but they refused to use their supply. If nurses don't have protections, we get sick and we can't work, and some of us lose our lives. We can't protect patients in the future if we don't have nurses to care for them. We kept asking management: "would you rather run out of N95s or nurses?"

About four weeks ago, a full six weeks into the crisis, the hospital finally allowed nurses on the PUI unit to have an N95 for regular patient care. We were allowed one N95 each day, which means that we reuse the N95 for an entire shift.

Together, the PUI unit nurses have continued to pressure management to give us enough N95s so that we don't have to reuse them. In the past couple of weeks, we have been allowed to ask for additional N95s when needed.

While our access to N95 respirators has slowly improved over the course of the past two months, our hospital is still failing to protect us correctly. We still need to constantly don and doff our N95s, which increase our risk of exposure. We aren't given hospital issued scrubs, and as a result, we have to wear our own scrubs and take them home to wash, adding to the risk of bringing the virus home to our families. The hospital does not tell us when a patient we have been in contact with tests positive for the virus, or if a coworker we have been in contact with tests positive for the virus. Because our unit is a mixed unit, with many patients testing positive for COVID19, and others who do not have the virus, there are many moments during each shift where nurses do not or cannot wear our N95s, because of the risk of contaminating non COVID patients. If the hospital will not relay information to us, we can't know if we've been exposed.

Even if we do know that we've been exposed, we are not allowed to be tested for COVID19 unless we have symptoms. Nurses who have been exposed, and could be asymptomatic for the virus, are expected to work with patients without knowing whether or not they have COVID19. As a result, we could be putting patients at risk of getting the virus.

Nurses in the PUI unit feel especially vulnerable in our hospital. When a patient comes into the emergency room of our hospital, health care workers in the ER have scrubs provided by the hospital, face shields, N95s, and goggles. When the patient is determined to be a PUI, they are transferred to our unit, where our nurses do not have adequate protection. When they inevitably test positive for COVID19, they are transferred to the COVID unit, where nurses and health care workers have similar PPE to those in the emergency room.

As a result, nurses in the PUI unit account for 90% of all the nurses who have tested positive for COVID19 in my hospital.

That does not mean that nurses in the ER or COVID units have been properly protected. At the very beginning of the pandemic, I worked on the COVID unit. The system for isolation protocols and personal protective equipment was disorganized and unclear at that time. While nurses in the COVID unit were given N95s, we were told to wear them for the entire shift. We know that every time you don and doff the N95, meaning every time you take it off or put it back on, you are putting yourself at risk of exposure to the virus. As a result, nurses in the COVID unit would not eat or drink for a 12-hour shift because of the concern of exposure when taking off the respirator mask.

Each unit has suffered from the ongoing challenge of poor staffing in our hospital. We didn't have enough nurses to take care of patients on regular shifts before COVID19 hit. This has never been due to a shortage of nurses, but rather because hospital management has refused to hire more nurses. Staffing has been a constant struggle for us in the ICU, and that struggle has been

amplified during this crisis. We have not had enough ICU nurses to effectively care for the COVID19 patients in our hospital.

To compensate, hospital management has instructed nurses who do not work in the ICU to receive a two-day orientation before beginning work in the ICU. It normally would take 12 weeks for a nurse to be trained for the ICU. Nurses that are beginning work in the ICU after only 2 days of training are thrust into situations they haven't experienced before, in the middle of a highly stressful pandemic situation. This has often caused more stress to experienced ICU nurses, as we are trying to help new ICU nurses who haven't received the training they should receive and are concerned they could put someone's life in jeopardy.

The nurses in my unit have been terrified of bringing the coronavirus home to our families. I cannot adequately put into words the stress that this fear has caused us.

For me, the lack of protections in my unit have forced me to send my daughter away to live with my mother during the course of the pandemic. I don't want to pass this virus on to my daughter or my mother. On Mother's Day, I was unable to see my own mother or to see my daughter.

It has been more than five weeks since I last saw my daughter in person, and I don't know when I'll see her again. It has been deeply devastating for both of us to take these precautions. My daughter is so frustrated by the situation that she consistently asks me to come home and has recently asked me to quit my job. She follows the news, and she knows that I am at a heightened risk of contracting COVID19 because my hospital is not giving me the protections I need. She is worried, she is scared, and she is experiencing separation anxiety.

When I come home every day, I live in fear of contracting the virus. When I get home, I have to take off my scrubs, because the hospital won't give us hospital scrubs. I leave them outside in a plastic bag for a few days before I bring them in to wash them. I wear my own cap on my hair in the hospital, and I come home and need to immediately shower. Many nurses are struggling with pain and reactions to the masks we are wearing. Some have skin rashes, rough skin around the face, facial pain, and headaches. I personally have been experiencing terrible headaches caused by prolonged use of masks for 12-hour shifts, as well as skin rashes.

The situation that nurses are forced to be in is astounding. As a nurse, we learn about the proper protections when caring for patients with infectious diseases. For example, we often care for TB patients, but we aren't concerned about contracting TB, because we know how to protect ourselves at work, and we are given the necessary protections. But for the course of this pandemic, our hospitals have consistently failed to give us the protections we know that we need.

From my own experiences, and from talking with nurses at other hospitals in my state and across the country, it's clear to me that our country has not established the systems necessary to protect frontline workers during an infectious disease pandemic. While Congress has taken action to pass multiple stimulus bills to help the economy during this crisis, Congress has not yet taken the needed action to protect frontline workers. As a result, more than 100 registered nurses across the country have lost their lives. Their deaths could have been prevented if Congress and the Administration had taken the necessary steps to protect workers two months ago.

I urge every member of this Committee to do everything in their power to ensure that nurses and other frontline workers get the protections we need immediately. We urge you to mandate that the Occupational Safety and Health Administration promulgate an emergency temporary standard for emerging infectious diseases, and to ensure that the Defense Production Act is fully invoked so that production of PPE is drastically increased. We needed these protections three months ago, and we need them now. It's the only way to ensure that nurses can do our jobs safely and protect our patients, our families, and our communities.

Thank you.

Attached:

Select Bibliography in Support of Testimony from Talisa Hardin, RN

Select Bibliography in Support of Testimony from Talisa Hardin, RN

Airborne precautions are needed for COVID-19.

Bourouiba, Lydia, "Turbulent Gas Clouds and Respiratory Pathogen Emissions: Potential Implications for Reducing Transmission of COVID-19," JAMA, March 26, 2020, <https://jamanetwork.com/journals/jama/fullarticle/2763852>.

Summary:

- This paper reported on what is known about disease transmission via respiratory droplets created by human exhalations, sneezes, and coughs.
- Droplet transmission was originally defined in 1897, large and small droplets defined in 1930s. This model of infectious disease transmission hasn't been updated since. And yet, the CDC and WHO maintain use of this paradigm despite more recent research.
- More recent research over the past few decades performed with instrumentation that better measures particle sizes and movement has determined that human exhalations, coughs, and sneezes (the things that supposedly create large droplets under old model) are actually made of multiphase turbulent gas clouds (a puff) that entrains ambient air and traps and carries clusters of particles of a wide range of sizes.
- This includes viral particles in people who are sick.
- Pathogen-carrying gas clouds emitted when people breath, cough, and sneeze can travel up to 23-27 feet.

Patients infected with SARS-CoV-2 produce viral particles that can be aerosolized when they breath, cough, sneeze, etc.

Wolfel, Roman, et al., "Virological assessment of hospitalized patients with COVID-2019," Nature, April 1, 2020, published online at <https://www.nature.com/articles/s41586-020-2196-x>.

Summary:

- This study examined viral loads and isolates for patients hospitalized with COVID-19. The majority of patients in this study presented with upper respiratory tract symptoms. Viral loads from upper respiratory tract samples were extremely high (more than 1000 times higher than SARS). Live virus was isolated from upper respiratory tract tissues.
- Michael Osterholm, PhD, MPH, director of the Center for Infectious Disease Research and Policy at the University of Minnesota, said, "The findings [of this study] confirm that COVID-19 is spread simply through breathing, even without coughing... They also challenge the idea that contact with contaminated surfaces is a primary means of spread," (emphasis added). <http://www.cidrap.umn.edu/news-perspective/2020/03/study-highlights-ease-spread-covid-19-viruses>.

Leung, Nancy H. L. et al. "Respiratory virus shedding in exhaled breath and efficacy of face masks," Nature Medicine, April 3, 2020, <https://www.nature.com/articles/s41591-020-0843-2>.

Summary:

- This study examined viral presence and load in exhaled breath of patients with lab-confirmed influenza, seasonal coronaviruses, or rhinovirus.

- Found viral presence in exhaled breath, even without cough, for all types of viruses in both droplet (>5 micron) and aerosol (<5 micron) particles.

SARS-CoV-2 virus can survive in the environment, including in the air.

Doremalen et al., “Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1,” New England Journal of Medicine, April 16, 2020, https://www.nejm.org/doi/full/10.1056/NEJMc2004973?query=featured_home.

Summary:

- This study examined how long SARS-CoV-2 can survive in aerosols suspended in the air and on surfaces of different types (metal, plastic, cardboard).
- They found that SARS-CoV-2 can survive up to three hours in aerosols, four hours on copper, 24 hours on cardboard, 2-3 days on plastic and stainless steel.
- The authors conclude, “Our results indicate that aerosol and fomite transmission of [SARs-CoV-2] is plausible, as the virus can remain viable in aerosols for multiple hours and on surfaces up to days.” This study was conducted by NIH and CDC scientists in addition to UCLA and Princeton.

Chin, Alex W H et al. “Stability of SARS-CoV-2 in different environmental conditions,” The Lancet Microbe, April 2, 2020, <https://www.sciencedirect.com/science/article/pii/S2666524720300033?via%3Dihub>.

Summary:

- This study examined the ability of SARS-CoV-2 to survive outside the human body in different environmental conditions.
- They found that SARS-CoV-2 can survive outside the human body for up to 14 days at 39 degrees Fahrenheit, 7 days at 72 degrees Fahrenheit and remains infectious in both situations.
- They found that SARS-CoV-2 can survive on different surfaces:
 - Printing and tissue papers- up to 3 hours
 - Wood and cloth- up to 2 days
 - Glass and banknote- up to 4 days
 - Stainless steel and plastic- up to 7 days
 - Surgical mask- detectable level of infectious virus found after 7 days on outer layer of mask
- They also tested the impact of different disinfectants, used at working concentrations, to successfully inactivate SARS-CoV-2:
 - Household bleach (1:49)
 - Household bleach (1:99)
 - Ethanol (70%)
 - Povidone-iodine (7.5%)
 - Chloroxylenol (0.05%)
 - Chlorhexidine (0.05%)
 - Benzalkonium chloride (0.1%)

Fears, Alyssa C. et al. "Comparative dynamic aerosol efficiencies of three emergent coronaviruses and the unusual persistence of SARS-CoV-2 in aerosol suspensions," medRxiv, April 18, 2020, <https://www.medrxiv.org/content/10.1101/2020.04.13.20063784v1>

Summary:

- This study looked at the viability of SARS-CoV-2 in suspended aerosols and found that SARS-CoV-2 remained infectious after 16 hours suspended in aerosols. This further reinforces airborne/aerosol transmission of SARS-2.
- The authors state: "Our approach of quantitative measurement of infectivity of viral airborne efficiency complemented by qualitative assessment of virion morphology leads us to conclude that SARS-CoV-2 is viable as an airborne pathogen."

Evidence shows widespread environmental contamination from SARS-CoV-2.

Guo, Zhen-Dong et al., "Aerosol and Surface Distribution of Severe Acute Respiratory Syndrome Coronavirus 2 in Hospital Wards, Wuhan, China, 2020," Emerging Infectious Diseases, April 10, https://wwwnc.cdc.gov/eid/article/26/7/20-0885_article.

Summary:

- This study looked at environmental contamination in an ICU and a general ward in hospital in China where patients with COVID-19 were placed.
- They found SARS-CoV-2 on many surfaces in patient rooms and on units, including doorknobs, bedrails, patient masks, computer mouse, keyboards, etc.
- Many positive results on floors not just in patient rooms but throughout the unit. 50% of the samples from the soles of healthcare workers' shoes were positive.
- They also measured SARS-CoV-2 in air samples and found several air samples positive in addition to finding that the samples from the air outlets were positive for virus.
- Underlines nurses' need for PPE!

Santarpia, Joshua L et al., "Transmission Potential of SARS-CoV-2 in Viral Shedding Observed at the University of Nebraska Medical Center," medRxiv (pre-print), March 26, 2020, <https://www.medrxiv.org/content/10.1101/2020.03.23.20039446v2>.

Summary:

- This study looked at the presence of virus in air samples taken in patient rooms in addition to environmental samples.
- SARS-CoV-2 was found in a majority of air samples taken at greater than 6 ft from patient.
- SARS-CoV-2 was found in a majority of hallway air samples.
- SARS-CoV-2 was found in the air samplers worn by sampling personnel even when the patients did not cough.

Chia, Po Ying et al. "Detection of Air and Surface Contamination by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) in Hospital Rooms of Infected Patients" medRxiv April 9, 2020, <https://www.medrxiv.org/content/10.1101/2020.03.29.20046557v1.full.pdf>

Summary:

- This study examined surface and air contamination in airborne infection isolation rooms of patients with confirmed COVID-19 infections in Singapore.
- They found that 56.7% of the rooms had at least one environmental surface contaminated, with 18.5% of the toilet seats and toilet flush button being contaminated.
- High touch surface contamination was shown in ten (66.7%) out of 15 patients in the first week of illness, and three (20%) beyond the first week of illness ($p = 0.010$).
- Air sampling of two COVID-19 patients (both day 5 of symptoms) detected SARS-CoV-2 PCR positive particles of sizes $>4 \mu\text{m}$ and $1-4 \mu\text{m}$. In a single subject at day 9 of symptoms, no SARS-CoV-2 PCR-positive particles were detected.

Protective PPE, including at minimum N95 respirators, gowns/coveralls, eye protection, and gloves, is necessary to protect nurses and other healthcare workers from SARS-CoV-2 exposure.

Cheng, C.C. et al., (March 5, 2020), "Escalating infection control response to the rapidly evolving epidemiology of the Coronavirus disease 2019 (COVID-19) due to SARS-CoV-2 in Hong Kong." Infection Control and Hospital Epidemiology, March 2020, p 1-24, <https://www.cambridge.org/core/journals/infection-control-and-hospital-epidemiology/article/escalating-infection-control-response-to-the-rapidly-evolving-epidemiology-of-the-coronavirus-disease-2019-covid19-due-to-sarscov2-in-hong-kong/52513ACC56587859F9C601DC747EB6EC>.

Summary:

- Hong Kong has more effectively contained the outbreak of COVID-19 than many other countries. This study reports a description of infection control measures adopted during response to COVID-19 in Hong Kong.
- 42 of 1275 patients evaluated were identified as having COVID-19 in first 42 days of the outbreak.
- 11 of 413 (2.7%) healthcare workers caring for these patients had unprotected exposure requiring a 14-day quarantine.
- No healthcare workers were infected, no nosocomial transmission observed. Environmental surveillance of viral particles conducted- in breathing zone of patient, wipe samples from surfaces in patient rooms.
- Infection control measures implemented include:
 - 36 patients immediately isolated upon admission in AIIRs, 6 in non-AIIR
 - Standard, contact, droplets, and airborne precautions for suspected or confirmed cases
 - Stepped up use of PPE during aerosol generating procedures
 - Surgical masks worn by all HCWs, patients, and visitors in clinical areas implemented since day 5
 - Promotion of hand hygiene by HCWs and patients

Wang, Xinghuan et al. "Association between 2019-nCoV transmission and N95 respirator use" J Hospital Infection, March 3, 2020, [https://www.journalofhospitalinfection.com/article/S0195-6701\(20\)30097-9/fulltext](https://www.journalofhospitalinfection.com/article/S0195-6701(20)30097-9/fulltext).

Summary:

- This study examined the infection rate in two groups of departments.

- Three departments were in the “mask group” because they utilized N95 respirators and also frequently performed hand hygiene (respiratory, ICU, and Infectious Disease).
- Three departments were in the “non-mask group” because early in the outbreak they hadn’t implemented precautions- staff did not wear masks and disinfected and cleaned hands “occasionally.”
- There were significantly more confirmed or probable COVID-19 patients cared for in the departments in the “mask group,” meaning workers in those units had significantly more exposure than the “non-mask group.”
- “Mask group” reported statistically significantly fewer infections than the “non-mask group.”
 - 0 out of 278 staff in “mask group” were infected
 - 10 out of 213 staff in “no mask group” were infected
 - Difference was found to be statistically significant
- Found similar results in two other hospitals- staff wearing N95s and frequently conducting hand hygiene were not infected

Chen, Weiyun et al “To Protect Healthcare Workers Better, To Save More Lives,” *Anesthesia & Analgesia*, March 30, 2020, https://journals.lww.com/anesthesia-analgesia/Abstract/publishahead/To_Protect_Healthcare_Workers_BetterTo_Save_More95724.aspx.

Summary:

- This study reported on healthcare worker protections implemented in China during three phases.
- First stage- this was an unknown disease and healthcare workers were not protected. At this time, the infection rate ranged from 3.5% to 29% among healthcare workers in different hospitals in the epicenter of Wuhan according to previous reports, when the initial source of the novel coronavirus still remained unknown.
- Second stage- inadequate protection for healthcare workers due to supply shortages. During this period of time, the number of confirmed cases in China was still increasing rapidly. By February 11, 2020, a total of 1,716 health care workers were confirmed with COVID-19, including five deaths.
- Third stage- disease severity acknowledged and full protection of healthcare workers. “The highest level of precaution, so called “full precaution,” is mandatory for high-risk exposure, a disposable surgical cap, test-fit N95 masks or respirators, gloves, goggles or face shield, gown and fluid-resistant shoe covers. We would like to point out that the key element of full precaution is the complete coverage of the head and facial skin...” No healthcare worker infections reported in this third period.

Feldman, Oren et al., “Exposure to a Surrogate Measure of Contamination from Simulated Patients by Emergency Department Personnel Wearing Personal Protective Equipment,” *JAMA*, April 27, 2020, <https://jamanetwork.com/journals/jama/fullarticle/2765377>.

Summary:

- Experienced healthcare workers performed care tasks commonly required by patients with COVID (e.g., airway management and ventilatory support) in a simulation. A non-visible fluorescent compound was used as a marker of contamination- applied surfaces and secretion areas on the manikin-patient.
- Healthcare workers wore N95 respirators, eye protection, isolation gowns, and gloves.

- 7 of 8 participants had fluorescent markers (contamination) on their exposed skin, primarily neck.
- All participants had fluorescent markers (contamination) in their hair.
- Half had fluorescent markers (contamination) on their shoes.
- “The findings suggest that the current recommendations for personal protective equipment may not fully prevent exposures in emergency department settings. Clothing that covers all skin may further diminish exposure risk.”