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Prioritizing Preparation: Ensuring Access to Health Care Through Hospitals' Stockpiling of Personal Protective Equipment

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COMMENT

Prioritizing Preparation: Ensuring Access to Health Care Through Hospitals' Stockpiling of Personal Protective Equipment

*Briana D. Long**

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I. INTRODUCTION

When the COVID-19 pandemic struck the United States in the early months of 2020, the nation was unprepared for the havoc that ensued.¹ The nation's failure to prepare the supplies required by hospitals to treat patients and protect health care providers was especially concerning.² Many American hospitals feared that a lack of ventilators, the life-support machines heavily relied upon by patients with severe respiratory virus symptoms, could cost many patients their chance of survival.³ However, it soon became apparent that supplies used daily in hospitals, such as masks, gloves, goggles, and aprons, were even more essential during the pandemic.⁴ These supplies proved vital in protecting America's frontline medical workers from contracting the virus.⁵

¹ See *infra* notes 17–22 and accompanying text.

² See Miao Hua, *How to Conserve PPE and Protect Health Care Workers from COVID-19*, HEALTH AFFS. BLOG (Apr. 25, 2020), www.healthaffairs.org/doi/10.1377/hblog20200422.52809/full/; Megan L. Ranney et al., *Critical Supply Shortages – The Need for Ventilators and Personal Protective Equipment During the Covid-19 Pandemic*, NEW ENG. J. MED., April 30, 2020, at e41(2), www.nejm.org/doi/pdf/10.1056/NEJMp2006141?articleTools=true [<http://dx.doi.org/10.1056/NEJMp2006141>]; David E. Sanger et al., *Before Virus Outbreak, a Cascade of Warnings Went Unheeded*, N.Y. TIMES (Mar. 22, 2020), www.nytimes.com/2020/03/19/us/politics/trump-coronavirus-outbreak.html; CHRISTI A. GRIMM, OFF. OF INSPECTOR GEN., HOSPITAL EXPERIENCES RESPONDING TO THE COVID-19 PANDEMIC: RESULTS OF A NATIONAL PULSE SURVEY MARCH 23–27, 2020, U.S. DEP'T OF HEALTH AND HUM. SERVS. 3–5 (2020), oig.hhs.gov/oei/reports/oei-06-20-00300.pdf [<https://perma.cc/4WAK-X2PA>].

³ See *Amid Grave Shortage of Ventilators, Some Hospitals Start Sharing Between Patients, Searching for Alternatives*, KAISER FAM. FOUND. (Mar. 26, 2020), khn.org/morning-breakout/amid-grave-shortage-of-ventilators-some-hospitals-start-sharing-between-patients-searching-for-alternatives/ [<https://perma.cc/QU8W-WD4B>]; Carrie MacMillan, *Ventilators and COVID-19: What You Need to Know*, YALE MED. (June 2, 2020), www.yalemedicine.org/news/ventilators-covid-19#:~:text=A%20ventilator%20pumps%20air%E2%80%94usually,to%20support%20breathing%20during%20surgery [<https://perma.cc/H4S3-V5LV>].

⁴ See PANDEMIC INFLUENZA PREPAREDNESS AND RESPONSE GUIDANCE FOR HEALTHCARE WORKERS AND HEALTHCARE EMPLOYERS, U.S. DEP'T OF LAB. 30 (2009), www.w1npp.org/ARES/FIRST_-2/PANDEM-1.PDF (“Given that pandemic influenza vaccine will likely not be available until 4 to 6 months into the pandemic and that shortages of antiviral medication are anticipated, PPE will be especially important for protecting health care workers.”); Yi Zhao, *Personal Protective Equipment Protecting Healthcare Workers in the Chinese Epicenter of COVID-19*, CLINICAL MICROBIOLOGY AND INFECTION (July 23, 2020), [www.clinicalmicrobiologyandinfection.com/article/S1198-743X\(20\)30437-7/fulltext](http://www.clinicalmicrobiologyandinfection.com/article/S1198-743X(20)30437-7/fulltext) [<https://doi.org/10.1016/j.cmi.2020.07.029>]; *Personal Protective Equipment for Ebola*, WORLD HEALTH ORG., www.who.int/teams/health-product-and-policy-standards/access-to-assistive-technology-medical-devices/priority-medical-devices-for-covid/ppe-ebola/ (last visited Nov. 26, 2020) [<https://perma.cc/JA5Z-EE5X>] (recognizing that PPE was the most important equipment in preventing the spread of the Ebola virus, a similar respiratory virus to COVID-19).

⁵ See *Shortage of Personal Protective Equipment Endangering Health Workers Worldwide*, WORLD HEALTH ORG. (Mar. 3, 2020), www.who.int/news/item/03-03-2020-shortage-of-personal-protective-equipment-endangering-health-workers-worldwide [<https://perma.cc/AQN5-2RB6>]; *COVID-19 Overview and Infection Prevention and Control Priorities in non-US Healthcare Settings*, CTRS. FOR DISEASE CONTROL AND PREVENTION (Aug. 12, 2020), www.cdc.gov/coronavirus/2019-

Hospitals categorize these vital daily supplies as personal protective equipment (PPE).⁶ PPE includes any “equipment worn to minimize exposure to hazards” to prevent health care workers from injuries and illnesses.⁷ Hospital administrators view PPE as essential to keeping health care workers safe.⁸ PPE not only protects health care providers, but also patients, hospital staff, and visitors in hospitals every day by preventing the spread of germs, thereby reducing the risk of transmitting infections.⁹

Throughout the pandemic, PPE has proven to be hospitals’ most critical form of equipment.¹⁰ Health care workers are at a heightened risk of contracting COVID-19.¹¹ A preliminary study found that health care workers were twelve-times as likely to contract COVID-19 as non-health care workers.¹² During the

ncov/hcp/non-us-settings/overview/index.html [https://perma.cc/VV2A-PNFF]; John P. Thomas et al., *Evaluating the National PPE Guidance for NHS Healthcare Workers During the COVID-19 Pandemic*, CLINICAL MED., May 2020, at 2 (“Thus with current evidence yet to conclusively elucidate the nature and degree of airborne spread of SARS-CoV-2. PPE guidance that risk-stratifies based on the aerosol-generating potential of a clinical activity at specific clinical locations or proximity to a patient may be greatly underestimating the risk.”).

⁶ See *Personal Protective Equipment for Infection Control*, U.S. FOOD AND DRUG ADMIN. (Feb. 10, 2020), www.fda.gov/medical-devices/general-hospital-devices-and-supplies/personal-protective-equipment-infection-control [https://perma.cc/ZB9C-VLGL]; PANDEMIC INFLUENZA PREPAREDNESS AND RESPONSE, *supra* note 4, at 18–19.

⁷ *Personal Protective Equipment*, U.S. DEP’T OF LAB., www.osha.gov/personal-protective-equipment (last visited Nov. 25, 2020) [https://perma.cc/V59N-KNYU]; see 29 C.F.R. § 1910.1030(b) (2020); *Alvarez v. IBI, Inc.*, 339 F.3d 894, 905 (9th Cir. 2003).

⁸ See *PPE in Healthcare: How to Prevent Exposure and Contamination*, AMERICAN SOC’Y OF SAFETY PROS. (Jan. 22, 2020), www.assp.org/news-and-articles/2020/01/22/ppe-in-healthcare-how-to-prevent-exposure-and-contamination [https://perma.cc/J3LF-XG2A].

⁹ David C. Dugdale & David Zieve, *Personal Protective Equipment*, MEDLINE PLUS (Sept. 29, 2019), medlineplus.gov/ency/patientinstructions/000447.htm [https://perma.cc/S9L8-RTKH].

¹⁰ *COVID-19 Overview*, *supra* note 5; Thomas et al., *supra* note 5, at 242; Udo Schuklenk, *What Healthcare Professionals Owe Us: Why Their Duty to Treat During a Pandemic is Contingent on Personal Protective Equipment (PPE)*, 46 J. MED. ETHICS 432–35, 432 (2020); see 8 N. PETER LAREAU, LABOR AND EMPLOYMENT LAW § 199.02 (2020) (recognizing the most crucial aspect of providing safe care to Ebola, a similar respiratory disease to COVID-19, patients was the site manager overseeing PPE donning and doffing); *AMA Code of Medical Ethics: Guidance in a Pandemic*, AM. MED. ASS’N (Apr. 14, 2020), www.ama-assn.org/delivering-care/ethics/ama-code-medical-ethics-guidance-pandemic [https://perma.cc/GET2-KQSN].

¹¹ See Kangqi Ng et al., *COVID-19 and the Risk to Health Care Workers: A Case Report*, ANNALS OF INTERNAL MED. (June 2, 2020), www.acpjournals.org/doi/full/10.7326/L20-0175 [https://doi.org/10.7326/L20-0175] (“We have to emphasize that hospital populations are at significantly increased risk for COVID-19.”); Press Release, Katie Marquedant, Study Reveals the Risk of COVID-19 Infection Among Health Care Workers, Mass. Gen. Hosp. (May 5, 2020), www.massgeneral.org/news/coronavirus/study-reveals-risk-of-covid-19-infection-among-health-care-workers [https://perma.cc/L6XH-FJCL].

¹² Long H. Nguyen et al., *Risk of COVID-19 Among Frontline Healthcare Workers and the General Community: A Prospective Cohort Study*, 5 LANCET PUB. HEALTH 475, 478–79 (2020), www.thelancet.com/action/showPdf?pii=S2468-2667%2820%2930164-X [https://doi.org/10.1016/

pandemic, PPE shortages unnecessarily exposed many health care providers who later contracted the contagious virus.¹³ With each passing month in 2020, news sources featured headlines reporting PPE shortages.¹⁴ Journalists have extensively documented the severe impacts of PPE shortages on health care providers' and patients' fears of exposure to the virus.¹⁵ Although the federal government

S2468-2667(20)30164-X]. Researchers, primarily from Massachusetts General Hospital and Harvard, preprinted this study in May of 2020 in response to the pandemic, which impacted America in February of 2020. *Id.* This journal has not yet been peer-reviewed. *Id.* Peer reviews typically take time to complete since outside researchers must analyze and repeat the study to ensure consistent results. See *Scrutinizing Science: Peer Review*, UNDERSTANDING SCIENCE, undsci.berkeley.edu/article/howscienceworks_16#:~:text=In%20science%2C%20peer%20review%20typically,peers%22%20of%20peer%20reviewundsci.berkeley.edu/article/howscienceworks_16#:~:text=In%20science%2C%20peer%20review%20typically,peers%22%20of%20peer%20review (last visited Nov. 25, 2020) [https://perma.cc/4W4H-TX6S]. This study should only be used as a preliminary indication of concern and should not guide clinical practices until the article has been peer-reviewed. See Nguyen et al., *supra* note 12.

¹³ See *Shortage of Personal Protective Equipment*, *supra* note 5.

¹⁴ See e.g., Kelly Ng, *Panic Buying of Face Masks Is Unwarranted and Could Pose Risks for Health Workers, Experts Say*, CNBC (Jan. 31, 2020, 10:55 PM), www.cnbc.com/2020/01/31/china-coronavirus-shortage-of-face-masks-could-pose-risks-for-healthcare-workers.html [https://perma.cc/M2YR-FHBK] (January); Sarah Boseley, *WHO Warns of Global Shortage of Face Masks and Protective Suits*, THE GUARDIAN (Feb. 7, 2020, 1:25 PM), www.theguardian.com/world/2020/feb/07/who-warns-global-shortage-face-masks-protective-suits-coronavirus [https://perma.cc/8B78-GMD5] (February); Nick Miroff, *U.S. Cities Have Acute Shortages of Masks, Test Kits, Ventilators as They Face Coronavirus Threat*, WASH. POST (Mar. 27, 2020, 12:38 PM), www.washingtonpost.com/national/coronavirus-mayors-mask-equipment-shortage/2020/03/27/fc2a45a4-701f-11ea-96a0-df4c5d9284af_story.html (March); Ken Alltucker, *'Can't Expect Nurses to Be Miracle Workers': Mask, Equipment Shortages Push Nurses to Brink Across Nation*, USA TODAY (Apr. 12, 2020, 12:43 PM), www.usatoday.com/story/news/health/2020/04/11/coronavirus-nurses-reach-breaking-point-amid-ppe-face-mask-shortages/2973881001/ (April); Brian Mann, *Nurses Left Vulnerable to COVID-19: 'We're Not Martyrs Sacrificing Our Lives'*, NAT'L PUB. RADIO (May 2, 2020, 7:00 AM), www.npr.org/2020/05/02/848997142/nurses-left-vulnerable-to-covid-19-we-re-not-martyrs-sacrificing-our-lives [https://perma.cc/EPN7-7T9L] (May); Michael Sainato, *HCA Nurses to Strike Over Staffing Cuts and PPE Shortages*, MOD. HEALTHCARE (June 23, 2020, 11:53 AM), www.modernhealthcare.com/labor/hca-nurses-strike-over-staffing-cuts-and-ppe-shortages [https://perma.cc/9Z7J-3R28] (June); Andrew Jacobs, *Grave Shortages of Protective Gear Flare Again as Covid Cases Surge*, N.Y. TIMES (July 8, 2020), www.nytimes.com/2020/07/08/health/coronavirus-masks-ppe-doc.html (July); *PPE Supply Shortages: FDA Makes List of What Might Run Out*, KAISER FAM. FOUND. (Aug. 17, 2020), khn.org/morning-breakout/ppe-supply-shortages-fda-makes-list-of-what-might-run-out/ [https://perma.cc/5C8S-F9Y7] (August); Jocelyn Grzeszczak, *As U.S. Braces for Potential Second Wave, Nurses Say There's Still a Critical Shortage of N95 Masks*, NEWSWEEK (Sept. 10, 2020, 10:22 AM), www.newsweek.com/us-braces-potential-second-wave-nurses-say-theres-still-critical-shortage-n95-masks-1530991 [https://perma.cc/UAP6-VXS7] (September); Jay Greene, *Hospitals Say They're Better Prepared with PPE Than Spring, but Supply Chain Uncertain*, MOD. HEALTHCARE (Oct. 25, 2020, 7:58 PM), www.modernhealthcare.com/supply-chain/hospitals-say-theyre-better-prepared-ppe-spring-supply-chain-uncertain [https://perma.cc/6TK4-KAKM] (October); Megan Cerullo, *Supplies of N95 Masks Running Low as COVID-19 Surges*, CBSNEWS (Nov. 6, 2020, 3:26 PM), www.cbsnews.com/news/ppe-n95-mask-shortage-covid-19/ [https://perma.cc/5HTC-FRRZ] (November).

¹⁵ E.g., *Healthcare Personnel and First Responders: How to Cope with Stress and Build Resilience During the COVID-19 Pandemic*, CTNS. FOR DISEASE CONTROL AND PREVENTION (May 5, 2020),

had previously created the Strategic National Stockpile (SNS) to supplement emergency supplies, including PPE, at the beginning of the pandemic, the SNS lacked sufficient PPE to address shortages and protect American health care workers during COVID-19.¹⁶

In April of 2020, Johns Hopkins University estimated the amount of PPE necessary for the nation to respond appropriately to the COVID-19 pandemic.¹⁷ The report released calculations that the United States, in order to protect health care workers for a 100-day COVID-19 wave, would need approximately 3.4 billion more gloves, 321 million more isolation gowns, 179 million more medical masks, and 57 million more disposable respirator masks, such as N95 respirators, beyond the supplies needed during non-emergency times.¹⁸ In contrast, at the beginning of the pandemic the SNS had stored only twelve million N95 respirators (twenty-one percent of Johns Hopkin's estimated demand) and thirty million surgical masks (seventeen percent of Johns Hopkin's estimated demand).¹⁹ The number of gloves and isolation gowns within the SNS was not made clear by the House Committee on Oversight and Reform.²⁰ However, the U.S. Department of Health & Human Services (HHS) distributed the entire stock of PPE to state entities by early April of 2020, indicating a similar shortage in gloves and isolation gowns in the SNS.²¹ These statistics display the critical failure of the

www.cdc.gov/coronavirus/2019-ncov/hcp/mental-health-healthcare.html [https://perma.cc/U8U7-9YN8]; Jacobs, *supra* note 14; Bryn Nelson, *COVID-19's Crushing Mental Health Toll on Health Care Workers*, 128 *CANCER CYTOPATHOLOGY* 597, 597–98 (2020); Leila Fadel, *Doctors Say Hospitals are Stopping Them from Wearing Masks*, NAT'L PUB. RADIO (April 2, 2020), www.npr.org/2020/04/02/825200206/doctors-say-hospitals-are-stopping-them-from-wearing-masks [https://perma.cc/WBE9-THLQ].

¹⁶ See 42 U.S.C. § 247d-6b; *Strategic National Stockpile*, PUB. HEALTH EMERGENCY, www.phe.gov/about/sns/Pages/default.aspx (last visited Nov. 25, 2020) [https://perma.cc/6UUQ-FXR5]; Press Release, New Document Shows Inadequate Distribution of Personal Protective Equipment and Critical Medical Supplies to States, House Comm. on Oversight and Reform (Apr. 8, 2020), oversight.house.gov/news/press-releases/new-document-shows-inadequate-distribution-of-personal-protective-equipment-and [https://perma.cc/3TVJ-KP5R].

¹⁷ ERIC TONER, INTERIM ESTIMATE OF US PPE NEEDS FOR COVID-19, JOHNS HOPKINS CTR. FOR HEALTH SEC. (2020), www.centerforhealthsecurity.org/resources/COVID-19/PPE/PPE-estimate.pdf [https://perma.cc/5TY5-Y9LD].

¹⁸ *Id.*

¹⁹ Press Release, New Document Shows Inadequate Distribution, *supra* note 16; Tessa Berenson, *States Need Medical Supplies to Fight Coronavirus. Can the National Stockpile Keep Up With Demand?*, TIME (Mar. 10, 2020), time.com/5800200/strategic-national-stockpile-coronavirus/; TONER, *supra* note 17.

²⁰ See Press Release, New Document Shows Inadequate Distribution, *supra* note 16; Berenson, *supra* note 19; TONER, *supra* note 17.

²¹ See Kristen Holmes, *Last Rounds of Protective Gear in National Stockpile Being Shipped*, CNN (Apr. 1, 2020, 6:37 PM), www.cnn.com/2020/04/01/politics/national-stockpile-shipments/index.html; TONER, *supra* note 17.

federal government to adequately prepare for a national medical emergency of COVID-19's magnitude.²²

There is a direct correlation between access to health care in America and health care providers' access to PPE.²³ Masks, gloves, goggles, and similar PPE help to prevent transmissions of infectious diseases in hospitals, especially between patients and their health care providers.²⁴ If health care providers do not have access to this protective equipment, they are more likely to contract infectious diseases.²⁵ During PPE shortages, more health care workers are likely to be exposed to infectious diseases due to their lack of protection and, as a result, they are more likely to contract those diseases.²⁶ Once a health care provider is ill, they are likely unable to continue providing care to others.²⁷ As more health care providers fall ill, hospitals' ability to continue providing care to patients in need is more significantly impacted.²⁸ Staffing problems force hospitals to admit fewer patients or continue providing care to the same number of patients at a lower quality of care.²⁹ In an effort to mitigate health care worker shortages in North Dakota, the Governor issued an executive order allowing health care workers to

²² Holmes, *supra* note 21; Press Release, New Document Shows Inadequate Distribution, *supra* note 16; *Strategic National Stockpile Response to COVID-19 Frequently Asked Questions*, PUB. HEALTH EMERGENCY, www.phe.gov/emergency/events/COVID19/SNS/Pages/FAQ.aspx#sns-depleted (last visited Nov. 25, 2020) [<https://perma.cc/XG4E-VXS8>].

²³ See *infra* notes 24–30 and accompanying text.

²⁴ See Phenelle Segal, *The Role of Personal Protective Equipment in Infection Prevention History*, INFECTION CONTROL TODAY (Oct. 17, 2016), www.infectioncontrolday.com/view/role-personal-protective-equipment-infection-prevention-history [<https://perma.cc/PH4V-G359>]; *Personal Protective Equipment*, MEDLINEPLUS, medlineplus.gov/ency/patientinstructions/000447.htm (last visited Nov. 25, 2020) [<https://perma.cc/LU8Y-KU5Y>].

²⁵ Press Release, Katie Marquedant, *supra* note 11; Christina Jewett & Liz Szabo, *True Toll of COVID-19 on U.S. Health Care Workers Unknown*, KAISER FAM. FOUND. (Apr. 15, 2020), khn.org/news/true-toll-of-covid-19-on-u-s-health-care-workers-unknown/ [<https://perma.cc/R2T8-6RW7>].

²⁶ See *Strategies to Mitigate Healthcare Personnel Staffing Shortages*, CTRS. FOR DISEASE CONTROL AND PREVENTION (July 17, 2020), www.cdc.gov/coronavirus/2019-ncov/hcp/mitigating-staff-shortages.html [<https://perma.cc/65GG-Z6JL>].

²⁷ See *Shortage of Personal Protective Equipment*, *supra* note 5; Press Release, Katie Marquedant, *supra* note 11 (workers caring with patients with documented COVID-19 had a nearly 5-times higher risk of testing positive if they had adequate PPE and a nearly 6-times higher risk if they had inadequate PPE); *Mitigating Staff Shortages*, *supra* note 26.

²⁸ See Tom Castles, *COVID-19: How a PPE Shortage Could Cripple the Healthcare System*, MDLIX (Apr. 10, 2020), www.mdlinx.com/article/covid-19-how-a-ppe-shortage-could-cripple-the-healthcare-system/4zPN2rH1bzHQCOrDuPPEin [<https://perma.cc/8H9P-YCCH>]; JONATHAN SCHWARTZ ET AL., PROTECTING HEALTHCARE WORKERS DURING THE CORONAVIRUS DISEASE 2019 (COVID-19) OUTBREAK: LESSONS FROM TAIWAN'S SEVERE ACUTE RESPIRATORY SYNDROME RESPONSE, *CLINICAL INFECTIOUS DISEASES* 1 (2020), pubmed.ncbi.nlm.nih.gov/32166318/ [<http://dx.doi.org/10.1093/cid/ciaa255>].

²⁹ See Castles, *supra* note 28; SCHWARTZ ET AL., *supra* note 28.

care for positive COVID-19 patients after testing positive for COVID-19, if the health care worker was asymptomatic.³⁰

Access to health care is an essential human right.³¹ While some Americans contest this statement, more than half of the world's countries formally recognize health care as a human right.³² After the severe nationwide impact of this pandemic on American citizens, the United States must reevaluate this omission of a fundamental right.³³ By formally recognizing health care as a human right, the government would acknowledge its duty to provide Americans access to health care.³⁴ This pandemic has highlighted the importance for all citizens, but especially health care providers, to be confident that their health is a priority to the government.³⁵ Health care providers are the most critical component of saving lives in the health care system because they provide diagnoses, treatment, and care to patients.³⁶ Medical equipment is rarely useful unless a health care provider is available to administer it to a patient.³⁷ Therefore, the nation's lack of preparation to ensure the safety of health care providers in emergencies by stocking adequate

³⁰ See STATE HEALTH OFFICER CONFINEMENT ORDER RELATING TO DISEASE CONTROL MEASURES TO PREVENT THE SPREAD OF 2019-nCoV/COVID-19 PURSUANT TO NORTH DAKOTA CENTURY CODE § 23-01-05(12), STATE OF N.D. DEP'T OF Health 1 (Nov. 9, 2020), www.health.nd.gov/sites/www/files/documents/Files/MSS/coronavirus/State%20Health%20Officer%20Orders/2020-05.2_isolation_health_care_exemption.pdf [<https://perma.cc/PG9U-HJE8>].

³¹ Ariel Pablos-Mendéz & Lesley Stone, *Health Development as Nation Strengthening*, in JOSÉ M. ZUNIGA ET AL., *ADVANCING THE HUMAN RIGHT TO HEALTH* 55 (2013); *Health is a Fundamental Right*, WORLD HEALTH ORG. (Dec. 10, 2017), www.who.int/news-room/commentaries/detail/health-is-a-fundamental-human-right [<https://perma.cc/3L4L-PA55>]; G.A. Res. 217 (III) A, Universal Declaration of Human Rights (Dec. 10, 1948).

³² Philip Barlow, *Health Care Is Not a Human Right*, 319 *BRITISH MED. J.* 321 (1999); Mary Gerisch, *Health Care as a Human Right*, AM. BAR ASS'N, www.americanbar.org/groups/crsj/publications/human_rights_magazine_home/the-state-of-healthcare-in-the-united-states/health-care-as-a-human-right/ (last visited Nov. 25, 2020) [<https://perma.cc/PV9Z-H6D2>]; *A Constitutional Right to Health Care: Many Countries Have It, But Not the U.S.*, UNIVERSITY OF CAL. – L.A. (July 19, 2013), www.sciencedaily.com/releases/2013/07/130719104927.htm [<https://perma.cc/89Y6-DJX5>].

³³ See *infra* notes 240–68 and accompanying text.

³⁴ See *infra* notes 249–68 and accompanying text.

³⁵ See Mark A. Rothstein, *Should Health Care Providers Get Treatment Priority in an Influenza Pandemic?*, 38 *J.L. MED. ETHICS* 412 (2010) (“[T]he following three considerations almost certainly would be used to support giving health care providers treatment priority in a pandemic: (1) specific social worth; (2) general social worth; and (3) desert.”).

³⁶ *Health Professions Networks*, WORLD HEALTH ORG., www.who.int/teams/health-workforce/health-professions-networks/#:~:text=Health%20professionals%20play%20a%20central,the%20primary%20health%20care%20approach (last visited Nov. 25, 2020) [<https://perma.cc/JUX3-YVVB>].

³⁷ See Alice G. Gosfield, *Editorial: Physician-Hospital Partnership—What Really Counts?*, 3 *J. ONCOLOGY PRAC.* 133 (“[V]irtually everything that happens in a hospital is derived ultimately from a physician's order.”).

amounts of PPE is a violation of the government's ethical duty to respect, protect, and fulfill Americans' health care needs.³⁸

To resolve the nation's deficiency in PPE preparation, the federal government should reinstate its Hospital Preparedness Program (HPP) grant enabling hospitals to establish a storage space for PPE and to supply the initial stockpile.³⁹ This grant should allow hospitals to utilize stockpile materials to minimize waste.⁴⁰ After the federal government funds the initial stockpile, hospitals will be able to independently maintain their stockpiles by replenishing the PPE they use from the stockpile with their standard equipment budgets.⁴¹ This grant encompasses a high initial cost for the federal government; however, it will reduce the federal government's long-term costs by requiring less spending in reaction to the next national emergency.⁴² If the federal government is unwilling or unable to provide the funding for a grant program, Wyoming should implement a similar grant or expand the state stockpile to ensure Wyoming's health care providers' safety during future emergencies.⁴³

This comment argues that the United States federal government should recognize its duty to protect American's access to health care through protecting the safety of health care providers.⁴⁴ Part II describes the consequences of previous national PPE shortages and the statutes and regulations currently governing hospital's PPE storage.⁴⁵ Part III explains the impact of PPE shortages to the nation during the COVID-19 pandemic and identifies the heightened risk of PPE shortages to rural communities during medical emergencies.⁴⁶ Part IV

³⁸ Press Release, New Document Shows Inadequate Distribution, *supra* note 16; see Christine Mitchell, *Ethical Dilemmas in Mask and Equipment Shortages: Health Care During the COVID-19 Pandemic*, HARVARD MED. SCHOOL (Apr. 24, 2020), www.slideshare.net/petriefflom/christine-mitchell-ethical-dilemmas-in-mask-and-equipment-shortages-health-care-during-the-covid19-pandemic; Adrian O'Dowd, *Covid-19: Government Failed to Protect Staff During Height of Pandemic, Experts Tell MPs*, BMJ (July 22, 2020), www.bmj.com/content/370/bmj.m2937 [<https://doi.org/10.1136/bmj.m2937>].

³⁹ See *Ratification of 18 International Human Rights Treaties*, UNITED NATIONS OFF. OF THE HIGH COMM'R, indicators.ohchr.org/ (last visited Nov. 28, 2020).

⁴⁰ See *infra* notes 232–33 and accompanying text.

⁴¹ See Will Mitchell, *How Much Do U.S. Hospitals Spend on Medical Supplies?*, HEALTH MGMT., POL'Y, & INNOVATION (Aug. 2, 2017), hmpi.org/2017/09/09/how-much-do-u-s-hospitals-spend-on-medical-supplies/?pdf=815 [<https://doi.org/10.1177/1077558717719928>] (summarizing Yousef Abdulsalam & Eugene Schneller, *Hospital Supply Expenses: An Important Ingredient in Health Services Research*, 76 MED. CARE RSCH. AND REV. 240 (July 24, 2017)).

⁴² See *infra* notes 329–36 and accompanying text.

⁴³ See *infra* notes 317–20 and accompanying text.

⁴⁴ See *infra* notes 241–68 and accompanying text.

⁴⁵ See *infra* notes 51–142 and accompanying text.

⁴⁶ See *infra* notes 143–199 and accompanying text.

describes the reactionary measures of government agencies to the pandemic.⁴⁷ It contends that the government should formally recognize its duty to ensure access to health care because health care is a fundamental human right.⁴⁸ Part V proposes the reinstatement of HHS's Hospital Preparedness Program and suggests that if the federal government is unwilling or unable to reinstate a modified version of the HPP program, Wyoming should take steps to ensure the safety of health care providers during future medical emergencies.⁴⁹ Finally, Part VI addresses potential criticisms.⁵⁰

II. BACKGROUND

A. *Learning from Previous Mistakes: Prior Hospital PPE Shortages*

America's PPE shortages are not specific to the COVID-19 pandemic.⁵¹ PPE supply shortages were also problematic during the Severe Acute Respiratory Syndrome (SARS) pandemic, the Ebola epidemic, and the H1N1 pandemic.⁵² Despite these warnings, the federal government made almost no changes to its emergency preparation techniques and continued to underfund national

⁴⁷ See *infra* notes 200–268 and accompanying text.

⁴⁸ See *infra* notes 241–68 and accompanying text. Formally recognizing health care as a human right would also create other significant ramifications beyond increasing PPE preparation for health care workers. See *Human Rights and Health*, WORLD HEALTH ORG. (Dec. 29, 2017), www.who.int/news-room/fact-sheets/detail/human-rights-and-health [https://perma.cc/W4B3-22BU]. However, other effects of recognizing health care as a human right are outside the scope of this article.

⁴⁹ See *infra* notes 269–320 and accompanying text.

⁵⁰ See *infra* notes 321–368 and accompanying text.

⁵¹ See 3 ARCHIE CAMPBELL, *THE SARS COMMISSION* 1108 (2006); *Nurses Protest H1N1 Respirator Mask Shortage*, HEALTH LEADERS (Nov. 2, 2009), www.healthleadersmedia.com/nursing/nurses-protest-h1n1-respirator-mask-shortage [https://perma.cc/HX6L-RKM9]; Bevan Schneck, *A New Pandemic Fear: A Shortage of Surgical Masks*, TIME (May 19, 2009), content.time.com/time/health/article/0,8599,1899526,00.html; *Ebola (Ebola Virus Disease)*, CTRS. FOR DISEASE CONTROL AND PREVENTION (Jan. 5, 2016), www.cdc.gov/vhf/ebola/healthcare-us/ppe/supplies.html [https://perma.cc/VSU8-PG8V]; Jennifer Cohen & Yana Van Der Meulen Rodgers, *Contributing Factors to Personal Protective Equipment Shortages During the COVID-19 Pandemic*, PREVENTIVE MED., Dec. 2020, www.ncbi.nlm.nih.gov/pmc/articles/PMC7531934/ [https://doi.org/10.1016/j.jypmed.2020.106263]; Memorandum from Christopher M. Kirchhoff to Susan E. Rice, Ambassador, 3–5 (July 11, 2016), int.nyt.com/data/documenthelper/6823-national-security-counci-ebola/05bd797500ea55be0724/optimized/full.pdf#page=1 [https://perma.cc/M2M9-9HS7].

⁵² See 3 ARCHIE CAMPBELL, *supra* note 51, at 1108; *Nurses Protest H1N1 Respirator Mask Shortage*, *supra* note 51; Schneck, *supra* note 51; *Ebola (Ebola Virus Disease)*, *supra* note 51; Memorandum from Kirchhoff, *supra* note 51, at 1–5. The difference between an epidemic and pandemic is that an epidemic is a widespread, but not global, medical emergency related to transmission of an infectious disease. Rebecca J. Stanborough, *How is a Pandemic Different From an Epidemic?*, Healthline (Apr. 30, 2020), www.healthline.com/health/pandemic-vs-epidemic [https://perma.cc/6H5V-2QBJ]. A pandemic relates to a global medical emergency related to widespread transmission of an infectious disease. *Id.*

medical emergency preparation programs.⁵³ The COVID-19 pandemic has only illuminated the severity of federal, state, and local shortages of vital medical gear, including PPE.⁵⁴

The commercial market typically fulfills hospitals' PPE supply.⁵⁵ However, during emergencies, the demand for PPE surges, and the commercial market has minimal ability to respond by rapidly supplying PPE to meet the increased demand.⁵⁶ Consequently, hospitals are unable to obtain PPE from the market.⁵⁷ Instead, hospitals request these critical supplies from the SNS.⁵⁸ In 2003, Congress designed the SNS "to supplement and resupply state and local public health agencies in the event of a national emergency within the United States or its territories."⁵⁹ The inventory is managed and distributed by HHS.⁶⁰ When the pandemic struck the United States, most Americans were under the misimpression that the SNS had enough emergency medical supplies, including PPE, to carry

⁵³ See Rebecca Katz et al., *Funding Public Health Emergency Preparedness in the United States*, AM. J. PUB. HEALTH, Sept. 2017, at S150–5, www.ncbi.nlm.nih.gov/pmc/articles/PMC5594396/pdf/AJPH.2017.303956.pdf [<https://doi.org/10.2105/AJPH.2017.303956>]; Sanger et al., *supra* note 2.

⁵⁴ See Sanger et al., *supra* note 2; C. Todd Lopez, *U.S. Must Prepare for Current, Future Pandemics*, U.S. DEP'T OF DEFENSE (Apr. 30, 2020), www.defense.gov/Explore/News/Article/Article/2170864/us-must-prepare-for-current-future-pandemics/ [<https://perma.cc/T4TJ-9E4Y>]; Susan R. Bailey, *Recurring PPE Shortages Must Be Resolved Now*, AM. MED. ASS'N (Aug. 26, 2020), www.ama-assn.org/about/leadership/recurring-ppe-shortages-must-be-resolved-now [<https://perma.cc/Z9SR-EDXD>].

⁵⁵ See Tara Lagu et al., *Fool Me Twice: The Role for Hospitals and Health Systems in Fixing the Broken PPE Supply Chain*, 15 J. HOSP. MED. 570 (2020); *Global Medical Supplies Market and the Impact of COVID-19 (2020 to 2021) – North America is Projected to Witness the Highest Growth During the Forecast Period*, BUSINESS WIRE (May 25, 2020), www.businesswire.com/news/home/20200525005104/en/Global-Medical-Supplies-Market-and-the-Impact-of-COVID-19-2020-to-2021---North-America-is-Projected-to-Witness-the-Highest-Growth-During-the-Forecast-Period---ResearchAndMarkets.com [<https://perma.cc/DZ6P-H5UZ>].

⁵⁶ See *Shortage of Personal Protective Equipment*, *supra* note 5.

⁵⁷ See Anita Patel & Satish Pillai, *Health System and Personal Protective Equipment Preparedness (PPE)*, CTRS. FOR DISEASE CONTROL AND PREVENTION 8 (Feb. 14, 2020), nwrhcc.org/wp-content/uploads/2020/02/Health-System-and-PPE-Preparedness-Webinar-2.14.2020.pdf [<https://perma.cc/8P7K-CWRN>].

⁵⁸ See Stephen D. Prior, *Who You Gonna Call? Responding to a Medical Emergency with the Strategic National Stockpile*, NAT'L SEC. HEALTH POL'Y CTR. 8 (2004); *Strategic National Stockpile*, ASS'N OF STATE AND TERRITORIAL HEALTH OFFS., www.astho.org/Programs/Preparedness/Public-Health-Emergency-Law/Emergency-Use-Authorization-Toolkit/Strategic-National-Stockpile-Fact-Sheet/ (last visited Nov. 25, 2020) [<https://perma.cc/XTV4-DS7Z>] (Deployment of the SNS).

⁵⁹ See 42 U.S.C. § 247d-6b; *Strategic National Stockpile (SNS)*, U.S. DEP'T OF HEALTH & HUM. SERVS., www.remm.nlm.gov/sns.htm (last visited Nov. 25, 2020).

⁶⁰ See *Strategic National Stockpile*, *supra* note 16; ANNA NICHOLSON ET AL., THE NATION'S MEDICAL COUNTERMEASURE STOCKPILE: OPPORTUNITIES TO IMPROVE THE EFFICIENCY, EFFECTIVENESS, AND SUSTAINABILITY OF THE CDC STRATEGIC NATIONAL STOCKPILE §2 (2016).

America through several months of global market shortages.⁶¹ However, the SNS's reserves were depleted by the beginning of April 2020, only one month after HHS's declaration of a national public health emergency.⁶²

The United States' lack of preparation is even more apparent when compared to other countries.⁶³ In 2009, when America was recovering from PPE shortages after the nation's response to the H1N1 pandemic, researchers found that for each mask per American citizen, Australian citizens had 2.5 masks, and English citizens had six.⁶⁴ Better preparation of PPE allowed Australia and England to cope more effectively with the H1N1 pandemic.⁶⁵ This finding is particularly concerning because HHS has not substantially replenished the SNS since 2009.⁶⁶ In 2009, over 85 million N95 respirators were distributed from the SNS to support public health efforts during the H1N1 pandemic.⁶⁷ President Obama tried to replenish the depleted stockpile in 2011; however, Congress did not allocate the full amount of requested funds.⁶⁸ In the federal budget, Congress

⁶¹ See Andrew Jacobs & Sheri Fink, *How Prepared Is the U.S. for a Coronavirus Outbreak?*, N.Y. TIMES (Mar. 9, 2020), www.nytimes.com/2020/02/29/health/coronavirus-preparation-united-states.html; Nell Greenfield Boyce, *Why Even a Huge Medical Stockpile Will Be of Limited Use Against COVID-19*, WYO. PUB. MEDIA (Mar. 14, 2020), www.wyomingpublicmedia.org/post/why-even-huge-medical-stockpile-will-be-limited-use-against-covid-19#stream/0 [<https://perma.cc/9JY4-7SZ4>]; Nell Greenfield Boyce, *Inside a Secret Government Warehouse Prepped for Health Catastrophes*, NAT'L PUB. RADIO (June 27, 2016, 4:56 AM), www.npr.org/sections/health-shots/2016/06/27/483069862/inside-a-secret-government-warehouse-prepped-for-health-catastrophes [<https://perma.cc/YDZ2-BH89>] [hereinafter *Health Catastrophes*].

⁶² See Donald J. Trump, *Proclamation on Declaring a National Emergency Concerning the Novel Coronavirus Disease (COVID-19) Outbreak*, WHITEHOUSE.GOV (Mar. 13, 2020), www.whitehouse.gov/presidential-actions/proclamation-declaring-national-emergency-concerning-novel-coronavirus-disease-covid-19-outbreak/#:~:text=The%20Secretary%20of%20Health%20and,in%20response%20to%20COVID%2D19 [<https://perma.cc/5UAH-RPA6>]; Holmes, *supra* note 21; 42 U.S.C. 247d (allowing the Secretary to declare a public health emergency which permits the Treasury to access the Public Health Emergency Fund to support the public health emergency).

⁶³ See Schneck, *supra* note 51.

⁶⁴ *Id.*

⁶⁵ *Id.*

⁶⁶ *Despite Repeated Calls to Replenish Supplies, A Shortage Exists of Specialized Masks to Protect Medical Personnel*, KAISER FAM. FOUND. (Mar. 11, 2020), khn.org/morning-breakout/despite-repeated-calls-to-replenish-supplies-a-shortage-exists-of-specialized-masks-to-protect-medical-personnel/ [<https://perma.cc/CVZ7-UXHN>]; Matthew Brown, *Fact Check: Did the Obama Administration Deplete the Federal Stockpile of N95 Masks?*, USA TODAY (Apr. 4, 2020, 3:31 PM), www.usatoday.com/story/news/factcheck/2020/04/03/fact-check-did-obama-administration-deplete-n-95-mask-stockpile/5114319002/; Greenfield Boyce, *supra* note 61.

⁶⁷ GEORGE J. BUSENBERG, POLICY LESSONS FROM THE HISTORY OF PANDEMIC PREPAREDNESS, EDMOND J. SAFRA CTR. FOR ETHICS 8 (2020).

⁶⁸ In 2011, President Obama's administration requested Congress increase HHS's budget for the SNS to \$655 million to replenish the HHS stockpile, however Congress instead cut the budget from the year before by nine percent from \$417 million to \$381 million. ADVANCING THE HEALTH,

specified that the majority of the allocation should be spent preparing for a terrorist attack.⁶⁹ There was not enough money allocated to also restock the PPE used during the H1N1 pandemic to prepare for future respiratory influenzas.⁷⁰ As a result of Congress' equipment prioritization, the SNS only had twelve million N95 respirators stored for the nation to rely on during the COVID-19 pandemic, only fourteen percent of the supply that was utilized during the H1N1 pandemic.⁷¹ Moreover, of the twelve million stored respirators, five million were expired.⁷²

The market for hospitals' PPE is generally stable.⁷³ However, demand for PPE spikes during emergencies necessitating a government-maintained PPE stockpile.⁷⁴ A stockpile is even more critical to the United States because the nation's PPE supply has become increasingly unstable over the last decade as the country has increasingly relied upon other countries, especially China, for medical supplies.⁷⁵ It is dangerous for one country to control the creation and

SAFETY, AND WELL-BEING OF OUR PEOPLE, U.S. DEP'T OF HEALTH & HUM. SERVS. 4 (2011) ("Budget includes \$655 million . . . for the Strategic National Stockpile to replace expiring products . . ."); Yeganeh Torbati & Isaac Arnsdorf, *How Tea Party Budget Battles Left the National Emergency Medical Stockpile Unprepared for Coronavirus*, PROPUBLICA (Apr. 3, 2020, 10:42 AM), www.propublica.org/article/us-emergency-medical-stockpile-funding-unprepared-coronavirus [https://perma.cc/LM3V-A5KR].

⁶⁹ BUDGET OF THE U.S. GOVERNMENT: FISCAL YEAR 2011, OFF. OF MGMT. AND BUDGET 76 (2011). Congress specified that HHS should utilize \$400 million of its allocated funds in preparing countermeasures against chemical, biological, radiological, and nuclear threats. *Id.* HHS was expected to use the remainder of the money within the \$1.65 billion allocated to the Supplemental Appropriations Act in 2009. *Id.*

⁷⁰ See *id.*; Beth Reinhard & Emma Brown, *Face Masks in National Stockpile Have Not Been Substantially Replenished Since 2009*, WASH. POST (Mar 10, 2020, 2:57 PM), www.washingtonpost.com/investigations/face-masks-in-national-stockpile-have-not-been-substantially-replenished-since-2009/2020/03/10/57e57316-60c9-11ea-8baf-519cedb6ccd9_story.html.

⁷¹ *Id.* The stockpile distributed 85 million N95 respirators. *Id.* Later, for COVID, the stockpile had 12 million N95s and 12/85 = 14%. *Id.*

⁷² *Id.* ("Another 5 million N95 masks in the stockpile are expired.").

⁷³ See generally *Personal Protective Equipment (PPE) Market to Hit USD 79 Billion by 2025: Global Market Insights Inc.*, CISION (Nov. 07, 2019), www.prnewswire.com/news-releases/personal-protective-equipment-ppe-market-to-hit-usd-79-billion-by-2025-global-market-insights-inc-300953624.html [https://perma.cc/45RE-AUAB]; *Growth Opportunities in the Pharmaceutical PPE Market 2017-2021*, BUSINESS WIRE (Apr. 24, 2017), www.businesswire.com/news/home/20170424006345/en/Growth-Opportunities-Pharmaceutical-PPE-Market-2017-2021 [https://perma.cc/9MB7-P9QS].

⁷⁴ See NICHOLSON ET AL., *supra* note 60, at 1; *Shortage of Personal Protective Equipment*, *supra* note 5.

⁷⁵ In 2004, United States manufacturing companies fulfilled 90% of the countries' surgical mask market. Yuki Noguchi, *Not Enough Face Masks are Made in America to Deal with Coronavirus*, NAT'L PUB. RADIO (Mar. 5, 2020, 5:06 AM), www.npr.org/sections/health-shots/2020/03/05/811387424/face-masks-not-enough-are-made-in-america-to-deal-with-coronavirus [https://perma.cc/4VH9-W664]. Within one year, 95% of the countries' demand was

distribution of most medical supplies because then the supply becomes susceptible to disruptions.⁷⁶ In a pandemic, countries relying primarily on imported medical supplies face a higher risk of shortages because their domestic stockpile and industrial capacity rely on other possibly affected countries.⁷⁷ If the country controlling the critical supply terminates exports of those supplies, and if there are no redundancies in production, such as a stockpile, the reliant country is without means to rapidly obtain those supplies.⁷⁸

fulfilled through manufacturers overseas. *Id.*; COVID-19: CHINA MEDICAL SUPPLY CHAINS AND BROADER TRADE ISSUES, CONG. RSCH. SERV. 42–43 (2020) (dependency of US health care supply chains on China). This 2005 shift of America's reliance on PPE manufacturers overseas remains present in 2020. See Jane Feinmann, *PPE: What Now for the Global Supply Chain?*, BMJ (May 15, 2020), [www.bmj.com/content/369/bmj.m1910.full](https://doi.org/10.1136/bmj.m1910) [https://doi.org/10.1136/bmj.m1910].

⁷⁶ See Feinmann, *supra* note 75.

⁷⁷ See Aaron Friedberg, *The United States Needs to Reshape Global Supply Chains*, FOREIGN POLICY (May 8, 2020, 3:48 PM), [foreignpolicy.com/2020/05/08/united-states-reshape-global-supply-chains-china-reglobalization/](https://perma.cc/7EX4-N2UL) [https://perma.cc/7EX4-N2UL] (“Once the coronavirus pandemic begins to recede, greater awareness of the potential impact of natural as well as man-made shocks will accelerate tendencies not toward deglobalization but rather toward reglobalization: a reshuffling of supply chains and at least a partial reduction in the concentration of capacity inside China. In the words of one recent survey of global manufacturing trends: ‘While the trade war triggered some notable tinkering, the massive operational disruption wrought by the coronavirus pandemic will compel companies to fundamentally rethink their sourcing strategies. At minimum . . . they will be increasingly inclined to spread their risks rather than put all their eggs in the lowest cost basket, as many long did in China.’”); Danielle Pletka & Derek Scissors, *We’re Too Dependent on China for Too Many Critical Goods. Especially Medicine.*, AM. ENTER. INST. (Mar 21, 2020), www.aei.org/op-eds/were-too-dependent-on-china-for-too-many-critical-goods-especially-medicine/ (“This makes no sense, economically or logically. Most individuals wouldn’t tolerate dependence on a single drug store for a critical, life-saving medication. Why would a nation?”).

⁷⁸ See Kenneth Rapoza, *The Coming ‘Breaking’ of the China Supply Chain*, FORBES (May 17, 2020, 4:42 PM), www.forbes.com/sites/kenrapoza/2020/05/17/the-coming-breaking-of-the-china-supply-chain/?sh=3a9e32915d04 [https://perma.cc/CCD9-KT78]; Press Release, Graham: We Must No Longer Be Reliant on China for PPE (July 16, 2020), www.lgraham.senate.gov/public/index.cfm/2020/7/graham-we-must-no-longer-be-reliant-on-china-for-ppe [https://perma.cc/F9F9-ZSRC]; Keith Bradsher, *China Dominates Medical Supplies, in This Outbreak and the Next*, N.Y. TIMES (July 5, 2020), www.nytimes.com/2020/07/05/business/china-medical-supplies.html. Redundancies in supply chain can include having many suppliers, holding extra inventories of the supply, and maintaining low-capacity utilization. Paul Michelman, *Building a Resilient Supply Chain*, HARV. BUS. REV. (Aug. 14, 2007), hbr.org/2007/08/building-a-resilient-supply-chain [https://perma.cc/L3CP-M2X3]. Low-capacity utilization occurs when there is a greater amount of supply available on the market at a certain time compared to the product’s demand at that time. See *What Is Capacity Utilization?*, CORP. FIN. INST., corporatefinanceinstitute.com/resources/knowledge/economics/capacity-utilization/ [https://perma.cc/9RFE-LPCL]. Product redundancies improve a product’s stability in the market by diversifying a product’s supply in the case of interruption of production from one or a few suppliers within the market. See Michelman, *supra* note 78.

Throughout 2020, the COVID-19 pandemic illustrated the accuracy of previously anticipated PPE market vulnerabilities.⁷⁹ COVID-19 spread across America, creating a national surge in demand for PPE.⁸⁰ However, the surge of COVID-19 cases in China had already depleted much of global PPE supply since the virus originated in China months before reaching America.⁸¹ China is also the largest provider of PPE, which was problematic because many PPE manufacturing factories closed while the pandemic devastated China.⁸² When the pandemic reached the United States, transmission rates in China began subsiding, allowing workers to return to their manufacturing jobs.⁸³ After an initial scarcity of imported supplies in America, Chinese PPE factories were able to reopen and contribute to the increasing global PPE demand.⁸⁴ China, amongst other countries, rushed to create more factories to produce PPE to meet supply.⁸⁵ However, due to the urgent demand in an increased supply of PPE, the quality of the supplies was not subject to the same level of market oversight as they were

⁷⁹ See *supra* notes 18–23 and accompanying text; *infra* notes 352–53 and accompanying text; Talha Burki, *Global Shortage of Personal Protective Equipment*, 20 LANCET 785, 785 (2020) (“The COVID-19 pandemic has caused shortages and price rises in PPE, especially those needed to protect frontline workers.”).

⁸⁰ Neil J. Rowan & John G. Laffey, *Unlocking the Surge in Demand for Personal and Protective Equipment (PPE) and Improvised Face Coverings Arising from Coronavirus Disease (COVID-19) Pandemic – Implications for Efficacy, Re-use and Sustainable Waste Management*, SCI. OF THE TOTAL ENV'T (Sept. 10, 2020), reader.elsevier.com/reader/sd/pii/S0048969720357880?token=689F7CF476930A0CB5E13D48725A8BDB19A630EDBF72CDAE18DDED5B7F410FEC522F7937D08356B1CDA97DCEB81D4AE [https://doi.org/10.1016/j.scitotenv.2020.142259]; Frank Diamond, *Expect Huge Surge in Demand for Personal Protective Equipment in COVID-19 Hotspots*, INFECTION CONTROL TODAY (Apr. 1, 2020) www.infection-controltoday.com/view/expect-huge-surge-demand-personal-protective-equipment-covid-19-hotspots [https://perma.cc/B5L4-9LNZ].

⁸¹ See WHO Director-General's Opening Remarks at the Media Briefing on 2019 Novel Coronavirus, WORLD HEALTH ORG. (Feb. 7, 2020), www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-2019-novel-coronavirus--7-february-2020 [https://perma.cc/U8SG-55DK]; He Huifeng, *Coronavirus: China's Manufacturing Heartland Almost Back to Normal as Over 6 Million Workers Return*, S. CHINA MORNING POST (Mar. 4, 2020, 1:16 PM), www.scmp.com/economy/china-economy/article/3064952/coronavirus-chinas-manufacturing-heartland-almost-back-normal [https://perma.cc/R35R-R6EK].

⁸² See Burki, *supra* note 79, at 785.

⁸³ Jonathan Cheng, *Workers Return to China's Factories, but Coronavirus Hurts Global Demand*, WALL STREET J. (Apr. 1, 2020, 12:33 PM), www.wsj.com/articles/workers-return-to-chinas-factories-but-coronavirus-hurts-global-demand-11585724711; Huifeng, *supra* note 81.

⁸⁴ See Nic Rogers, *China's Manufacturing Facilities Reopen: Checklist for Best Practices During Coronavirus Outbreak*, THOMAS (Mar. 10, 2020), www.thomasnet.com/insights/china-s-manufacturing-facilities-reopen-checklist-for-best-practices-during-coronavirus-outbreak/ [https://perma.cc/FH53-68Y7]; Mark Halper, *Coronavirus: Signify Reopens China Plants. US Lighting and Plastics Firm Retools for PPE*, LEDS MAGAZINE (Apr. 1, 2020), www.ledsmagazine.com/leds-ssl-design/article/14173222/coronavirus-signify-reopens-china-plants-us-lighting-and-plastics-firm-retools-for-ppe.

⁸⁵ See Burki, *supra* note 79 (noting the dramatic increase in China's supply of PPE, including surgical masks producing 90 million more masks per day than production before the pandemic).

before the pandemic, resulting in lower-quality products.⁸⁶ Upon complaints of lower-quality materials, China implemented additional quality assurances; however, these assurances caused further delays in exporting supplies.⁸⁷

To respond to PPE shortages, some American industrial companies endeavored to pause the production of their industrial products and, instead, switch to manufacturing the PPE in high demand.⁸⁸ However, these companies struggled to find the raw materials required to manufacture the PPE products.⁸⁹ Producers discovered that many raw materials were also primarily produced in China and imported into the United States.⁹⁰ Since China makes most of the raw materials to produce medical supplies, depleted Chinese exports made these materials challenging to obtain during the pandemic.⁹¹ As a result, American industrial companies capable of manufacturing PPE supplies were mostly unable to produce the supplies desperately needed by American hospitals.⁹²

⁸⁶ *Fighting Fake and Bad Quality PPE with QC Inspections*, CHINA L. BLOG (May 1, 2020), www.chinalawblog.com/2020/05/fighting-fake-and-bad-quality-ppe-with-qc-inspections.html [<https://perma.cc/RVF2-8GWZ>]; Pamela Boykoff & Clare Sebastian, *With No Shipments from China, Medical Mask Suppliers Have to Choose Whom to Supply*, CNN BUS. (Mar. 6, 2020, 9:39 AM), www.cnn.com/2020/03/06/business/medical-masks-china-shortage-suppliers/index.html; *Stop Using Gowns, Including Surgical Gowns, from Laws of Motion PPE – Letter to Health Care Providers*, U.S. FOOD AND DRUG ADMIN. (Aug. 28, 2020), www.fda.gov/medical-devices/letters-health-care-providers/stop-using-gowns-including-surgical-gowns-laws-motion-ppe-letter-health-care-providers [<https://perma.cc/GF34-JS8R>].

⁸⁷ Keith Bradsher, *China Delays Mask and Ventilator Exports After Quality Complaints*, N.Y. TIMES (Apr. 11, 2020), www.nytimes.com/2020/04/11/business/china-mask-exports-coronavirus.html; Rachel Sandler, *In Effort to Stop Faulty Goods, China Asks Importers to Ensure PPE Meets Standards*, FORBES (Apr. 30, 2020, 8:49 PM), www.forbes.com/sites/rachelsandler/2020/04/30/in-effort-to-stop-faulty-goods-china-asks-importers-to-ensure-ppe-meets-standards/?sh=7920bb8b360b [<https://perma.cc/V8AU-HAAH>].

⁸⁸ See Kristina Fiore, *Not Much Progress on PPE ‘Reshoring’*, MEDPAGE TODAY (Sept. 25, 2020), www.medpagetoday.com/special-reports/exclusives/88815 [<https://perma.cc/XSA9-J6DE>]; Scott Paul, *Why Can’t America Make Enough Masks or Ventilators?*, N.Y. TIMES (Apr. 14, 2020), www.nytimes.com/2020/04/14/opinion/coronavirus-industry-manufacturing.html; Lauren Frias, *Workers Volunteered to Live in a Factory for 28 Days to Produce Millions of Pounds of Raw PPE Materials to Make Masks and Gowns for Frontline Medical Workers*, BUSINESS INSIDER (Apr. 23, 2020, 9:17 PM), www.businessinsider.com/workers-lived-in-factory-for-month-raw-ppe-materials-2020-4.

⁸⁹ See Pat Rizzuto et al., *Disinfectant Shortage to Last Weeks Without Raw Materials*, BLOOMBERG LAW (Mar. 27, 2020, 12:04 PM), news.bloomberglaw.com/environment-and-energy/disinfectant-shortage-to-last-weeks-without-raw-materials [<https://perma.cc/82HD-6PJX>]; Christopher Reynolds, *Manufacturers Scramble to Find Raw Materials Amid ‘Desperate’ Shortage for PPE*, CTV NEWS (May 24, 2020, 10:59 AM), www.ctvnews.ca/health/coronavirus/manufacturers-scramble-to-find-raw-materials-amid-desperate-shortage-for-ppe-1.4952270 [<https://perma.cc/43BZ-77ZV>].

⁹⁰ *U.S. to Ramp Up Mask Production, But China Is Bottleneck for Raw Materials*, GLOBAL BIODEFENSE (Mar. 1, 2020, 10:06 AM), globalbiodefense.com/headlines/u-s-to-ramp-up-mask-production-but-china-is-bottleneck-for-raw-materials/ [<https://perma.cc/CJN6-5HW6>].

⁹¹ *Id.*

⁹² See *supra* notes 88–91 and accompanying text.

Despite these difficulties, COVID-19 highlighted Americans' innovative spirit.⁹³ After recognizing the challenges of producing medical-grade masks in the United States, many individuals and local businesses began creating cloth masks and aprons from material scraps to supplement hospitals' dwindling supplies.⁹⁴ However, most hand-crafted masks are not created with the same standard as industrial-made masks and may not offer the same protection.⁹⁵ Cloth masks generally have not surmounted the rigorous testing of medical-grade masks to determine the degree of protection they provide.⁹⁶ Although cloth masks offer more protection than no mask, cloth masks primarily help the health care industry by decreasing the overall demand for medical-grade masks, preserving them for health care workers.⁹⁷ Moreover, cloth masks also indirectly help health care workers maintain medical-grade masks by slowing down the transmission of the virus, which decreases the number of COVID-19 patients admitted to hospitals.⁹⁸ Subsequently, the reduction in COVID-19 patients

⁹³ Hannah Thomasy, *Covid-19 Has Designers Reimagining Personal Protective Equipment*, SMITHSONIAN MAGAZINE (Sept. 14, 2020), www.smithsonianmag.com/innovations/covid-19-has-designers-reimagining-personal-protective-equipment-180975782/ [https://perma.cc/PW8H-R63M].

⁹⁴ See David Enrich et al., *A Sewing Army, Making Masks for America*, N.Y. TIMES (Mar. 25, 2020), www.nytimes.com/2020/03/25/business/coronavirus-masks-sewers.html; *Strategies for Optimizing the Supply of Facemasks*, CTRS. FOR DISEASE CONTROL AND PREVENTION (Nov. 23, 2020), www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/face-masks.html [https://perma.cc/7HVZ-B43J].

⁹⁵ See Anna Davies et al., *Testing the Efficacy of Homemade Masks: Would They Protect in an Influenza Pandemic*, 7 DISASTER MED. AND PUB. HEALTH PREPAREDNESS 413, 414–15 (2013).

⁹⁶ See ABRAR A. CHUGHTAI ET AL., EFFECTIVENESS OF CLOTH MASKS FOR PROTECTION AGAINST SEVERE ACUTE RESPIRATORY SYNDROME CORONAVIRUS 2 (2020).

⁹⁷ See Laura R. Garcia Godoy et al., *Facial Protection for Healthcare Workers During Pandemics: A Scoping Review*, BMJ (May 5, 2020), www.ncbi.nlm.nih.gov/pmc/articles/PMC7228486/ [http://dx.doi.org/10.1136/bmjgh-2020-002553] (explaining the results of a recent study comparing surgical and cloth masks. However, the study did not include a no-mask control group due to ethical concerns of not providing any respiratory protection to individuals in close-proximity with COVID-19-positive patients); *Considerations for Wearing Masks*, CTRS. FOR DISEASE CONTROL AND PREVENTION (Nov. 12, 2020), <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cloth-face-cover-guidance.html> [https://perma.cc/2XMK-S3SU]; *N95 Respirators, Surgical Masks, and Face Masks*, U.S. FOOD AND DRUG ADMIN. (Nov. 24, 2020), www.fda.gov/medical-devices/personal-protective-equipment-infection-control/n95-respirators-surgical-masks-and-face-masks [https://perma.cc/P6KT-XCVS].

⁹⁸ See Signe Brewster, *People Are Sewing Face Masks for Medical Workers. Should They?*, N.Y. TIMES (Mar. 27, 2020), www.nytimes.com/wirecutter/blog/homemade-face-masks-coronavirus/; Janelle Ringer, *Which Type of Face Mask Is Most Effective Against COVID-19?*, LOMA LINDA UNIVERSITY HEALTH (Aug. 11, 2020), news.llu.edu/health-wellness/which-type-of-face-mask-most-effective-against-covid-19 [https://perma.cc/2VTM-6CSH]; CHUGHTAI ET AL., *supra* note 96; *COVID-19: How Much Protection Do Face Masks Offer?*, MAYO CLINIC (Aug. 20, 2020), www.mayoclinic.org/diseases-conditions/coronavirus/in-depth/coronavirus-mask/art-20485449#:~:text=A%20cloth%20mask%20is%20intended,t%20realize%20it [https://perma.cc/4QE2-GD2T].

reduced the amount of PPE used in hospitals, allowing hospitals to better retain their supplies.⁹⁹

Moreover, even surgical masks are insufficient substitutes for N95 respirators.¹⁰⁰ N95 respirators filter out 95% of particles 0.3 microns or larger.¹⁰¹ Surgical masks do not block small particles because the loose fit between the mask and the wearer's face allows passage of most airborne particles.¹⁰² The design of surgical masks primarily blocks splashes and large-particle droplets such as those released from a cough or sneeze.¹⁰³ Surgical masks, when compared to N95 respirators, do not provide equal respiratory protection from exposure to particles in the air to their wearers.¹⁰⁴ Surgical masks primarily are meant to protect others from the *wearer's* respiratory emissions because the droplets remain within the mask and do not become airborne.¹⁰⁵ Because cloth masks protect droplets that may contain COVID-19 particles produced primarily by a person's coughs or sneezes, such masks reduce but do not eliminate the risk of contracting COVID-19.¹⁰⁶ If there are airborne COVID-19 particles, which for example, may be created from an infected person who is not wearing a mask coughing or sneezing, another person with a cloth or surgical mask will not be as well protected from the transmission of the virus by a mask, as they would be using a respirator.¹⁰⁷

⁹⁹ See Brewster, *supra* note 98; Ringer, *supra* note 98; CHUGHTAI ET AL., *supra* note 96.

¹⁰⁰ See Samy Rengasamy et al., *Simple Respiration Protection – Evaluation of the Filtration Performance of Cloth Masks and Common Fabric Masks Against 20-1000 nm Size Particles*, 54 ANNALS OF OCCUPATIONAL HYGIENE 789 (2010).

¹⁰¹ Don Oldenburg, *N95 Masks Fly Off Shelves, but Offer Scant Protection*, WASH. POST (Feb. 15, 2003), www.washingtonpost.com/archive/lifestyle/2003/02/15/n95-masks-fly-off-shelves-but-offer-scant-protection/90540cf6-846b-420a-8184-4b872edbe1ca/. 0.3 microns is smaller than the eye can detect. *Filtration*, NILFISK, nilfiskcfm.com/filtration/#:-:text=One%20micron%20is%20equal%20to,often%20causing%20adverse%20health%20effects (last visited Nov. 26, 2020) [<https://perma.cc/5P9R-W6N5>]. On average, the human eye can detect particles of 50–60 microns and larger. *Id.* There are 1,000 microns in a millimeter. *Microns to Millimeters*, METRIC CONVERSIONS, www.metric-conversions.org/length/microns-to-millimeters.htm (last visited Nov. 26, 2020).

¹⁰² *N95 Respirators, Surgical Masks, and Face Masks*, *supra* note 97.

¹⁰³ *Id.*

¹⁰⁴ See *Understanding the Difference*, CTRS. FOR DISEASE CONTROL AND PREVENTION, www.cdc.gov/niosh/npptl/pdfs/UnderstandDifferenceInfographic-508.pdf (last visited Nov. 26, 2020) [<https://perma.cc/GSB9-XWKK>]. The purpose of respiratory protection is to prevent exposure to contaminated air. Elaine L. Chao & John L. Henshaw, *Respiratory Protection*, U.S. DEP'T OF LAB. (2002), www.osha.gov/Publications/OSHA3079/osha3079.html#:-:text=The%20primary%20objective%20of%20the,thus%20to%20prevent%20occupational%20illness [<https://perma.cc/7YNH-GZJW>]. Because surgical masks have a loose fit, they do not filter the air to prevent the contaminants, such as COVID-19 suspended in the air, from being inhaled. *Understanding the Difference*, *supra* note 104. Therefore, surgical masks should not be used as respirators for respiratory protection. See 42 C.F.R. § 84.1 (2020); Chao & Henshaw, *supra* note 104.

¹⁰⁵ *Understanding the Difference*, *supra* note 104.

¹⁰⁶ See *id.*; *Considerations for Wearing Masks*, *supra* note 97.

¹⁰⁷ See *Considerations for Wearing Masks*, *supra* note 97.

Because surgical and cloth masks do not provide full respiratory protection, hospitals typically rely upon respirators for this purpose.¹⁰⁸ When health care providers intubate a patient or place a patient on another noninvasive breathing device, the patient can release aerosolized particles of the virus into the air requiring the health care provider to use respiratory protection to prevent transmission of the virus.¹⁰⁹ Therefore, N95 respirators are vital for health care workers to best protect themselves while providing care to positive COVID-19 patients.¹¹⁰

B. Federal Pre-Pandemic Laws Relating to Hospital Supplies

No federal laws require an individual hospital to store a certain amount of PPE.¹¹¹ Although there are a handful of administrative regulations relating to PPE, there is little guidance regarding how much PPE a hospital should store.¹¹² In their role as employers, hospital administrators are responsible for protecting health care workers in the hospital.¹¹³ The PPE standard designated by the Occupational Safety and Health Administration (OSHA) mandates that hospitals provide their employees with PPE.¹¹⁴ OSHA also requires that hospitals retain emergency preparedness by maintaining a “functional level” of preserved equipment, supplies, and worker training.¹¹⁵ However, OSHA does not define

¹⁰⁸ See HOSPITAL RESPIRATORY PROTECTION PROGRAM TOOLKIT: RESOURCES FOR RESPIRATOR PROGRAM ADMINISTRATORS 5 (2015).

¹⁰⁹ See Nicoletta Lanese, *Are Ventilators Being Overused on COVID-19 Patients?*, LIVE SCIENCE (Apr. 8, 2020) (“Noninvasive breathing devices do pose some threat to health care workers, as they can release aerosolized particles of the virus into the air while in use . . .”).

¹¹⁰ See *N95 Respirators, Surgical Masks, and Face Masks*, *supra* note 97; Shefali Luthra & Christina Jewett, *Widely Used Surgical Masks Are Putting Health Care Workers at Serious Risk*, KAISER FAM. FOUND. (Apr. 28, 2020), khn.org/news/widely-used-surgical-masks-are-putting-health-care-workers-at-serious-risk/ [<https://perma.cc/L78W-GLCK>]; Heather Grey, *Hundreds of Healthcare Workers Have Died from COVID-19: This Doctor Is Honoring Them*, HEALTHLINE (Oct. 11, 2020), www.healthline.com/health-news/hundreds-of-healthcare-workers-have-died-from-covid-19-this-doctor-is-honoring-them#Gaps-in-tracking,-reporting [<https://perma.cc/S7AE-86NQ>].

¹¹¹ See 24 U.S.C. §§ 1–423; 29 U.S.C. §§ 651–78 (legislation on this issue would likely fall within the sections referenced).

¹¹² See 29 C.F.R. §§ 1910.132–.138; *id.* § 1910.1030; *id.* § 1910.151; *id.* § 1926.50; *id.* § 1915.87.

¹¹³ See *id.* § 1910.132(a); HOSPITALS AND COMMUNITY EMERGENCY RESPONSE: WHAT YOU NEED TO KNOW, U.S. DEP’T OF LAB. 14 (2008).

¹¹⁴ See *Employers Must Provide and Pay for PPE*, OCCUPATIONAL SAFETY AND HEALTH ADMIN. (Feb. 9, 2010), www.osha.gov/dte/outreach/intro_osh/7_employee_ppe.pdf [<https://perma.cc/VM9A-XDMY>]; Letter from Richard E. Fairfax, Dir., Directorate of Enforcement Programs, to Kevin J. Hayden, Acting Commanding Off. N.J. Emergency Mgmt. Section, Occupational Safety and Health Admin. (Dec. 2, 2002), www.osha.gov/laws-regs/standardinterpretations/2002-12-02-0 [<https://perma.cc/G8Z2-7XZ7>].

¹¹⁵ OSHA BEST PRACTICES FOR HOSPITAL-BASED FIRST RECEIVERS OF VICTIMS FROM MASS CASUALTY INCIDENTS INVOLVING THE RELEASE OF HAZARDOUS SUBSTANCES, U.S. DEP’T OF LAB. (2005).

the amount of supplies constituting a functional level, leaving that determination largely to the discretion of individual hospitals.¹¹⁶

The Centers for Medicare and Medicaid Services (CMS) also regulates health care organizations indirectly.¹¹⁷ Hospitals participating in the Medicare and Medicaid services must comply with CMS's Conditions of Participation.¹¹⁸ One condition of participation that hospitals must comply with is CMS's Emergency Preparedness regulations.¹¹⁹ These regulations include compliance with the Emergency Medical Treatment and Labor Act (EMTALA), requiring hospitals

¹¹⁶ See *id.*

¹¹⁷ See CMS MANUAL SYSTEM: PUB. 100-07 STATE OPERATIONS PROVIDER CERTIFICATION, CTRS. FOR MEDICARE & MEDICAID SERVS. (2009). CMS is a division of the Department of Health and Human Services. *About CMS*, CTRS. FOR MEDICARE & MEDICAID SERVS., www.cms.gov/About-CMS/About-CMS (last visited Nov. 26, 2020) [<https://perma.cc/9NHF-HKQK>]. Congress created CMS in 1965 after H.R. 6675 was passed by Congress and signed by the President, creating the Medicare and Medicaid programs. Social Security Amendments of 1965, Pub. L. No. 89-97, 79 Stat. 286. CMS is the administrative body primarily regulating the Medicare and Medicaid programs. *Centers for Medicare and Medicaid Services*, USA.GOV, www.usa.gov/federal-agencies/centers-for-medicare-and-medicare-services#:~:text=The%20Centers%20for%20Medicare%20and,%20the%20Health%20Insurance%20Marketplace (last visited Nov. 26, 2020) [<https://perma.cc/B3VF-UTM9>]. Hospitals are not obligated to participate in Medicare or Medicaid services. *Fact Sheet: Underpayment by Medicare and Medicaid*, AM. HOSP. ASS'N (Jan. 7, 2020), www.aha.org/fact-sheets/2020-01-07-fact-sheet-underpayment-medicare-and-medicare#:~:text=Hospital%20participation%20in%20Medicare%20and,for%20Medicare%20and%20Medicaid%20beneficiaries [<https://perma.cc/3FS4-XP2S>]. However, many hospitals contract with CMS, agreeing to stipulations such as the quality of treatment and set payments for certain treatments to ensure payment for the hospital's services after treating patients with Medicare or Medicaid. See *July 2020 Medicaid & CHIP Enrollment Data Highlights*, MEDICAID.GOV (Oct. 30, 2020), www.medicare.gov/medicaid/program-information/medicaid-and-chip-enrollment-data/report-highlights/index.html [<https://perma.cc/9HNR-JDXY>]. Approximately 75 million people in the US, including residents of every state, were enrolled in Medicaid in June 2020. *Id.* In 2018, approximately 60 million US citizens were enrolled in Medicare. *Total Number of Medicare Beneficiaries*, KAISER FAM. FOUND. (2018), www.kff.org/medicare/state-indicator/total-medicare-beneficiaries/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D [<https://perma.cc/J7T7-Q6FV>].

¹¹⁸ See 45 C.F.R. § 180.90 (2020); *Find & Compare Nursing Homes, Hospitals & Other Providers Near You*, MEDICARE.GOV, www.medicare.gov/care-compare/?providerType=Hospital&redirect=true (last visited Nov. 26, 2020) [<https://perma.cc/69T2-Q9CG>]; *EMTALA Fact Sheet*, AM. COLLEGE OF EMERGENCY PHYSICIANS, www.acep.org/life-as-a-physician/ethics-legal/emtala/emtala-fact-sheet/#:~:text=Penalties%20may%20include%3A,%2C%20including%20on%2Dcall%20physicians (last visited Nov. 26, 2020) [<https://perma.cc/YA5F-MWTF>].

¹¹⁹ See *Conditions for Coverage (CfCs) & Conditions of Participation (CoPs)*, CMS.GOV (May 19, 2020, 11:29 AM), www.cms.gov/Regulations-and-Guidance/Legislation/CFCsAndCoPs [<https://perma.cc/444T-MF4N>]; Memorandum from David Wright, Dir. Quality Safety and Oversight Group, to State Survey Agency Directors, Ctrs. for Medicare & Medicaid Servs. (Mar. 9, 2020), www.cms.gov/files/document/qso-20-15-emtala-requirements-and-coronavirus-0311-updated-003pdf.pdf-1 [<https://perma.cc/37V8-K6AJ>].

to comply with general infection control practices.¹²⁰ General infection control practices include a requirement for hospitals to use PPE correctly and have PPE readily available at entrances to patients' rooms.¹²¹ Health care providers found to be non-compliant may be restricted from further participation in the Medicare or Medicaid program.¹²² However, during the pandemic, CMS released a memorandum stating that EMTALA does not provide specific requirements for the amount of PPE that health care facilities must have on hand; however, health care facilities are still expected to adhere to accepted standards of infection control strategies to prevent transmissions of the COVID-19 virus.¹²³

Although the federal government does not require specific amounts of PPE storage, the CDC will occasionally release a calculator to help hospitals estimate how much PPE the hospital may need for a medical emergency.¹²⁴ The CDC typically releases these calculators during particular medical emergencies where hospitals utilize more PPE than they use in non-emergencies.¹²⁵ This calculator estimates a facility's PPE "burn rate" to help calculate its future PPE needs.¹²⁶ In addition to assessing the burn rate, the calculator can help hospitals prioritize PPE conservation measures depending on the facilities' surge capacity.¹²⁷

¹²⁰ See CMS's INTERNAL CONTROLS OVER HOSPITAL PREPAREDNESS FOR EMERGING INFECTIOUS DISEASE EPIDEMICS SUCH AS CORONAVIRUS DISEASE 2019, U.S. DEP'T OF HEALTH & HUM. SERVS. (2019), oig.hhs.gov/reports-and-publications/workplan/summary/wp-summary-0000455.asp; Memorandum from David Wright, *supra* note 119, at 5, 13.

¹²¹ CMS MANUAL SYSTEM, *supra* note 117, at 16, 20.

¹²² See 42 C.F.R. § 424.535(j) (2020); Memorandum from David Wright, *supra* note 119, at 5. According to the American Hospital Association, 60% of the care provided to patients in most hospitals is covered by Medicare and Medicaid. AMERICAN HOSPITAL ASSOCIATION: UNDERPAYMENT BY MEDICARE AND MEDICAID FACT SHEET, AM. HOSP. ASS'N (2017).

¹²³ Memorandum from David Wright, *supra* note 119, at 5, 13. Congress enacted the EMTALA in 1986 "to ensure public access to emergency [medical] services regardless of ability to pay." *Emergency Medical Treatment & Labor Act (EMTALA)*, CTRS. FOR MEDICARE & MEDICAID SERVS. (Mar. 26, 2012, 4:43 AM), www.cms.gov/Regulations-and-Guidance/Legislation/EMTALA [<https://perma.cc/K3WS-6SN5>].

¹²⁴ *PPE Burn Rate Calculator*, CTRS. FOR DISEASE CONTROL AND PREVENTION (Apr. 7, 2020), www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/burn-calculator.html [<https://perma.cc/D8G6-4U5J>].

¹²⁵ See *id.*; *Ebola PPE Calculator*, CTRS. FOR DISEASE CONTROL AND PREVENTION, www.cdc.gov/vhf/ebola/healthcare-us/ppel/calculator.html (last updated Jan. 21, 2016) [<https://perma.cc/Y3S3-VVYT>].

¹²⁶ See *PPE Burn Rate Calculator*, *supra* note 124. An inventory burn rate calculates how quickly the hospital is predicted to use and need to dispose of equipment. See *id.* PPE is recommended for one-time use only, so after an article of PPE is used, it is "burned" because it has expended its full use, and it must be disposed of and replaced. See *Questions About Personal Protective Equipment (PPE)*, U.S. FOOD AND DRUG ADMIN. (Mar. 11, 2020), www.fda.gov/medical-devices/personal-protective-equipment-infection-control/questions-about-personal-protective-equipment-ppe [<https://perma.cc/ZEY4-7XLZ>].

¹²⁷ See *PPE Burn Rate Calculator*, *supra* note 124 ("The tool will calculate the average consumption rate . . . this information can then be used to estimate how long the remaining

In summary, America's lack of preparation relating to PPE stems partially from the lack of supplies in the SNS and partially from governmental agencies' lack of guidance relating to hospital PPE storage prior to medical emergencies.¹²⁸ The severe lack of stored PPE equipment nationwide demonstrates that neither hospitals nor the government stored adequate supplies for health care providers during emergencies.¹²⁹ This failure to prepare must be rectified to save American lives before the next large-scale medical emergency.¹³⁰

C. Pre-Pandemic Wyoming Laws Relating to Hospital Supplies

At the end of 2020, Wyoming had no state laws or regulations related to PPE storage.¹³¹ Wyoming also lacked administrative rules related to the storage of protective gear in Wyoming.¹³² The Wyoming Department of Health, however, requires hospitals to establish an infection control program to obtain state

supply of PPE will last, based on the average consumption rate" – if you open the calculator (Excel file) you can see the three categories). Surge capacity is the increased strain on the hospital's PPE during a pandemic from a sudden increase of high-risk patients placing a strain on a hospital's supplies. *Optimizing Personal Protective Equipment (PPE) Supplies*, CTNS FOR DISEASE CONTROL AND PREVENTION (July 16, 2020), www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/index.html [<https://perma.cc/Q8WS-Y9G4>].

¹²⁸ See Greenfield Boyce, *supra* note 61; Brown, *supra* note 66; Jacobs & Fink, *supra* note 61. However, Congress created the SNS to *supplement* state and local supplies during public health emergencies, not *meet* each state's emergency demand. See *Strategic National Stockpile*, *supra* note 16.

¹²⁹ See Lisa Schnirring, *WHO Warns of PPE Shortage; nCoV pace Slows Slightly in China*, CTNS FOR INFECTIOUS DISEASE RSCH. AND POL'Y (Feb. 7, 2020), www.cidrap.umn.edu/news-perspective/2020/02/who-warns-ppe-shortage-ncov-pace-slows-slightly-china [<https://perma.cc/VW5C-5JCU>]; Max Kutner, *Nurses' Union Survey Finds Hospitals Still Short on PPE*, LAW360 (Nov. 12, 2020, 7:58 PM), www.law360.com/health/articles/1328206/nurses-union-survey-finds-hospitals-still-short-on-ppe?nl_pk=6df3e1ec-ec25-40da-92c2-52195a929c85&utm_source=newsletter&utm_medium=email&utm_campaign=health&read_more=1 [<https://perma.cc/5BN2-96JX>]; Press Release, Survey of Nation's Frontline Registered Nurses Shows Hospitals Unprepared for COVID-19, Nat'l Nurses United (Mar. 5, 2020), www.nationalnursesunited.org/press/survey-nations-frontline-registered-nurses-shows-hospitals-unprepared-covid-19 [<https://perma.cc/LR6A-6PFX>].

¹³⁰ See *supra* notes 24–31 and accompanying text.

¹³¹ See Jeff Lagasse, *California Passes Nation's First Bill Requiring Hospitals to Keep a 45-Day Supply of PPE*, HEALTHCARE FIN. NEWS (Sept. 2, 2020), www.healthcarefinancenews.com/news/california-passes-nations-first-bill-requiring-hospitals-keep-45-day-supply-ppe [<https://perma.cc/4L5V-DRDY>] (for CA to be the only state in the nation to pass a PPE supply bill, WY could not have such a statute). WYO. CODE R. § 053-0012-4 (LexisNexis 2020); *id.* § 053-0013-4; *id.* § 010-0005-28. The Wyoming Health Association also has not made any local or state recommendations regarding the state's regulation of health care facilities' PPE storage. See *WHA Resources*, WYO. HOSP. ASS'N, www.wyohospitals.com/wha-resources/ (last visited Nov. 26, 2020).

¹³² See WYO. CODE R. § 053-0012-4; *id.* § 053-0013-4; *id.* § 010-0005-28. The Wyoming Health Association also has not made any local or state recommendations regarding the state's regulation of health care facilities' PPE storage. See *WHA Resources*, *supra* note 131.

licensure.¹³³ These programs must adhere to standards of practice recognized nationwide to prevent and control infectious diseases.¹³⁴ Hospitals typically fulfill this requirement by stipulating their transmissions prevention protocols.¹³⁵ Hospitals must supply enough PPE to their workers and patients to comply with their infection control policies and should be required to maintain this standard even in times of emergencies.¹³⁶ When individual hospitals independently determine the supply of PPE to store, they may inadequately estimate the number of supplies necessary for an emergency and, therefore, be unable to comply with infection control policies when hospitals and patients need those policies the most.¹³⁷

Wyoming has published PPE quality and procedure requirements through the Wyoming Department of Workforce Services; however, these regulations mirror the federal OSHA requirements discussed in the previous section.¹³⁸ Therefore, because there are no state-specific regulations relating to the storage of medical PPE supplies, Wyoming hospitals have considerable discretion regarding their facilities' PPE storage.¹³⁹ So long as Wyoming hospitals meet the federal quality and procedure requirements outlined by OSHA and comply with their infection control programs, they are not subject to further regulations related to PPE.¹⁴⁰ Due to this lack of regulation on hospital inventories, an individual hospital's inventory decisions are typically contained within internal documents.¹⁴¹ Unfortunately, these individual hospital decisions are generally unavailable to the public, making further analysis of state hospital PPE practices unfeasible.¹⁴²

¹³³ See WYO. CODE R. § 048-0061-12 (Section 24 – Infection Control Program).

¹³⁴ See *id.*

¹³⁵ Yacob Habboush et al., *Infection Control*, STATPEARLS (Sept. 11, 2020), www.ncbi.nlm.nih.gov/books/NBK519017/#:~:text=Infection%20control%20program%20has%20the,transmission%20depending%20on%20the%20microorganism [<https://perma.cc/W2W5-X984>].

¹³⁶ See DAVID T. KUCHAR ET AL., INFECTION CONTROL IN HEALTHCARE PERSONNEL: INFRASTRUCTURE AND ROUTINE PRACTICES FOR OCCUPATIONAL INFECTION PREVENTION AND CONTROL SERVICES, CTRS. FOR DISEASE CONTROL AND PREVENTION 12 (2019), www.cdc.gov/infectioncontrol/pdf/guidelines/infection-control-HCP-H.pdf [<https://perma.cc/WKW5-9WHE>].

¹³⁷ See generally *Ebola (Ebola Virus Disease)*, *supra* note 51; Sumanth Ruja et al., *Calculating an Institutional Personal Protective Equipment (PPE) Burn Rate to Project Future Usage Patterns During the 2020 COVID-19 Pandemic*, CAMBRIDGE UNIVERSITY PRESS (May 4, 2020), www.cambridge.org/core/journals/infection-control-and-hospital-epidemiology/article/calculating-an-institutional-personal-protective-equipment-ppe-burn-rate-to-project-future-usage-patterns-during-the-2020-covid19-pandemic/8AC92AEA39AAB4FC7C4C60E9983C9415 [<https://doi.org/10.1017/ice.2020.190>].

¹³⁸ See WYOMING DEPARTMENT OF HEALTH INFECTIOUS DISEASE EPIDEMIOLOGY UNIT, INFECTION PREVENTION ORIENTATION MANUAL §7 (2014).

¹³⁹ See WYO. CODE R. § 053-0012-4; *id.* § 053-0013-4; *id.* § 010-0005-28.

¹⁴⁰ See WYO. CODE R. § 053-0012-4; *id.* § 053-0013-4; *id.* § 010-0005-28.

¹⁴¹ See *supra* notes 128–40 and accompanying text.

¹⁴² See Jan de Vries, *Hospital Inventory Systems: Powerplay or Rational Decision-Making?*, HOSPITAL HEALTHCARE EUROPE (June 16, 2011), [hospitalhealthcare.com/news/hospital-inventory-](https://www.hospitalhealthcare.com/news/hospital-inventory-)

III. PPE SHORTAGES DURING THE PANDEMIC

A. Nationwide PPE Unavailability During the COVID-19 Pandemic

During the COVID-19 pandemic, the entire nation faced PPE supply deficiencies.¹⁴³ The PPE shortages forced many hospitals nationwide to optimize their supplies through rationing and reuse of disposable materials.¹⁴⁴ The CDC recommends N95 respirators be used for no more than eight hours before their

systems-powerplay-or-rational-decision-making/ [https://perma.cc/CL78-8PRG] (“[M]ajor investment decisions made by the board of directors are frequently based on the advice of an internal investment committee. In our case study, this process was shown to have its own dynamic character resulting in a somewhat fuzzy and less transparent decision-making process regarding the reshaping of the inventory system.”); *Emergency Readiness*, AM. HOSP. ASS’N (May 10, 2006), www.aha.org/2006-05-10-emergency-readiness-1 [https://perma.cc/7LZL-JTU9].

¹⁴³ See Anna Rose MacArthur, *Due to National Shortage, Health Workers in Western Alaska are Forced to Reuse Gloves*, ALASKA PUB. MEDIA (Oct. 22, 2020), www.alaskapublic.org/2020/10/22/due-to-national-shortage-health-workers-in-western-alaska-are-forced-to-reuse-gloves/ [https://perma.cc/S9CJ-2FN5] (Alaska); Rachel Monahan, *Even as Gov. Kate Brown Reopens Oregon, a Shortage of Masks and Other Personal Protective Equipment at Hospitals Suggests a State Still in Crisis*, WILLAMETTE WEEK (May 20, 2020), www.wweek.com/news/state/2020/05/20/even-as-gov-kate-brown-reopens-oregon-a-shortage-of-masks-and-other-personal-protective-equipment-at-hospitals-suggest-a-state-still-in-crisis/ [https://perma.cc/566S-KR8G] (Oregon); Emma Johnson & Jerad Giottonini, *Utah Physician Legislators Urge Businesses to Donate Personal Protective Equipment*, ABC4.COM (Mar. 24, 2020, 11:30 AM), www.abc4.com/news/local-news/utah-physician-legislators-urge-businesses-to-donate-personal-protective-equipment/ [https://perma.cc/Z7WR-NDJJ] (Utah); Jens Gould, *New Mexico Department of Health Bought Face Masks at Far Above Normal Price*, LAS CRUCES SUN NEWS (May 27, 2020, 11:50 AM), www.lcsun-news.com/story/news/2020/05/27/coronavirus-new-mexico-bought-face-masks-far-above-normal-price/5266611002/ [https://perma.cc/A4UD-RNBV] (New Mexico); *Personal Protective Equipment (PPE)*, MO. DEP’T OF HEALTH & SENIOR SERVS., health.mo.gov/living/healthcondiseases/communicable/novel-coronavirus/ppe.php (last visited Nov. 26, 2020) [https://perma.cc/J3ST-75XK] (Missouri); Mary Scott Hodgins, *‘Critical Shortage Everywhere’ of Personal Protective Equipment*, WBHM.ORG (Mar. 29, 2020), wbhm.org/feature/2020/health-care-providers-face-critical-shortage-everywhere/ [https://perma.cc/Q5CK-2F7Q] (Alabama); Kristen Jordan Shamus, *As COVID-19 Cases Rise Again, Are Michigan Health Care Providers Ready? It’s Complicated.*, DETROIT FREE PRESS (Nov. 1, 2020, 1:19 PM), www.freep.com/story/news/health/2020/11/01/covid-19-cases-rise-michigan-healthcare-providers-ready/6057270002/ [https://perma.cc/54KR-PL4N] (Michigan); *Rapid City Medical Center Shortages*, NEWSCENTER1.TV (Apr. 8, 2020), www.newscenter1.tv/rapid-city-medical-center-shortages/ [https://perma.cc/Y4UM-VS2R] (South Dakota); *COVID What’s Next: Pa. Health Care Still Facing Furloughs, PPE Shortages and Testing Issues*, POCONO RECORD (Aug. 5, 2020, 5:01 AM), www.poconorecord.com/story/news/coronavirus/2020/08/05/covid-whatsquos-next-pa-health-care-still-facing-furloughs-ppe-shortages-and-testing-issues/113428184/ [https://perma.cc/7RQ7-T8QQ] (Pennsylvania).

¹⁴⁴ See Rekha Priyadarshini et al., *Rationing PPEs During a Pandemic: The COVID-19 Scenario*, RSCH. SOC. AND ADMIN. PHARMACY (June 9, 2020), www.ncbi.nlm.nih.gov/pmc/articles/PMC7282774/ [http://dx.doi.org/10.1016/j.sapharm.2020.06.008]; *Optimizing Personal Protective Equipment (PPE) Supplies*, *supra* note 127; *Strategies for Reuse and Extended Use of Personal Protective Equipment (PPE) During COVID-19 Outbreak*, NYC HEALTH 1–3, www1.nyc.gov/assets/doh/downloads/pdf/imm/strategies-for-the-conservation-of-respiratory-ppe.pdf (last visited Nov. 26, 2020).

disposal for optimal protection.¹⁴⁵ However, N95 shortages drove many health care providers to disregard this recommendation in desperation to maintain respiratory protection during the PPE shortage.¹⁴⁶

B. Challenges Obtaining Supplies in Wyoming During the COVID-19 Pandemic

By rationing supplies and receiving donations from local communities, only one Wyoming hospital, near the end of 2020, reported reaching a critical shortage of PPE supplies.¹⁴⁷ However, while Wyoming has never completely exhausted its PPE supply, the state has not been immune to supply scarcities due to a lack of emergency preparedness.¹⁴⁸ Many hospitals in Wyoming faced PPE shortages, and some hospitals described their PPE situation as “critical” and “desperate.”¹⁴⁹ As the state’s restrictions began to loosen at the end of April, 2020 allowing businesses to reopen slowly and expand public gathering size limitations, Wyoming Governor Mark Gordon expressed fears that a resurgence of COVID-19 cases may occur.¹⁵⁰ He warned that serious shortages remained in Wyoming, hinting that hospitals

¹⁴⁵ See *Recommended Guidance for Extended Use and Limited Reuse of N95 Filtering Facepiece Respirators in Healthcare Settings*, CTNS. FOR DISEASE CONTROL AND PREVENTION (Mar 27, 2020), www.cdc.gov/niosh/topics/hcwcontrols/recommendedguidanceextuse.html [<https://perma.cc/A5LA-M7RB>].

¹⁴⁶ See *id.*; *OSHA COVID-19 Enforcement on the Rise*, NAT’L L. REV. (Oct. 2, 2020), www.natlawreview.com/article/osha-covid-19-enforcement-rise [<https://perma.cc/ZQC3-GMR7>]; Cheryl Clark, *Nurses Survey: N95 Mask Shortages Still the Rule*, MEDPAGE TODAY (Sept. 2, 2020), www.medpagetoday.com/infectiousdisease/covid19/88419 [<https://perma.cc/F5UF-FFTL>].

¹⁴⁷ See Seth Klamann, *More Than 2 Million Requested Gloves, Masks, Gowns Haven’t Been Delivered to Wyoming*, CASPER STAR TRIB. (May 15, 2020), trib.com/news/state-and-regional/health/more-than-2-million-requested-gloves-masks-gowns-havent-been-delivered-to-wyoming/article_995ee7ed-bb5a-586e-8e94-112a9db081f2.html [<https://perma.cc/97NB-PWPF>]. See generally *Governor Mark Gordon*, STATE OF WYO., governor.wyo.gov/media/news-releases (last visited Nov. 27, 2020) [<https://perma.cc/7P32-A7DW>]. A critical shortage indicates that supplies are dangerously low and may be exhausted if a hospital does not take steps to increase the supply. See *Critical Shortage*, COLLINS, www.collinsdictionary.com/us/dictionary/english/critical-shortage (last visited Nov. 27, 2020) [<https://perma.cc/5ZVZ-H3BT>].

¹⁴⁸ Seth Klamann, *Doctors at Wyoming’s Largest Hospital Grapple with the Worst of the Coronavirus*, CASPER STAR TRIB. (July 31, 2020), trib.com/news/state-and-regional/health/doctors-at-wyomings-largest-hospital-grapple-with-the-worst-of-the-coronavirus/article_ab15c4e3-7b14-511e-b388-b3d4ec27a95a.html [<https://perma.cc/8AR6-N52M>].

¹⁴⁹ See *id.*; SMH SEEKING DONATIONS OF PPE – HOMEMADE MASKS, SHERIDAN MEMORIAL HOSP. (Mar. 26, 2020), www.sheridanhospital.org/wp-content/uploads/2020/03/3.26.2020_Community-request_PPE-1.pdf [<https://perma.cc/MD5P-6AVD>]; Seth Klamann, *University of Wyoming Lab 3D Prints 150 Face Masks for Health Care Providers*, CASPER STAR TRIB. (May 7, 2020), trib.com/news/state-and-regional/health/university-of-wyoming-lab-3d-prints-150-face-masks-for-health-care-providers/article_1f8f52d0-0e84-596c-833f-112ded3c0e0b.html [<https://perma.cc/Z3AP-FZB3>]; *Mask Project Aims to Supply St. Johns with Over 1,000 Masks with Help from Community*, BUCKRAIL (Mar. 27, 2020), buckrail.com/mask-project-aims-to-supply-st-johns-with-over-1000-masks-with-help-from-community/ [<https://perma.cc/2S9Q-8MMC>].

¹⁵⁰ See Michelle Stoddart et al., *When Each State’s Stay-At-Home Order Lifts*, ABCNEWS (May 12, 2020, 8:06 PM), abcnews.go.com/US/list-states-stay-home-order-lifts/story?id=70317035 [<https://perma.cc/FK3D-L68F>].

may still not have the supplies necessary to manage a spike in the virus.¹⁵¹ After May of 2020, Governor Gordon did not provide any updates regarding the adequacy of state hospitals' PPE supplies.¹⁵² Additionally, the Wyoming Medical Center in Casper reported in mid-October of 2020 that it had "plenty" of PPE supplies.¹⁵³ However, the national trend of shortages at the end of the year in 2020, especially for N95 respirators, indicated that it was likely at least some Wyoming hospitals were experiencing PPE supply shortages.¹⁵⁴

Governor Gordon had previously recognized that it was "absolutely essential" that health care workers protect themselves with PPE.¹⁵⁵ The state focused, in the early months of the pandemic, on obtaining PPE for the state's hospitals.¹⁵⁶ In late March of 2020, Wyoming received a shipment of PPE from the SNS.¹⁵⁷ Although this shipment was helpful to the state's health care facilities, the supplies only fulfilled 54% of the state's requested supplies and were inadequate to meet Wyoming hospitals' demand.¹⁵⁸ During a press conference in late March of 2020, Governor Gordon addressed Wyoming's increasing need for PPE, acknowledging the growing need to obtain the supplies the SNS could not provide.¹⁵⁹ The state then began working with the CDC and the Federal Emergency Management

¹⁵¹ Priyadarshini et al., *supra* note 144.

¹⁵² See *Governor Mark Gordon*, *supra* note 147.

¹⁵³ Brendan LaChance, *Wyoming Medical Center Activate 'Code Orange'; Seeing Record Number of Covid Patients*, OIL CITY NEWS (Oct. 14, 2020), oilcity.news/community/health/covid-19/2020/10/14/wyoming-medical-center-activate-code-orange-seeing-record-number-of-covid-patients/ [https://perma.cc/7QDU-4YZL].

¹⁵⁴ See Mark Huffman, *With COVID-19 Surging, America is Facing Another Mask Shortage*, CONSUMER AFFS. (Nov. 5, 2020), www.consumeraffairs.com/news/with-covid-19-surge-america-is-facing-another-mask-shortage-110520.html [https://perma.cc/C942-UQ5P]; *Some PPE Shortages are Worsening*, KAISER FAM. FOUND. (Sept. 18, 2020), khn.org/morning-breakout/some-ppe-shortages-are-worsening/ [https://perma.cc/KX3Q-HKNH]; Daniel J. Finkenstadt et al., *Why the U.S. Still Has a Severe Shortage of Medical Supplies*, HARV. BUS. REV. (Sept. 17, 2020), hbr.org/2020/09/why-the-u-s-still-has-a-severe-shortage-of-medical-supplies [https://perma.cc/53DB-7DKQ].

¹⁵⁵ *National Stockpile and State Supplies Going to Wyoming Communities in Need*, CAP CITY NEWS (Mar. 23, 2020), capcity.news/latest-news/2020/03/23/national-stockpile-and-state-supplies-going-to-wyoming-communities-in-need/ [https://perma.cc/8A3U-KEY8].

¹⁵⁶ See *id.*

¹⁵⁷ Doug Randall, *Governor Says Wyoming Received Shipment of Protective Equipment*, KGAB.COM (Mar. 24, 2020), kgab.com/governor-says-wyoming-received-shipment-of-protective-equipment/ [https://perma.cc/9NDM-YTJF].

¹⁵⁸ See Klamann, *supra* note 147. State received 60,000 of the requested 71,294 ventilators; 143,500 of the requested 169,344 masks; 21,356 of the 36,126 requested face shields; 14,796 of the 29,699 requested surgical gowns; 312 of the 1,786 requested coveralls; and 35,800 of the 198,538 gloves requested. *Id.*

¹⁵⁹ *National Stockpile and State Supplies*, *supra* note 155.

Agency (FEMA) to acquire PPE, however, this effort was also unsuccessful.¹⁶⁰ In fact, in early April of 2020, Governor Gordon publicly criticized FEMA at a press conference for canceling Wyoming's PPE orders.¹⁶¹ Governor Gordon lamented that FEMA was the federal organization created to help states respond to disasters.¹⁶² However, instead of assisting the state, FEMA preempted Wyoming's efforts to restock their health care facilities' PPE.¹⁶³ FEMA preempted the PPE orders to prioritize the supply in areas more significantly hit by the virus.¹⁶⁴ This strategy did not allow the less-severely affected areas to get ahead of the virus's transmission curve.¹⁶⁵ Instead, it forced those areas to respond primarily in reactionary measures to the spread of the virus.¹⁶⁶ This strategy of sending supplies to severely impacted areas was, more likely than not, morally necessary to save the most American lives.¹⁶⁷ However, if America better prepared for nationwide emergencies, the federal government would not be forced to choose to which areas to send supplies since areas that were not as heavily affected by the emergency would already have supplies in storage to stay ahead of the virus's transmission curve.¹⁶⁸

After FEMA preempted Wyoming from ordering additional PPE supplies, Wyoming was forced to devise unprecedented solutions to replenish the state's health care facilities' critical PPE supply.¹⁶⁹ In the state's desperation, it ordered PPE supplies directly from China to avoid the U.S. government's redirection of PPE ordered by the state.¹⁷⁰ Before transmissions of the virus began to intensify within Wyoming, HHS officials depleted the SNS's PPE inventory through final

¹⁶⁰ See Brendan LaChance, *Gordon Critical of FEMA for Cancelling Wyoming PPE Orders Amid COVID-19 Shortages*, OIL CITY NEWS (Apr. 3, 2020), oilcity.news/community/health/covid-19/2020/04/03/gordon-critical-of-fema-for-cancelling-wyoming-ppe-orders-amid-covid-19-shortages/.

¹⁶¹ *Id.*

¹⁶² *Id.*; *About Us*, FED. EMERGENCY MGMT. AGENCY (Aug. 27, 2020), www.fema.gov/about.

¹⁶³ LaChance, *supra* note 160.

¹⁶⁴ *Id.*

¹⁶⁵ *Id.*

¹⁶⁶ *Id.*

¹⁶⁷ See Einer Elhauge, *Allocating Health Care Morally*, 82 CALIF. L. REV. 1449, 1506 (1994).

¹⁶⁸ See *supra* notes 160–67 and accompanying text.

¹⁶⁹ See Seth Klamann, *Governor: Feds have Diverted Away Shipments of Protective Gear Meant for Wyoming*, CASPER STAR TRIB. (May 9, 2020), trib.com/news/state-and-regional/health/governor-feds-have-diverted-away-shipments-of-protective-gear-meant-for-wyoming/article_5a24796f-91f9-5dc0-97b0-28efa51f03cf.html [<https://perma.cc/M46T-6R44>].

¹⁷⁰ Klamann, *supra* note 169. The federal emergency assistance act that provided money to Wyoming was the Robert T. Stafford Disaster Relief and Emergency Assistance Act. Wyoming; Major Disaster and Related Determinations, 85 Fed. Reg. 27,424 (Apr. 11, 2020), www.federalregister.gov/documents/2020/05/08/2020-09841/wyoming-major-disaster-and-related-determinations [<https://perma.cc/K453-VE8H>]. This act was created in 1988 to provide economic relief to states and local governments responding to national disasters. See 42 U.S.C. §§ 5121–5207.

shipments to other states.¹⁷¹ The state, due to the surge of cases during the fall of 2020, may deplete its current PPE stock before the end of the year.¹⁷² If a shortage does occur, it is unclear what federal protections, if any, Wyoming will be able to rely upon to replenish its PPE based on the federal government's previous failures to support Wyoming during this pandemic.¹⁷³

C. Rural Hospitals' Elevated Concerns Regarding Access to Health Care

Seventeen of Wyoming's twenty-three counties have fewer than six people per square mile and are, therefore, considered rural communities by Wyoming's Department of Health.¹⁷⁴ Citizens residing in rural communities account for almost half of Wyoming's population.¹⁷⁵ The low population density of rural communities was advantageous to Wyoming and other primarily rural states at the beginning of the pandemic.¹⁷⁶ People believed social distancing was natural in rural areas because the small population size residing in a large area of land typically allows for limited face-to-face contact with people outside of those living in the same home.¹⁷⁷ Wyoming also has relatively low international travel rates, which likely delayed a spike of the virus in Wyoming.¹⁷⁸ However, the advantages

¹⁷¹ See Press Release, New Document Shows Inadequate Distribution, *supra* note 16; *Wyoming Coronavirus Map and Case Count*, N.Y. TIMES, www.nytimes.com/interactive/2020/us/wyoming-coronavirus-cases.html (last visited Nov. 20, 2020).

¹⁷² See Andrew Graham, *Wyoming Losing Care Options as COVID Floods Region's Hospitals*, CASPER STAR TRIB. (Nov. 19, 2020), trib.com/news/state-and-regional/health/wyoming-losing-care-options-as-covid-floods-region-s-hospitals/article_7be81011-7cd0-5d7e-9da5-c454f9529d0b.html [<https://perma.cc/9N7N-MBE2>]; Kutner, *supra* note 129.

¹⁷³ See *supra* notes 160–68 and accompanying text.

¹⁷⁴ *What is Rural*, WYO. DEP'T OF HEALTH, health.wyo.gov/publichealth/rural/officeofruralhealth/what-is-rural/ (last visited Nov. 27, 2020) [<https://perma.cc/3BAD-KJWM>] (this finding is based on federal agencies' definition of the term "frontier").

¹⁷⁵ *Id.*

¹⁷⁶ See *Wyoming Population 2020*, WORLD POPULATION REV., worldpopulationreview.com/states/wyoming-population (last visited Nov. 27, 2020) [<https://perma.cc/Z6MP-68JY>]; Jack Healy et al., *Coronavirus Was Slow to Spread to Rural America. Not Anymore.*, N.Y. TIMES (Apr. 8, 2020), www.nytimes.com/interactive/2020/04/08/us/coronavirus-rural-america-cases.html; *contra Study: Urban Density Not Linked to Higher Coronavirus Infection Rates-and is Linked to Lower COVID-19 Death Rates*, JOHNS HOPKINS BLOOMBERG SCHOOL OF PUB. HEALTH (June 18, 2020), www.jhsph.edu/news/news-releases/2020/urban-density-not-linked-to-higher-coronavirus-infection-rates-and-is-linked-to-lower-covid-19-death-rates.html [<https://perma.cc/P3E4-4WZM>].

¹⁷⁷ See Jack Healy et al., *supra* note 176; Frank Morris, *Rural Towns Insulated from Coronavirus Now May Take a Harder Hit Later*, NAT'L PUB. RADIO (Mar. 13, 2020, 5:01 AM), www.npr.org/2020/03/13/814917520/rural-towns-insulated-from-coronavirus-now-may-take-a-harder-hit-later [<https://perma.cc/28H3-U2VH>].

¹⁷⁸ See Patrick Surry, *Which States Are Most Likely to Travel Abroad This Year?*, MEDIA (June 7, 2017), media.hopper.com/research/which-states-are-most-likely-to-travel-abroad-this-year [<https://perma.cc/X66N-S7ZY>]; Michal Czepkiewicz et al., *Why Do Urbanites Travel More than Do Others? A Review of Associations Between Urban Form and Long-Distance Leisure Travel*, 13 ENV'T RSCH.

enjoyed by rural communities at the beginning of the pandemic did not remain for long.¹⁷⁹

Several months into the pandemic, a wave of COVID-19 cases spread to nearly three-quarters of rural communities in the United States.¹⁸⁰ In June, Uinta County in Wyoming had the third-highest number of positive COVID-19 cases in Wyoming, even though it is ranked tenth out of the twenty-seven counties in population size.¹⁸¹ Research has found that rural populations are disadvantaged once the virus permeates the community because of the high populations of elderly residents in rural communities, who are at an increased risk of suffering from severe COVID-19 symptoms.¹⁸² Therefore, the populations residing in rural areas are at a higher risk of severe illness from COVID-19.¹⁸³

LETTERS (2013), iopscience.iop.org/article/10.1088/1748-9326/aac9d2/pdf; Mary Van Beusekom, *Studies Trace COVID-19 Spread to International Flights*, CTR. FOR INFECTIOUS DISEASE RSCH. AND POL'Y (Sept. 21, 2020), www.cidrap.umn.edu/news-perspective/2020/09/studies-trace-covid-19-spread-international-flights [<https://perma.cc/Z28D-9MQQ>]; Robin Foster & E.J. Mundell, *National Guard Activated in 3 States as U.S. Coronavirus Cases Top 34,000*, U.S. NEWS (Mar. 23, 2020), www.usnews.com/news/health-news/articles/2020-03-23/national-guard-activated-in-3-states-as-us-coronavirus-cases-top-34-000. Weston County, a rural community in Wyoming, may have avoided all COVID-19 cases until mid-July 2020. Alexis Barker, *County was COVID Free Until July 12*, NEWS LETTER J. (July 15, 2020, 11:21 AM), news1j.com/content/county-was-covid-free-until-july-12 [<https://perma.cc/Z4Y2-ATQ6>].

¹⁷⁹ See *infra* notes 180–84 and accompanying text.

¹⁸⁰ See Jack Healy et al., *supra* note 176; Christopher Curley, *Rural America Could Be the Region Hardest Hit by the COVID-19 Outbreak*, HEALTHLINE (Aug. 3, 2020), www.healthline.com/health-news/rural-america-hardest-hit-by-covid-19-outbreak [<https://perma.cc/49M7-6RM2>].

¹⁸¹ Joshua Wolfson, *Two Uinta County Residents in Intensive Care as Wyoming Coronavirus Spike Continues*, CASPER STAR TRIB. (July 28, 2020), trib.com/news/state-and-regional/two-uinta-county-residents-in-intensive-care-as-wyoming-coronavirus-spike-continues/article_58359b9a-af0e-52a8-8d23-0a87db34672e.html [<https://perma.cc/23P8-9YD3>].

¹⁸² See *Rural Communities*, CTRS. FOR DISEASE CONTROL AND PREVENTION (Aug. 3, 2020), www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/other-at-risk-populations/rural-communities.html [<https://perma.cc/E8NH-UPAM>]; *Older Adults at Greater Risk of Requiring Hospitalization or Dying if Diagnosed with COVID-19*, CTRS. FOR DISEASE CONTROL AND PREVENTION (Nov. 27, 2020), www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/older-adults.html [<https://perma.cc/RJ5R-T4XG>]. According to the 2012 to 2016 American Community Survey, approximately 23% of seniors live in rural areas. Craig Thomas, *Understanding Rural Health Care Needs and Challenges: Why Access Matters to Rural Americans*, 43 HARV. J. ON LEGIS. 253 (2006); *People at Increased Risk and Other People Who Need to Take Extra Precautions*, CTRS. FOR DISEASE CONTROL AND PREVENTION (Nov. 30, 2020), www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/index.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fneed-extra-precautions%2Fpeople-at-increased-risk.html [<https://perma.cc/JJUW9-GFAN>]; Susan Jaffe, *Aging in Rural America*, 34 HEALTH AFFS. 7 (2015); Nicole Huberfeld, *Rural Health, Universality, and Legislative Targeting*, 13 HARV. L. & POL'Y REV. 241, 243; Shawn Radcliffe, *Rural Hospitals Closing at an Alarming Rate*, HEALTHLINE (Feb. 24, 2017), www.healthline.com/health-news/rural-hospitals-closing [<https://perma.cc/GP6B-LMVR>].

¹⁸³ See *Rural Communities*, *supra* note 182; *People at Increased Risk and Other People Who Need to Take Extra Precautions*, *supra* note 182.

The number of Wyoming deaths resulting from the COVID-19 virus was relatively low for most of 2020 but increased significantly in the fall of 2020.¹⁸⁴ Rural hospitals are also disadvantaged by inequalities including economic stagnation, outdated equipment, and exacerbated health care worker shortages.¹⁸⁵ Economic stagnation further manifests both outdated equipment and health care worker shortages.¹⁸⁶ Rural hospitals are largely unable to purchase new equipment and typically cannot afford to have large surpluses to create adequate storage for emergency preparation.¹⁸⁷ For these reasons, among others, PPE supply shortages took a more significant toll on rural hospitals than urban hospitals.¹⁸⁸

The severe impact on rural hospitals is due to the combination of health care provider shortages and PPE deficits, which can create chaos in rural communities.¹⁸⁹ Lack of providers creates a distinct disadvantage for rural

¹⁸⁴ See *United States COVID-19 Cases and Deaths by State*, CTRS. FOR DISEASE CONTROL AND PREVENTION, covid.cdc.gov/covid-data-tracker/#cases_deathsper100k (last visited Nov. 30, 2020). As of October 1, 2020, there were approximately eight deaths in Wyoming per 100,000 people. *Death Rate by State/Territory*, CTRS. FOR DISEASE CONTROL AND PREVENTION (updated Oct. 1, 2020, 12:17 PM), web.archive.org/web/20201001235600/covid.cdc.gov/covid-data-tracker/#cases_deathsper100k. Wyoming, Alaska, and Vermont had the lowest U.S. state deaths per 100,000 people. *Id.* However, by the end of November, there were thirty-seven deaths in Wyoming per 100,000 people. *United States COVID-19 Cases and Deaths by State*, CTRS. FOR DISEASE CONTROL AND PREVENTION (as of Nov. 29, 2020), web.archive.org/web/20201129163355/covid.cdc.gov/covid-data-tracker/#cases_deathsper100k.

¹⁸⁵ See Sheldon Weisgrau, *Issues in Rural Health: Access, Hospitals, and Reform*, 17 HEALTH CARE FINANCING REV. 1 (1995). Wyoming has sixteen critical access hospitals and twenty-two rural health clinics. Approximately four hundred thousand people live in rural Wyoming of the approximately 580,000 total Wyoming residents (69% of residents live in rural Wyoming). *Wyoming*, RURAL HEALTH INFO. HUB (Nov. 1, 2018), www.ruralhealthinfo.org/states/wyoming [<https://perma.cc/9W6R-6BEN>]. Critical Access Hospitals are rural hospitals eligible for CMS to reduce financial vulnerabilities and improve health care access to rural communities. *Critical Access Hospitals (CAHs)*, RURAL HEALTH INFO. HUB (Aug. 20, 2019), www.ruralhealthinfo.org/topics/critical-access-hospitals [<https://perma.cc/47MV-KNRY>]. These Critical Access Hospitals have twenty-five or fewer acute care inpatient beds and are more than thirty-five miles from other hospitals. *Id.*

¹⁸⁶ See Weisgrau, *supra* note 185, at 1.

¹⁸⁷ See *id.*

¹⁸⁸ See Adrian Diaz et al., *The COVID-19 Pandemic and Rural Hospitals—Adding Insult to Injury*, HEALTH AFFS. BLOG (May 3, 2020), www.healthaffairs.org/doi/10.1377/hblog20200429.583513/full/ [<https://perma.cc/2ZLG-RWVM>]; Will Stone, *Getting Health Care Was Already Tough in Rural Areas. The Pandemic Has Made It Worse*, WYO. PUB. MEDIA (Oct. 7, 2020), www.wyomingpublicmedia.org/post/getting-health-care-was-already-tough-rural-areas-pandemic-has-made-it-worse#stream/0 [<https://perma.cc/CAM2-C92M>]; Gladys Bautista, *Heading into Fall, COVID-19 Infections Among Rural Hospital Staff Is Major Concern*, KRCGTV.COM (Oct. 4, 2020), krcg.com/news/local/heading-into-fall-covid-19-infections-among-rural-hospital-staff-is-major-concern.

¹⁸⁹ See *infra* notes 190–94 and accompanying text; John Pruitt, *The PPE Shortage—Mending a Crippled Supply Chain*, COMM. HOSP. CORP. (May 16, 2020), communityhospitalcorp.com/the-ppe-shortage-mending-a-crippled-supply-chain/ [<https://perma.cc/5Y3N-Y8H3>].

communities, especially in times of medical emergencies.¹⁹⁰ The absence of just one health care provider can result in a drastic decline in care because rural health care facilities only have a handful of health care providers available, and they are difficult to replace.¹⁹¹ When a rural health care provider with insufficient PPE contracts an illness, that physician cannot provide services, resulting in an increased shortage of providers.¹⁹² This increased shortage can be devastating to rural populations' access to health care.¹⁹³ Depending on the number of health care providers at the rural facility, losing only a few workers to illness could require the hospital to close.¹⁹⁴

For example, Crook County Medical Services District (CCMSD) in Crook County, Wyoming, has two physicians.¹⁹⁵ The hospital also employs five nurse practitioners and one physician assistant.¹⁹⁶ If CCMSD does not have access to proper PPE supplies during a potential second wave of the pandemic, several hospital providers will likely be exposed to the virus while caring for patients.¹⁹⁷ Even if only a few health care providers contract the virus, the hospital will suffer a detrimental injury through loss of services and will likely be unable to continue normal operations.¹⁹⁸ Therefore, having adequate PPE supplies on-hand is essential to rural communities because it helps ensure that residents within communities such as Crook County have timely access to potentially life-saving medical care.¹⁹⁹

¹⁹⁰ See Mark A. Kelley et al., *The Critical Care Crisis in the United States*, 125 CHEST J. 1514, 1514 (2004).

¹⁹¹ See *id.*

¹⁹² See *id.*

¹⁹³ See *id.*

¹⁹⁴ See *id.*

¹⁹⁵ *Meet Our Providers*, CROOK CNTY. MED. SERVS. DIST., www.ccmsd.org/providers/#Providers (last visited Nov. 28, 2020) [<https://perma.cc/SSN8-GQVC>].

¹⁹⁶ *Id.*

¹⁹⁷ *Personal Protective Equipment for Infection Control*, U.S. FOOD AND DRUG ADMIN. (Feb. 10, 2020), www.fda.gov/medical-devices/general-hospital-devices-and-supplies/personal-protective-equipment-infection-control [<https://perma.cc/3M5X-QB5K>].

¹⁹⁸ See *supra* notes 189–94 and accompanying text; Kelley et al., *supra* note 190, at 1514 (“If Leapfrog recommendations are implemented, the physician shortage will be immediate, highlighting the vulnerability of the system that also has a shortage of pharmacists and declining number of critical care nurses. This article describes the challenges and recommends steps to prevent a crisis in the delivery of critical care services.”).

¹⁹⁹ See *supra* notes 189–98 and accompanying text; *Rural Leaders Build Networks to Source PPE for Hospitals*, NAT’L RURAL HEALTH ASS’N (Oct. 9, 2020), www.ruralhealthweb.org/blogs/ruralhealthvoices/october-2020/rural-leaders-build-network-to-source-ppe [<https://perma.cc/HC4Y-QAAG>].

IV. THE GOVERNMENT'S ETHICAL DUTY TO PROVIDE EMERGENCY HEALTH CARE PREPARATION

It is not enough for the federal government to respond to large-scale medical emergency through reactionary programs such as the Federal Coronavirus Aid, Relief, and Economic Securities Act (CARES), Defense Production Act (DPA), or Food and Drug Administration (FDA) immunities.²⁰⁰ It is critical for the federal government to formally recognize health care as a human right and to create better emergency preparation programs to ensure Americans have adequate access to health care.²⁰¹

A. Why the Federal CARES Act Provider Relief Fund was Insufficient

During the pandemic, many health care facilities experienced unprecedented financial losses.²⁰² The American Hospital Association estimated that from the beginning of March to the end of June in 2020, the average U.S. hospital lost around \$202.6 billion.²⁰³ Hospitals canceled all elective procedures to reduce the exposure of the virus to all patients whose surgeries could safely be postponed and to reserve hospitals' existing PPE.²⁰⁴ Canceling elective procedures in hospitals caused large reductions in patient volumes contributing to the extensive losses in revenue.²⁰⁵ Hospitals also accrued losses from the increased costs of COVID-19 patient hospitalizations.²⁰⁶ The cost of purchasing PPE increased drastically.²⁰⁷ Hospitals also accrued additional increased expenses during the pandemic due to an increase in the price of other medical supplies, increased staffing firm prices, increased overtime, and through bonus pay for front-line workers paid by some hospitals.²⁰⁸

²⁰⁰ See *infra* notes 202–39 and accompanying text.

²⁰¹ See *infra* notes 240–68 and accompanying text.

²⁰² *Hospitals and Health Systems Face Unprecedented Financial Pressures Due to COVID-19*, AM. HOSP. ASS'N (2020), www.aha.org/guidereports/2020-05-05-hospitals-and-health-systems-face-unprecedented-financial-pressures-due [hereinafter *Hospitals and Health Systems Face*] [<https://perma.cc/L34B-4R7X>]; Robert Pearl, *Why Major Hospitals Are Losing Money by the Millions*, FORBES (Nov. 7, 2017, 7:50 AM), www.forbes.com/sites/robertpearl/2017/11/07/hospitals-losing-millions/?sh=1fe12b987b50 [<https://perma.cc/Q2ZK-75F7>].

²⁰³ *Hospitals and Health Systems Face*, *supra* note 202.

²⁰⁴ See *id.*

²⁰⁵ Rich Daly, *Amid 'Dire' Losses, Some Eye Restart of Hospital Elective Surgeries*, HEALTHCARE FIN. MGMT. ASS'N (Apr. 27, 2020), www.hfma.org/content/hfma/www/topics/news/2020/04/amid-dire-losses-some-eye-restart-of-hospital-elective-surger/ [<https://perma.cc/ED2G-2P74>].

²⁰⁶ *Hospitals and Health Systems Face*, *supra* note 202.

²⁰⁷ *Demand Sends Costs of Protective Gear Skyrocketing: 'There's No End in Sight'*, KAISER FAM. FOUND. (Apr. 17, 2020), khn.org/morning-breakout/demand-sends-costs-of-protective-gear-skyrocketing-theres-no-end-in-sight/ [<https://perma.cc/6MP2-9RMA>]; see Burki, *supra* note 79.

²⁰⁸ *Hospitals and Health Systems Face*, *supra* note 202.

Hospitals receiving funds from the CARES Act could use the distributed money only for permissible purposes, and hospitals were required to document and report their uses.²⁰⁹ Permissible purposes included any use of the allocated money to prevent, prepare for, and respond to the COVID-19 pandemic or reimburse the health care provider for lost revenues attributable to the pandemic.²¹⁰ The CARES Act found that purchases of PPE qualified under a permissible purpose because PPE aids in preventing further transmissions of the virus.²¹¹ However, this funding for PPE did not cure global PPE shortages.²¹² Instead, the CARES Act, at most, only supplemented the extra expense of the few PPE supplies that hospitals could find.²¹³

The CARES Act temporarily provided enough cash to keep hospitals, especially rural hospitals, operating during the pandemic.²¹⁴ Most hospitals

²⁰⁹ See *CARES Act Provider Relief Fund: For Providers*, U.S. DEP'T OF HEALTH & HUM. SERVS. (Nov. 24, 2020), www.hhs.gov/coronavirus/cares-act-provider-relief-fund/for-providers/index.html#reporting-requirements [https://perma.cc/J2WA-23ED].

²¹⁰ CARES ACT PROVIDER RELIEF FUND TERMS AND CONDITIONS, JONES DAY 1 (June 17, 2020, 9:00 AM), www.aha.org/system/files/media/file/2020/06/1513422112_1_CARES-Act-Provider-Relief-Fund-Terms-and-Conditions.pdf [https://perma.cc/77SZ-V9XA].

²¹¹ CORONAVIRUS RELIEF FUND: GUIDANCE FOR STATE, TERRITORIAL, LOCAL, AND TRIBAL GOVERNMENTS, U.S. DEP'T OF THE TREASURY 3 (2020), home.treasury.gov/system/files/136/Coronavirus-Relief-Fund-Guidance-for-State-Territorial-Local-and-Tribal-Governments.pdf [https://perma.cc/53G8-UWQX].

²¹² See *supra* notes 18–22 and accompanying text.

²¹³ See Christen Linke Young et al., *Responding to COVID-19: Using the CARES Act's Hospital Fund to Help the Uninsured, Achieve Other Goals*, HEALTH AFFS. BLOG (Apr. 11, 2020), www.healthaffairs.org/doi/10.1377/hblog20200409.207680/full/ [https://perma.cc/TN6R-BJFR]; Daniella Diaz et al., *Protective Equipment Costs Increase Over 1000% Amid Competition and Surge in Demand*, CNN POLITICS (Apr. 16, 2020), www.cnn.com/2020/04/16/politics/ppe-price-costs-rising-economy-personal-protective-equipment/index.html. In addition to increased prices of PPE, the low market supply of PPE combined with high demand created an opportunity for price-gouging. See *Supply and Demand or Price Gouging? An Ongoing Debate*, HARV. BUS. SCHOOL ONLINE (Apr. 1, 2020), online.hbs.edu/blog/post/supply-and-demand-or-price-gouging-an-ongoing-debate [https://perma.cc/5P XK-LYR9]. Price-gouging occurs when a person or business increases the price of critical supplies during an emergency. *How to Identify and Report Price Gouging*, U.S. PUB. INT. RSCH. GROUP, uspig.org/feature/usf/how-identify-and-report-price-gouging (last visited Nov. 28, 2020) [https://perma.cc/KE5S-MFR3]; see *How to Spot and Report Price Gouging*, STATE OF TEX., www.texasattorneygeneral.gov/consumer-protection/disaster-and-emergency-scams/how-spot-and-report-price-gouging (last visited Nov. 28, 2020) [https://perma.cc/G7SH-MQVQ].

²¹⁴ See *CARES Act Provider Relief Fund: General Information*, U.S. DEP'T OF HEALTH & HUM. SERVS. (Nov. 10, 2020), www.hhs.gov/coronavirus/cares-act-provider-relief-fund/general-information/index.html [https://perma.cc/T2ZC-AVZG]; Press Release, Rep. Williams: Texas Rural Hospitals Receive Funds from CARES Act, house.gov (May 7, 2020), williams.house.gov/media-center/press-releases/rep-williams-texas-rural-hospitals-receive-funds-from-cares-act [https://perma.cc/6YME-668X]; *CARES Act Fund to Reimburse Providers for Uninsured Patients*, AM. HOSP. ASS'N (Apr. 6, 2020, 4:12 PM), www.aha.org/news/headline/2020-04-06-cares-act-fund-reimburse-providers-uninsured-patients [https://perma.cc/7QBV-FMJH] (“Pollack noted that the emergency relief fund ‘was intended to provide hospitals with an infusion of emergency relief as providers incur substantial expenses in preparing and dealing with fighting this battle against COVID-19.’”);

within Wyoming received over one million dollars through the CARES Act relief fund.²¹⁵ However, the relief fund did not provide sufficient relief for hospitals to obtain desperately needed supplies to enhance hospitals' existing infection control endeavors or to respond to potential future waves of the virus.²¹⁶ The CARES Act was only a temporary fix.²¹⁷ A long term solution focused on preparation and supplemented by Congressional action would save the government money and save the lives of many at the beginning of a national medical emergency.²¹⁸ Creating sufficient PPE storage facilities within hospitals would enable hospitals to continue providing stable health care to Americans, even during medical emergencies.²¹⁹ It would also allow time for additional tailored reactionary measures necessary to fully address the national emergency.²²⁰

With the COVID-19 pandemic, a few grant programs have emerged to help health care organizations obtain supplies to survive COVID-19 shortages.²²¹ The CARES Act, in some ways, acted as a grant program because it allowed hospitals to put the distributed money towards preparation funding; however, the CARES Act restricted funding to only the supplies needed to prepare for future COVID-

Josh Bivens & Heidi Shierholz, *Despite Some Good Provisions, the CARES Act has Glaring Flaws and Falls Short of Fully Protecting Workers During the Coronavirus Crisis*, ECON. POL'Y INST. (Mar. 25, 2020, 2:13 PM), www.epi.org/blog/despite-some-good-provisions-the-cares-act-has-glaring-flaws-and-falls-short-of-fully-protecting-workers-during-the-coronavirus-crisis/ [<https://perma.cc/JWM3-TZRQ>]; Liz Carey, *Rural Hospitals Worry \$10 Billion Infusion from CARES Act Just a 'Band-Aid'*, DAILY YONDER (Apr. 29, 2020), dailyyonder.com/rural-hospitals-worry-10-billion-infusion-from-cares-act-just-a-band-aid/2020/04/29/ [<https://perma.cc/MV74-6KKQ>].

²¹⁵ Seth Klamann, *Wyoming Hospitals, Providers Receive More Than \$48 Million in Coronavirus Relief Funding*, CASPER STAR TRIB. (Aug. 5, 2020), trib.com/news/state-and-regional/health/wyoming-hospitals-providers-receive-more-than-48-million-in-coronavirus-relief-funding/article_7a8e38d4-0ca3-5db7-ab80-dc4da4e26aa9.html [<https://perma.cc/HQY3-T3DX>] (“[M]ost hospitals listed received more than \$1 million, but some received less.”).

²¹⁶ *Id.*

²¹⁷ See *supra* notes 203–16 and accompanying text.

²¹⁸ William Dow et al., *Economics and Health Benefits of a PPE Stockpile*, UNIVERSITY OF CAL. BERKELEY LAB. CTR. (Aug. 12, 2020), laborcenter.berkeley.edu/economic-and-health-benefits-of-a-ppe-stockpile/ [<https://perma.cc/8K2F-2QW4>]; Juliet Linderman & Martha Mendoza, *US Medical Supply Chains Failed, and COVID Deaths Followed*, ASSOCIATED PRESS (Oct. 6, 2020), apnews.com/article/virus-outbreak-pandemics-ap-top-news-global-trade-fresno-4354f8e8026cf8135b74fa19f0d0f048.

²¹⁹ See *infra* notes 304–16 and accompanying text.

²²⁰ See Emily Bae, Article, *Are Anti-Price Gouging Legislations Effective Against Sellers During Disasters?*, 4 ENTREPRENEURIAL BUS. L.J. 79, 85 (2009) (explaining supply and demand generally).

²²¹ Jim Parker, *National Hospice Foundation Creates Grant Program for PPE During COVID-19*, HOSPICE NEWS (May 27, 2020), hospicenews.com/2020/05/27/national-hospice-foundation-creates-grant-program-for-ppe-during-covid-19/ [<https://perma.cc/Y7G8-YGHW>]; *Show Me Strong Personal Protective Equipment (PPE) Retooling Program*, MO. DEP'T OF ECON. DEV., ded.mo.gov/content/show-me-strong-personal-protective-equipment-ppe-retooling-program (last visited Nov. 28, 2020) [<https://perma.cc/A47X-6DJN>]; *Utah COVID-19 PPE Support Grant Program: About the Grant*, UTAH GOVERNOR'S OFF. OF ECON. DEV., business.utah.gov/utah-covid-19-ppe-support-grant-program/ (last visited Nov. 28, 2020) [<https://perma.cc/CW5S-BQWB>].

19 waves.²²² Because HHS eliminated the HPP supply grant program, there are no longer any government programs to resolve America's emergency medical supply preparation for future medical crises.²²³ A few grant programs were created during the COVID-19 pandemic to fund additional storage and supplies to help hospitals better manage hospitals' PPE and other medical supplies.²²⁴ Therefore, these temporary grant programs do not provide long-term solutions to better prepare hospitals for future medical emergencies.²²⁵

B. Post-Emergency Response is Insufficient in Replacing Pre-Emergency Planning

It is challenging for the federal government to predict emergencies such as pandemics before they occur, and it is even more challenging to predict the pandemic's severity.²²⁶ Although the federal government has taken steps to increase federal emergency preparation, such as the formation of the SNS in 2003, the U.S. government has not yet found the best way to prepare the nation for medical emergencies.²²⁷

PPE shortages during previous medical emergencies should have focused the nation's attention on national storage deficiencies.²²⁸ Although the SNS is a good first step in preparing the country for an emergency, it is inadequate to supply

²²² See *supra* notes 209–11 and accompanying text; Coronavirus Aid, Relief, and Economic Security Act, Pub. L. No. 116-136, 134 Stat. 281 (Section 3211); H.R. 748, THE “CORONAVIRUS AID, RELIEF, AND ECONOMIC SECURITY ACT” (CARES ACT) HEALTH CARE HIGHLIGHTS, AM. MED. ASS'N 2 (2020), www.ama-assn.org/system/files/2020-03/summary-H.R.%20748-cares-act.pdf [<https://perma.cc/7LRQ-ZQ5X>].

²²³ See *About the Hospital Preparedness Program*, U.S. DEP'T OF HEALTH & HUM. SERVS., www.phe.gov/Preparedness/planning/hpp/Pages/about-hpp.aspx (last visited Nov. 22, 2020) [<https://perma.cc/Y9BN-XC6Y>]; *Grants*, GRANTS.GOV, www.grants.gov/web/grants/search-grants.html (last visited Nov. 22, 2020) [www.grants.gov/web/grants/search-grants.html].

²²⁴ *COVID-19 PPE Fund*, THE BOS. FOUND., www.tbf.org/donors/forms/covid19-ppe-fund (last visited Nov. 22, 2020) [<https://perma.cc/R9UL-2RXS>]; *Personal Protective Equipment Grant Program*, SAN JOAQUIN CNTY., www.sjgov.org/covid19/grants/personal-protective-equipment (last visited Nov. 22, 2020) [<https://perma.cc/6BBH-4F8W>]; Press Release, Minn. Dep't of Health, MDH Awards COVID-19 Emergency Health Care Grants to About 350 Organizations Statewide (Apr. 8, 2020), www.health.state.mn.us/news/pressrel/2020/grants040820.html [<https://perma.cc/33KR-JBTW>].

²²⁵ See *COVID-19 PPE Fund*, *supra* note 224; *Personal Protective Equipment Grant Program*, *supra* note 224; Press Release, Minn. Dep't of Health, *supra* note 224.

²²⁶ Jeffery K. Taubenberger et al., *The Next Influenza Pandemic: Can It Be Predicted*, 297 J. AM. MED. ASS'N 2025, 2026–27 (2007).

²²⁷ See *id.*; Dan Diamond, *Inside America's 2-Decade Failure to Prepare for Coronavirus*, POLITICO (Apr. 11, 2020, 7:04 AM), www.politico.com/news/magazine/2020/04/11/america-two-decade-failure-prepare-coronavirus-179574 [<https://perma.cc/FL7E-BT52>].

²²⁸ See *supra* notes 52–54 and accompanying text.

the entire nation with emergency supplies.²²⁹ Although it is vital to maintain the SNS, expanding the SNS would create excessive waste when the stockpile is not used.²³⁰ These supplies sit in storage and are not utilized until an emergency occurs, triggering HHS to deploy the equipment.²³¹ Waste is expensive because Congress has to replenish the supplies to keep the nation prepared for national emergencies.²³² To prevent this waste and cost, Congress should pass legislation implementing rotating storage systems within hospitals to ensure adequate supply to hospitals nationwide.²³³

Though the government has reactionary steps available such as the DPA and FDA immunities to supplement dwindling supplies during a large-scale national emergency, these reactionary steps take time and could cost American lives.²³⁴ Time is critical in health care.²³⁵ The time to create production of PPE contributes

²²⁹ Greenfield Boyce, *supra* note 61; see *Strategic National Stockpile (SNS)*, CHEMICAL HAZARDS EMERGENCY MED. MGMT. (Sept. 14, 2020), chemm.nlm.nih.gov/sns.htm [hereinafter CHEMM] (recognizing that SNS stores enough supplies to respond to multiple large-scale emergencies, simultaneously, but does not contemplate supporting a uniform nationwide emergency).

²³⁰ See *The Strategic National Stockpile: Key to Protecting the Nation's Health*, CTRS. FOR DISEASE CONTROL AND PREVENTION cmt. May 6, 2016, 11:13 AM (Apr. 29, 2016), blogs.cdc.gov/publichealthmatters/2016/04/sns-key-to-protecting-the-nations-health/ [<https://perma.cc/82PK-VVU8>] (“When products are nearing expiration, the SNS can submit them to FDA for stability testing if they meet certain standards. If products are found to be stable and safe to use beyond the original manufacturer’s labeled expiration date, they can be extended for an extra 12 to 24 months of shelf life. More testing can lead to even longer extensions. Products that fail FDA testing are removed from SNS inventory.”); *Bipartisan Bills to Improve the Strategic National Stockpile*, ENERGY AND COM. COMM. (Apr. 23, 2020), republicans-energycommerce.house.gov/news/bipartisan-bills-to-improve-the-strategic-national-stockpile/ [<https://perma.cc/HL5A-BKHT>] (“The stockpile inventory modernization act of 2020, introduced by Rep. Brook. And Chairwoman Eshoo, would allow the SNS to sell existing products when they are no longer needed. This will reduce waste and ensure the SNS has resources to reinvest in supplies needed for future public health emergencies, saving taxpayer dollars and helping keep the SNS’s inventory current.”).

²³¹ See *Strategic National Stockpile*, *supra* note 16; CHEMM, *supra* note 229.

²³² See *The Strategic National Stockpile: Key to Protecting the Nation's Health*, *supra* note 230, at cmt. June 3, 2016, 11:03 AM (“[F]or the large majority of items, the SNS inventory far exceeds the annual use in the commercial marketplace and these types of rotations are not possible or cost savings.”); NICHOLSON ET AL., *supra* note 60 (“BARDA also makes investments in next-generation products to potentially decrease life-cycle management costs, for example, productions in lyophilized forms to extend the shelf life from 3 to 10 years. There is clear justification to invest going from 3 to 10 years, but less so from 5 to 6 He estimated that such investments might require several hundred million dollars over a much longer period of time This is determined by how quickly the investment will be recouped to develop the second-generation MCM (life cycle costs includes the development and then the out-year cost for replenishment); such investments require savings over time.”).

²³³ See *supra* notes 346–49 and accompanying text.

²³⁴ See 21 U.S.C. § 360; Coronavirus Aid, Relief, and Economic Security Act, Pub. L. No. 116-136, 134 Stat. 281.

²³⁵ See *infra* note 236–38 and accompanying text.

to the transmission of the virus and directly costs Americans their lives.²³⁶ By November 2020, 259 thousand Americans died from COVID-19.²³⁷ If America had better medical emergency preparation, thousands of lives could be saved in the next medical emergency because the nation could rely on the stockpile while reactionary steps are taken to manufacture PPE to match the future demand.²³⁸ Congress must address the nation's current emergency preparation inadequacies and take steps to rectify these deficiencies through legislation to better protect American citizens' lives in the future.²³⁹

C. *The Federal Government's Ethical Duty to Protect Health Care Providers*

America's public health laws reflect the nation's endeavors to prevent disease; however, these laws should be expanded to also promote health by improving the underlying determinants of health.²⁴⁰ The underlying factors of health include the influence of social, economic, and political forces.²⁴¹ Americans expect the government to acknowledge their medical needs and respond through political forces such as passing laws in the best interest of American citizens.²⁴² Health care should be recognized in the United States as a fundamental human right.²⁴³ Law, human rights, and bioethics are interconnected, and America should formally recognize this relationship.²⁴⁴ America's recognition of health care as a human right would provide essential rights and freedoms to all Americans and create a governmental duty to protect and fulfill those rights.²⁴⁵ This ratification would legally create a governmental responsibility to provide minimally adequate treatment to patients in need of medical assistance.²⁴⁶ In some ways, the American government already recognizes the importance of Americans' access to health care through programs such as Medicare, Medicaid, and the Affordable

²³⁶ See *supra* notes 25–31 and accompanying text.

²³⁷ *United States COVID-19 Cases and Deaths by State*, CTNS. FOR DISEASE CONTROL AND PREVENTION, web.archive.org/web/20201125181927/https://covid.cdc.gov/covid-data-tracker/#cases_casesper100klast7days (as of Nov. 25, 2020).

²³⁸ See *infra* notes 306–07 and accompanying text.

²³⁹ See *infra* notes 305–16 and accompanying text.

²⁴⁰ FOUNDATIONS OF GLOBAL HEALTH & HUMAN RIGHTS 2 (Lawrence O. Gostin & Benjamin Mason Meier eds., 2020).

²⁴¹ *Id.*

²⁴² *Id.* at 9–10.

²⁴³ See *infra* notes 244–68 and accompanying text.

²⁴⁴ See George J. Annas, *American Bioethics and Human Rights: The End of All Our Exploring*, 32 J.L. MED. & ETHICS 658, 658 (2004).

²⁴⁵ See Lawrence O. Gostin & Lance Gable, *Human Rights of Persons with Mental Disabilities: A Global Perspective on the Application of Human Rights Principles to Mental Health*, 63 MD. L. REV. 20, 100–01 (2004).

²⁴⁶ See *id.*

Care Act.²⁴⁷ However, even with these programs, millions of Americans still lack access to needed care.²⁴⁸

The United Nations (UN) issued General Comment 14 in 2000, an interpretation of Article 12, the International Covenant on Economic, Social and Cultural Rights.²⁴⁹ The comment states, “[h]ealth is a fundamental right indispensable for the exercise of other human rights.”²⁵⁰ The United States signed Article 12 in 1977 but has not ratified it, and thus, the United States has also not ratified General Comment 14.²⁵¹ However, of the 197 UN member states, 171, or 87% have ratified this treaty.²⁵² The United States could ratify the treaty but carve out certain rights and obligations by reserving those rights when ratifying, accepting, approving, or acceding to the treaty.²⁵³ The United States should ratify Article 12 because it is imperative that America formally realize that health care is a human right.²⁵⁴

Furthermore, the COVID-19 pandemic is the first time in American history that fifty states have declared a state of emergency.²⁵⁵ Many Americans through-

²⁴⁷ See MEDICARE AND MEDICAID: KEEPING US HEALTHY FOR 50 YEARS, CTRS. FOR MEDICARE & MEDICAID SERVS. (2015), www.cms.gov/Outreach-and-Education/Look-Up-Topics/50th-Anniversary/Long-Form-Drop-In-Article.pdf [<https://perma.cc/XLG9-WA3F>]; James Roland, *The Pros and Cons of Obamacare*, HEALTHLINE (Aug. 16, 2019), www.healthline.com/health/consumer-healthcare-guide/pros-and-cons-obamacare#:~:text=Millions%20of%20Americans%20have%20benefitted,or%20had%20low%20paying%20jobs.&text=Conservatives%20objected%20to%20the%20tax,needed%20to%20pay%20for%20Obamacare [<https://perma.cc/ER6T-JE5S>]; Rachel Garfield et al., *The Coverage Gap: Uninsured Poor Adults in States that Do Not Expand Medicaid*, KAISER FAM. FOUND. (Jan. 14, 2020), www.kff.org/medicaid/issue-brief/the-coverage-gap-uninsured-poor-adults-in-states-that-do-not-expand-medicaid/ [<https://perma.cc/X4Q3-HNQK>].

²⁴⁸ See Jennifer Tolbert et al., *Key Facts About the Uninsured Population*, KAISER FAM. FOUND. (Nov. 6, 2020), www.kff.org/uninsured/issue-brief/key-facts-about-the-uninsured-population/ [<https://perma.cc/QR66-Y3E8>].

²⁴⁹ Economic and Social Council, U.N. Doc. E/C.12/2000/4 (Aug. 11, 2000); see Jean Connolly Carmalt, *Holding the U.S. Accountable: How American Health Care Fails to Meet International Human Rights Standards*, 11 N.Y. CITY L. REV. 359, 361–62 (2008).

²⁵⁰ Economic and Social Council, U.N. Doc. E/C.12/2000/4, at 1.

²⁵¹ See *Ratification of 18 International Human Rights Treaties*, *supra* note 39. Signing a UN treaty indicates the member state’s intent to adopt the treaty. *What is the Difference Between Signing, Ratification and Accession of UN Treaties?*, DAG HAMMARSKJOLD LIBRARY (Apr. 26, 2018), ask.un.org/faq/14594 [<https://perma.cc/2ZET-UCLY>]. However, the signature does not establish consent to be bound by that member state. *Id.* The member state must first ratify the treaty. *See id.*

²⁵² *Ratification of 18 International Human Rights Treaties*, *supra* note 39.

²⁵³ See *Glossary*, UNITED NATIONS TREATY COLLECTION, treaties.un.org/pages/overview.aspx?path=overview/glossary/page1_en.xml#:~:text=Reservations%20can%20be%20made%20when,certain%20reservations%20to%20be%20made (last visited Nov. 28, 2020) [<https://perma.cc/DTT3-6MUT>].

²⁵⁴ See *infra* notes 255–64 and accompanying text; *supra* notes 240–48 and accompanying text.

²⁵⁵ FEMA’S NATURAL DISASTER PREPAREDNESS AND RESPONSE EFFORTS DURING THE CORONAVIRUS PANDEMIC, U.S. FED. EMERGENCY MGMT. AGENCY (2020); Justine Coleman, *All 50 States Under*

out this pandemic have been panicked for their well-being.²⁵⁶ The most critical hospital resource in providing medical care to patients are health care providers.²⁵⁷ More effort in protecting health care providers is required to preserve access to health care.²⁵⁸ Health care providers are fundamental to providing diagnoses, treatment, and care to patients.²⁵⁹ When health care providers put themselves at risk due to working during a PPE shortage and consequently contract the illness, they cannot continue providing care to other patients.²⁶⁰ When significant numbers of workers are unable to continue working, hospitals will become short-staffed.²⁶¹ When a hospital is short-staffed, it cannot provide the same quantity and quality of health care.²⁶² Therefore, the protection of health care workers is directly linked to Americans' access to health care.²⁶³ As a result of this correlation, the federal government should ethically prioritize health care providers' safety to preserve the American medical workforce to ensure Americans' access to health care.²⁶⁴

Americans want reassurance that their access to health care is protected by the government.²⁶⁵ A human right to health care respects the rights of Americans and protects Americans' lives.²⁶⁶ The federal government has a duty to promote the

Disaster Declaration for First Time in US History, THE HILL (Apr. 12, 2020, 4:31 PM), thehill.com/policy/healthcare/public-global-health/492433-all-50-states-under-disaster-declaration-for-first [https://perma.cc/4BG4-N5M9].

²⁵⁶ See generally Seyed Hassan Saadat et al., *Fear and Panic of COVID-19*, 8 INT'L J. TRAVEL MED. & GLOBAL HEALTH 91 (2020); Christian Jasper C. Nicomedes & Ronn Mikhael A. Avila, *An Analysis on the Panic During COVID-19 Pandemic Through an Online Form*, 276 J. AFFECTIVE DISORDERS 14 (2020); Amy McKeever, *Coronavirus is Spreading Panic. Here's the Science Behind Why.*, NAT'L GEOGRAPHIC (Mar. 17, 2020), www.nationalgeographic.com/history/reference/modern-history/why-we-evolved-to-feel-panic-anxiety/; Catherine Prentice et al., *Timed Intervention in COVID-19 and Panic Buying*, J. RETAILING AND CONSUMER SERVS., Nov. 2020.

²⁵⁷ See Karen Weintraub, *Not Just Ventilators: Staff Trained to Run Them Are in Short Supply*, SCIENTIFIC AM. (Apr. 8, 2020), www.scientificamerican.com/article/not-just-ventilators-staff-trained-to-run-them-are-in-short-supply/ [https://perma.cc/EVA3-MA2Q]. See generally *Coronavirus Disease 2019 (COVID-19)*, MAYO CLINIC (Nov. 24, 2020), www.mayoclinic.org/diseases-conditions/coronavirus/diagnosis-treatment/drc-20479976 [https://perma.cc/KPU3-S6FE].

²⁵⁸ Dow et al., *supra* note 218.

²⁵⁹ *Health Professions Networks*, *supra* note 36.

²⁶⁰ See *Shortage of Personal Protective Equipment*, *supra* note 5; Press Release, Katie Marquedant, *supra* note 11; *Mitigating Staff Shortages*, *supra* note 26.

²⁶¹ See *Strategies to Mitigate Healthcare Personnel Staffing Shortages*, *supra* note 26.

²⁶² See SEAN P. CLARKE & NANCY E. DONALDSON, PATIENT SAFETY AND QUALITY: AN EVIDENCE-BASED HANDBOOK FOR NURSES 2-124 (2008).

²⁶³ See *supra* notes 27–29 and accompanying text.

²⁶⁴ See *infra* notes 304–16 and accompanying text.

²⁶⁵ Robert J. Blendon et al., *Understanding the American Public's Health Priorities: A 2006 Perspective*, 25 HEALTH AFFS. 508, www.healthaffairs.org/doi/pdf/10.1377/hlthaff.25.w508 [https://doi.org/10.1377/hlthaff.25.w508].

²⁶⁶ Annas, *supra* note 244, at 660.

well-being of its citizens, including their health and safety, by ensuring medical care to its residents is accessible.²⁶⁷ Therefore, the government should prioritize a grant program providing stable PPE supplies to health care providers.²⁶⁸

V. REINSTATING A PPE-SPECIFIC HOSPITAL SUPPLY GRANT PROGRAM

HHS's previous hospital supply grant was utilized from 2002 to 2011.²⁶⁹ In recognizing the federal government's duty to protect American's access to health care, Congress should reimplement a modified version of the HPP grant program which would fund a storage space and an initial stockpile of PPE for individual hospitals.²⁷⁰ If Congress does not prioritize the reimplement of this grant program, Wyoming should consider increasing PPE supplies to better supplement the state for future medical emergencies.²⁷¹

A. *The Previously Implemented Federal Hospital Supply Grant Program*

The HPP is the only federally funded source supporting health care facilities' preparedness and response.²⁷² From 2002 to 2011, HPP provided funding through a grant system for hospitals to buy medical inventory supplies, including PPE.²⁷³ Congress created the HPP in 2002 after the impact of terrorist attacks revealed flaws in hospital preparation.²⁷⁴ In 2005, after Hurricane Katrina showed that the grants used to fund individual hospital preparedness programs were not sufficient by themselves, HHS transitioned the HPP to incentivize regional

²⁶⁷ See Ning Tang et al., *The Roles of Government in Improving Health Care Quality and Safety*, 30 JOINT COMM'N J. ON QUALITY AND SAFETY 47, 54 (2004).

²⁶⁸ See *infra* notes 304–16 and accompanying text.

²⁶⁹ See *infra* notes 272–303 and accompanying text.

²⁷⁰ See *infra* notes 304–16 and accompanying text.

²⁷¹ See *infra* notes 317–20 and accompanying text.

²⁷² See Serena Vinter et al., *Public Health Preparedness in a Reforming Health System*, 4 HARV. L. & POL'Y REV. 339, 352 (2010); *Hospital Preparedness Program (HPP)*, PUB. HEALTH EMERGENCY (Nov. 25, 2020), www.phe.gov/Preparedness/planning/hpp/Pages/default.aspx#:~:text=As%20the%20only%20source%20of,disasters%20and%20enables%20rapid%20recovery [<https://perma.cc/X8KP-NURX>]. Other funding sources mentioned in this paper focus on responding to national emergencies, while the HPP focuses specifically on preparation for health care. *Id.*

²⁷³ See HOSPITAL PREPAREDNESS PROGRAM, ASSISTANT SEC'Y FOR PREPAREDNESS AND RESPONSE (last visited Nov. 28, 2020), www.phe.gov/Preparedness/planning/hpp/Documents/hpp-intro-508.pdf [<https://perma.cc/X9HN-F3TP>]; ERIC TONER ET AL., HOSPITALS RISING TO THE CHALLENGE: THE FIRST FIVE YEARS OF THE U.S. HOSPITAL PREPAREDNESS PROGRAM AND PRIORITIES GOING FORWARD, CTR. FOR BIOSECURITY OF UPMC (Apr. 16, 2009), www.centerforhealthsecurity.org/our-work/publications/hospitals-rising-to-the-challenge-the-first-five-years-of-the-us-hospital-preparedness-program-and-priorities-going-forward [<https://perma.cc/U3TQ-8UQ5>].

²⁷⁴ Andrea Lebron, *15 Years of the Hospital Preparedness Program and Where It's Heading*, RAVE MOBILE SAFETY (Sept. 11, 2018), www.ravemobilesafety.com/blog/15-years-of-the-hospital-preparedness-program [<https://perma.cc/34A5-MQBC>].

cooperative agreements.²⁷⁵ HHS's regional cooperative agreements created a contract between all hospitals within a region that utilized the HPP grant.²⁷⁶ When a hospital within a region was suffering from an emergency that required additional supplies, surrounding hospitals in that region could supplement the affected hospital's equipment with regional hospitals' supplies purchased using the HPP.²⁷⁷

For health care facilities to utilize the grant, they first were required to match ten percent of the equipment's cost.²⁷⁸ Once the facilities purchased inventory with the HPP grant, it became a federal asset.²⁷⁹ When the equipment was expended, expired, broken, or lost, future grant funds could replace those items and reduce the cost of replenishing the stockpile.²⁸⁰ Recipients were strongly encouraged, but not required, to rotate items by utilizing the oldest supplies first through the first in-first out inventory method.²⁸¹ These inventory strategies prioritize using the oldest equipment in the storage to reduce the amount of waste from expired inventory.²⁸² The program's purpose was to ensure that hospitals had access to medical caches in preparation for an emergency causing surge capacities.²⁸³ The HPP grant did not permit the use of PPE from the HPP stockpile in everyday health care operations.²⁸⁴ HHS reasoned that the purpose of storing the materials in a medical cache for emergencies would be defeated if health care providers used the materials in everyday operations.²⁸⁵ Therefore, because hospitals could

²⁷⁵ *Id.*

²⁷⁶ *Id.*

²⁷⁷ *Id.*

²⁷⁸ *Id.*

²⁷⁹ ATTACHMENT C: HOSPITAL PREPAREDNESS PROGRAM (HPP) FREQUENTLY ASKED QUESTIONS (FAQs), HEALTH AND HUM. SERVS. GRANT 1 (2012), cdn.ymaws.com/www.lhaonline.org/resource/resmgr/imported/FAQs%20-%20FINAL.pdf [<https://perma.cc/V5SY-5L2H>]. The General Services Administration regulates how surplus supplies paid for using federal funds may be donated. See *Government Property for Sale or Disposal*, U.S. GEN. SERVS. ADMIN. (Apr. 4, 2008), www.gsa.gov/buying-selling/government-property-for-sale-or-disposal [<https://perma.cc/9XNK-2Z2N>]; *For State Agencies and Public Organizations*, U.S. GEN. SERVS. ADMIN. (Sept. 30, 2020), www.gsa.gov/buying-selling/government-property-for-sale-or-disposal/personal-property-for-reuse-sale-for-state-agencies-and-public-organizations [<https://perma.cc/92VV-LPNW>]; WYO. STAT. ANN. § 9-2-1016 (2020).

²⁸⁰ See ATTACHMENT C, *supra* note 279, at 2; *Government Property for Sale or Disposal*, *supra* note 279; WYO. STAT. ANN. § 9-2-1016.

²⁸¹ See ATTACHMENT C, *supra* note 279, at 2.

²⁸² Katherine Arline, *FIFO vs. LIFO: What Is the Difference?*, BUS. NEWS DAILY (Aug. 28, 2020), www.businessnewsdaily.com/5514-fifo-lifo-differences.html [<https://perma.cc/FZ2N-PKUS>].

²⁸³ ATTACHMENT C, *supra* note 279, at 3.

²⁸⁴ *Id.*

²⁸⁵ *Id.*

only use the inventory during emergencies, even when using the first in-first out method, large amounts of the stored inventory likely expired.²⁸⁶

HPP's federal funding peaked in 2003 and 2004 at \$498 million.²⁸⁷ After 2004, the federal government cut the program's funding every year until 2011.²⁸⁸ In 2011, Congress cut HPP's funding to \$350 million.²⁸⁹ As a result, HHS replaced the HPP grant with a program that provided funding and technical assistance to public health departments to assist health care facilities' preparation plans for health care emergencies.²⁹⁰ This cut and change in the program in 2011 was alarming after the report released by Trust for America's Health warned that America fell short in preparedness related to large-scale emergencies.²⁹¹ One of the critical flaws identified in the report was the nation's inability to ensure hospitals' access to supplies during a surge.²⁹² Instead of acting on the data found in these reports, the government prioritized other areas of the federal budget and cut the HPP grant program.²⁹³ From 2012 to 2016, HPP dispersed funding to health care facilities to assist their emergency preparation plans instead of helping

²⁸⁶ *Id.* at 2 (permitting replacement grant funds for expired, broken, or lost items within the stockpile); see Reinhard & Brown, *supra* note 70 (stating that five of twelve million N95 masks in the SNS were expired; thus, indicating that when supplies are stored and only used during emergencies, similar to the SNS, the stock has a high likelihood of expiring before an emergency requires the supplies' deployment).

²⁸⁷ See Paul Barr, *Still Not Prepared: Healthcare System Has Made Major Gains in Disaster Readiness in Decade Since 9/11, but Experts Cite Significant Shortcomings*, MOD. HEALTHCARE (Sept. 5, 2011, 1:00 AM), www.modernhealthcare.com/article/20110905/MAGAZINE/110909983/still-not-prepared.

²⁸⁸ *Id.*

²⁸⁹ Irwin Redlener & David Abramson, *Domestic Preparedness Cuts in the Current Federal Budget Threaten Infrastructure Gains and Public Health Preparedness*, COLUM. UNIVERSITY NAT'L CTR. FOR DISASTER PREPAREDNESS (July 3, 2011), ncdp.columbia.edu/news/disaster-funding-cuts/ [<https://perma.cc/55A2-LSLX>].

²⁹⁰ See *Hospital Preparedness Program*, *supra* note 273; HEALTHCARE PREPAREDNESS CAPABILITIES: NATIONAL GUIDANCE FOR HEALTHCARE SYSTEM PREPAREDNESS, OFF. OF THE ASSISTANT SEC'Y FOR PREPAREDNESS AND RESPONSE vii (2012).

²⁹¹ *Ready or Not? 2011 Report Finds Preparedness for Bioterror and Health Emergencies Eroding in Nation*, TRUST FOR AMERICA'S HEALTH (Dec. 20, 2011), www.tfah.org/releases/bioterror11/. The large-scale emergencies anticipated in this article could include emergencies such as natural disasters, terrorist attacks, biochemical attacks, epidemics, and pandemics. See *id.*

²⁹² See *id.* (discussing a risk of eliminating the Cities Readiness Initiative, which supports rapidly distributing and administering vaccines and medications, and without the initiative, the cities are prone to surges since they can't respond rapidly).

²⁹³ The federal government increased the FDA's budget for the Food Safety Modernization Act, the CDC to raise disease-prevention funds, and the Strategic National Stockpile to replace expiring supplies in the stockpile. Robert Roos & Lisa Schnirring, *Proposed Budget Trims Preparedness Funds, Boosts FDA*, CTR. FOR INFECTIOUS DISEASE RSCH. AND POL'Y (Feb. 14, 2011), www.cidrap.umn.edu/news-perspective/2011/02/proposed-budget-trims-preparedness-funds-boosts-fda [<https://perma.cc/HL39-Z8FK>].

supply the preparation materials for health care emergencies.²⁹⁴ Since 2017, HPP has supported regional collaboration and emergency medical preparation by encouraging the development of health care coalitions and incentivizing competition.²⁹⁵ HPP uses its remaining funding to provide emergency training and exercises to health care facilities.²⁹⁶ The average appropriation from 2018 to 2019 was \$265 million.²⁹⁷ Overall, since the program's inception in 2002, Congress has invested \$5.9 billion in HPP's health care preparation programs.²⁹⁸

The HPP grant was the only grant available during the twenty-first century to provide medical supplies to prepare hospitals for emergencies prior to temporary CARES Act funding.²⁹⁹ America should learn the valuable lesson from the COVID-19 pandemic that emergency medical supply preparation is crucial for America to timely and effectively respond to national and global medical emergencies.³⁰⁰ By preparing the nation with an adequate supply of general medical necessities, such as PPE, hospitals and the federal government will be better able to respond to all medical emergencies.³⁰¹ The government will also be able to focus its time and money on developing a vaccine or medications specific to that future emergency, which are more difficult to store in preparation.³⁰² General pre-emergency preparation supplemented by specific governmental reactions to the emergency will better enable the nation to better manage and more effectively mitigate medical emergencies.³⁰³

²⁹⁴ *Hospital Preparedness Program*, *supra* note 273.

²⁹⁵ *Id.*

²⁹⁶ *About the Hospital Preparedness Program*, *supra* note 223.

²⁹⁷ *Hospital Preparedness Program*, *supra* note 273.

²⁹⁸ *Id.*

²⁹⁹ See Press Release, HHS Provides \$100 Million to Help U.S. Healthcare Systems Prepare for COVID-19 Patients, U.S. Dept of Health & Hum. Servs. (Mar. 24, 2020), www.hhs.gov/about/news/2020/03/24/hhs-provides-100-million-to-help-us-healthcare-systems-prepare-for-covid-19-patients.html [<https://perma.cc/6QRY-BQHF>].

³⁰⁰ WHO CHECKLIST FOR INFLUENZA PANDEMIC PREPAREDNESS PLANNING, WORLD HEALTH ORG. vii (2005); see Kathleen Votava, *Emergency Preparedness: Even More Important During COVID-19*, ADMIN. FOR CMTY. LIVING (Sept. 21, 2020), acl.gov/news-and-events/acl-blog/emergency-preparedness-even-more-important-during-covid-19 [<https://perma.cc/C7J3-7ZPE>].

³⁰¹ See WHO CHECKLIST, *supra* note 300, at vii, 24; *Personal Protective Equipment*, CTRES. FOR DISEASE CONTROL AND PREVENTION, [www.cdc.gov/niosh/topics/emres/ppe.html#:~:text=Personal%20protective%20equipment%20\(PPE\)%20is,for%20emergency%20and%20recovery%20workers.&text=Therefore%2C%20main%20protective%20equipment%20includes,the%20use%20of%20PPE%20change](http://www.cdc.gov/niosh/topics/emres/ppe.html#:~:text=Personal%20protective%20equipment%20(PPE)%20is,for%20emergency%20and%20recovery%20workers.&text=Therefore%2C%20main%20protective%20equipment%20includes,the%20use%20of%20PPE%20change) (last visited Nov. 22, 2020) [<https://perma.cc/6AF5-74SB>].

³⁰² See PANDEMIC INFLUENZA PREPAREDNESS AND RESPONSE: A WHO GUIDANCE DOCUMENT, WORLD HEALTH ORG. §5 (2009); H. Cody Meissner, *Ask the Expert: Why is Vaccine Development Against COVID-19 Disease So Difficult*, AM. ACAD. OF PEDIATRICS NEWS (June 17, 2020), www.aapublications.org/news/2020/06/17/covid19vaccines061720 [<https://perma.cc/GTF3-QN9Y>].

³⁰³ See PANDEMIC INFLUENZA PREPAREDNESS AND RESPONSE, *supra* note 302, § 5; Howard P. Forman et al., *Health Care Priorities for a COVID-19 Stimulus Bill: Recommendations to the*

B. Reimplementing a Modified Version of the Federal Hospital Preparedness Grant Program

Pandemic emergencies are relatively rare, making it impractical for either federal or state governments to strictly reserve funds or unused supplies specifically for another pandemic.³⁰⁴ America must recognize that emergency medical supply preparation is crucial for timely and effective national responses to medical emergencies.³⁰⁵ By reinstating a federal hospital preparedness grant, similar to the HPP federal grant program utilized from 2002 to 2011, the federal government could fund a sufficient amount of PPE supplies for individual hospitals to survive a pandemic-like emergency for at least a month without additional supply.³⁰⁶ Having a storage supply of PPE would give the nation time to begin creating its own supply or to allow the market to stabilize and match the increased demand.³⁰⁷

It is unlikely that this proposed program would have supplied sufficient amounts of PPE supplies during the COVID-19 pandemic by itself.³⁰⁸ However, the grant program would have extended the amount of time to find additional supplies and put less initial stress on the SNS.³⁰⁹ If health care facilities have continued access to adequate PPE supplies in future medical emergencies, then health care providers, while complying with their ethical duty to provide medical care, will be less likely to do so without proper protective equipment.³¹⁰ Ensuring

Administration, Congress, and Other Federal, State and Local Leaders from Public Health, Medical, Policy, and Legal Experts, HEALTH AFFS. (Mar. 12, 2020), www.healthaffairs.org/doi/10.1377/hblog20200312.363618/full/ [<https://perma.cc/U5Y6-9R2X>] (proposing two of four basic principles for Congress and other federal, state and local leaders from public health should prioritize as first implementing immediate and targeted reactionary measures to address a medical emergency and second to prepare the nation, as much as possible, for future medical emergencies).

³⁰⁴ See *Influenza (Flu)*, CTRS. FOR DISEASE CONTROL AND PREVENTION, www.cdc.gov/flu/pandemic-resources/basics/past-pandemics.html (last reviewed Aug. 10, 2018) [<https://perma.cc/8VXP-JXS9>]. But see Joseph Lamour, *Dr. Fauci Said We're Entering a "Pandemic Age." What Does That Mean?*, MIC (Sept. 2, 2020), www.mic.com/p/dr-fauci-said-were-entering-a-pandemic-age-what-does-that-mean-33006509 [<https://perma.cc/8UKU-SACE>] (positing pandemics are not as rare as most people previously believed).

³⁰⁵ See HOSPITAL EMERGENCY RESPONSE CHECKLIST, WORLD HEALTH ORG. EUROPE 7, 9 (2011).

³⁰⁶ See Dow et al., *supra* note 218.

³⁰⁷ See Press Release, New Document Shows Inadequate Distribution, *supra* note 16; Press Release, Globe Newswire, COVID-19 Pandemic's Impact on the Global Healthcare Personal Protective Equipment Market, 2020 Report: Collaboration Among PPE Value Chain Participants Will Bolster Supplies and Stabilize Growth, Markets Insider (Sept. 24, 2020, 7:38 AM), markets.businessinsider.com/news/stocks/covid-19-pandemic-s-impact-on-the-global-healthcare-personal-protective-equipment-market-2020-report-collaboration-among-ppe-value-chain-participants-will-bolster-supplies-and-stabilize-growth-1029618964 [<https://perma.cc/D4UU-LM5Q>].

³⁰⁸ See *supra* notes 18–22 and accompanying text.

³⁰⁹ See *supra* notes 61–64 and accompanying text; Dow et al., *supra* note 218.

³¹⁰ See CHEMM, *supra* note 229; NICHOLSON ET AL., *supra* note 60, § 2.

that health care providers have access to sufficient PPE supplies will greatly decrease health care workers' risk of contracting infectious diseases in their frontline response to medical emergencies.³¹¹ This proposed federal hospital preparedness grant system would also enable hospitals to create and maintain efficient and secure spaces for individual hospitals to store essential PPE equipment.³¹² Implementing a grant program is a key component of the federal government ensuring that hospitals are prepared for all emergencies, especially large-scale emergencies such as pandemics.³¹³

The proposed federal hospital preparedness grant must ensure that every participating hospital has its own PPE storage to rely upon during times of national emergencies.³¹⁴ For example, if this storage grant were in effect at the beginning of the year in 2020, then hospitals in states similar to Wyoming that were not as heavily impacted by spikes in the COVID-19 pandemic would not have needed to rely as heavily, if at all, on FEMA or the CDC to obtain additional supplies.³¹⁵ FEMA would only have needed to supplement supplies to hospitals drastically affected by early COVID-19 spikes since each hospital would have a buffer to help ensure the safety of their health care providers.³¹⁶

C. *Creation of a Supplemental State Hospital Grant Program or State Stockpile*

If the federal government does not provide funding or another solution to resolve the inadequacies of critical emergency medical supply preparation within hospitals, the Wyoming government must take the initiative to protect its citizens by providing a similar grant system for the state.³¹⁷ After being forced to cut budgets during the economic downfall resulting from the COVID-19 pandemic and the overall decreased state revenues due to previous unrelated factors, the Wyoming government is less likely than the federal government to have available funding for a hospital preparedness grant program.³¹⁸ However, the state must

³¹¹ See *supra* notes 25–30 and accompanying text; Dow et al., *supra* note 218.

³¹² See *supra* notes 304–07 and accompanying text.

³¹³ See Vinter et al., *supra* note 272, at 352.

³¹⁴ See Lewis Rubinson et al., *Augmentation of Hospital Critical Care Capacity After Bioterrorist Attacks or Epidemics: Recommendation of the Working Group on Emergency Mass Critical Care*, 33 CRITICAL CARE MED. 2393 (2005) (recognizing that if all hospitals within a region increased their emergency preparation, a region's life-saving medical care may be increased significantly, possibly doubling or tripling overall critical care capacity).

³¹⁵ See *supra* notes 160–63 and accompanying text.

³¹⁶ See *supra* notes 163–68 and accompanying text.

³¹⁷ See *infra* notes 319–20 and accompanying text.

³¹⁸ Wyoming's top economic contributor is the mining industry, which has faced significant substantial declines since 2014. See WORKFORCE PLANNING REPORT: 2016, WYO. LAB. FORCE TRENDS Ch. 6 (2016); *Economics*, WYO. MINING ASS'N, www.wyomingmining.org/economics/ (last visited

prioritize the health care of nearly half of its residents living in rural communities, despite the state's current economic hardships.³¹⁹ Although state funds are scarce, Wyoming cannot ethically afford a failure to provide adequate health care.³²⁰

VI. ADDRESSING CRITICISMS

Though there may be concerns about funding, storage space, and potential inventory waste associated with a hospital grant program, first in-first out inventory strategies and offsite storage may mitigate these concerns.³²¹

A. *Apportioning Money from the Federal Budget to Fund the Grant Program*

Whenever a proposal to spend money arises, one of the first questions to be addressed is how to fund the proposal.³²² After the COVID-19 pandemic, the chance the federal government will allocate more money to HHS is fairly high, although this likelihood may change depending on the results of the 2020 American election.³²³ Congress has already allocated HHS funding to distribute according to the CARES Act to respond to the national COVID-19 crisis.³²⁴

Nov. 22, 2020) [<https://perma.cc/9Y4Y-Y449>]; *Budget Cuts Approved by Governor Gordon Total More Than \$250 Million*, STATE OF WYO. (July 13, 2020), governor.wyo.gov/media/news-releases/2020-news-releases/budget-cuts-approved-by-governor-gordon-total-more-than-250-million [<https://perma.cc/GDM9-TYP4>].

³¹⁹ See *What Is Rural*, *supra* note 174; *Budget Cuts Approved by Governor Gordon Total More Than \$250 Million*, *supra* note 318.

³²⁰ See *supra* notes 155–73, 318–20 and accompanying text.

³²¹ See *infra* notes 322–68 and accompanying text.

³²² See *Section 2. Establishing Micro-Grant Programs*, CMTY. TOOL BOX, ctb.ku.edu/en/table-of-contents/finances/invest-in-community-resources/microgrant/main (last visited Nov 22, 2020) [<https://perma.cc/2VZB-7LHX>]. See generally Andrea Helaine, *How to Establish a Grant*, CHRON, smallbusiness.chron.com/establish-grant-14969.html (last visited Nov. 22, 2020) [<https://perma.cc/R4ZA-ZAX7>]; Alex Lamachenka, *How to Write a Grant Proposal*, PANDADOC BLOG (June 5, 2018), blog.pandadoc.com/grant-proposal/ [<https://perma.cc/ZG9N-TUPQ>].

³²³ See generally *To Prepare the U.S. for Future Pandemics, AACC Calls on Congress to Enact 4 Recommendations*, AM. ASS'N FOR CLINICAL CHEMISTRY (June 25, 2020), www.aacc.org/media/press-release-archive/2020/06-jun/to-prepare-for-future-pandemics-aacc-calls-on-congress-to-enact-4-recommendations [<https://perma.cc/E563-8GT6>]; Laura Magaña & Sandro Galea, *Preventing the Next Pandemic Through Investment in Academic Public Health*, HILL (May 18, 2020, 2:00 PM), thehill.com/blogs/congress-blog/healthcare/498326-preventing-the-next-pandemic-through-investment-in-academic [<https://perma.cc/9USP-PN2K>]; *Tell Congress to Pass the Preventing Future Pandemics Act 2020*, WORLD ANIMAL PROT., www.worldanimalprotection.us/preventing-future-pandemics-act-2020 (last visited Dec. 13, 2020) [<https://perma.cc/5V4U-NTNS>]; Elena Moore, *Trump's And Biden's Plans on the Coronavirus Pandemic*, NAT'L PUB. RADIO (Oct. 16, 2020, 8:01 AM), www.npr.org/2020/10/16/919139204/trumps-and-biden-s-plans-on-the-coronavirus-pandemic [<https://perma.cc/QS8R-398F>].

³²⁴ Press Release, U.S. Dep't of Health & Hum. Servs., HHS to Begin Distributing \$10 Billion in Additional Funding to Hospitals in High Impact COVID-19 Areas (July 17, 2020), www.hhs.gov/about/news/2020/07/17/hhs-begin-distributing-10-billion-additional-funding-hospitals-

There were over 33,000 cases per one million people and 740 COVID-19 deaths per one million people as of November 13, 2020 in the United States.³²⁵ In contrast, in mid-November, China had only 63 cases per one million people and only 3 deaths per one million people.³²⁶ As of November of 2020, the United States has seen the most COVID-19 cases and COVID-19 related deaths since the pandemic began.³²⁷ After nearly eleven million confirmed cases of the virus and over 267 thousand deaths in approximately ten months of the pandemic, Congress has ample proof that more money needs to be invested into HHS to improve the nation's emergency preparedness.³²⁸

The overhead price of this grant would be significant.³²⁹ Based on University of California Berkeley's algorithms, a federal grant program supplying a ninety-day PPE stockpile would cost approximately \$813 million, and a Wyoming program covering the supplies in all hospitals in the state could cost approximately \$1.23 million.³³⁰ However, to supply the same ninety-day stockpile during an emergency at pandemic prices would cost the federal government over five billion dollars and would cost Wyoming approximately eight million dollars.³³¹ The cost of this grant program could be split over several years.³³² Furthermore, after the high costs to create storage spaces and stock the initial supply of existing hospitals, the costs to continue the program will be substantially reduced.³³³ Continued funding to replace expired, damaged, or lost supplies will be minimal if hospitals rotate supplies and use first in-first out strategies to prevent waste.³³⁴ The fund should also continue to allocate money to develop storage spaces in or near new hospitals built after the grant program was created to ensure that all hospitals in

high-impact-covid-19-areas.html#:~:text=media%40hhs.gov-,HHS%20To%20Begin%20Distributing%20%2410%20Billion%20in%20Additional%20Funding%20to,High%20Impact%20COVID%2D19%20Areas&text=Payments%20from%20the%20%2410%20billion,as%20Monday%20of%20next%20week [https://perma.cc/F344-TYM8].

³²⁵ *Confirmed COVID-19 Cases and Deaths*, *supra* note 237.

³²⁶ *COVID-19 Coronavirus Tracker*, KAISER FAM. FOUND., www.kff.org/coronavirus-covid-19/fact-sheet/coronavirus-tracker/ (last visited Nov. 23, 2020).

³²⁷ *Id.*

³²⁸ *See id.*

³²⁹ *See* Dow et al., *supra* note 218.

³³⁰ *Id.*; *Total Health Care Employment*, KAISER FAM. FOUND. (May 2018), www.kff.org/other/state-indicator/total-health-care-employment/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D [https://perma.cc/TEL9-JS4J] (stating the total number of health care employees in each U.S. state in May of 2018; this number estimated the number of health care workers for the UC Berkley algorithm).

³³¹ Dow et al., *supra* note 218; *Total Health Care Employment*, *supra* note 330.

³³² *See generally* Dow et al., *supra* note 218.

³³³ *See infra* notes 336–37 and accompanying text.

³³⁴ *See infra* notes 345–351 and accompanying text.

the nation are prepared for emergencies.³³⁵ These supplemental budgets are likely to be minimal compared to the grant's initial overhead costs, and the grant costs during an emergency could save the government up to five billion dollars.³³⁶

In 2011, HHS required hospitals receiving the HPP grant to match ten percent of the cost of the supplies.³³⁷ In a renewed hospital storage grant program, the federal government should again require this ten percent match.³³⁸ Though some may argue that hospitals have typically paid for their own PPE, at least in large part, and should continue to do so, most American hospitals struggle to make a profit, even without pandemic conditions.³³⁹ Therefore, many hospitals are unlikely to be able to afford the initial capital to create sufficient storage of PPE to provide the hospital for a future large-scale emergency.³⁴⁰ The federal government is the best-suited entity to bear the high initial cost of implementing the program.³⁴¹ Health care facilities should, again, be required to match ten percent of the initial cost to create the storage and purchase the initial supplies.³⁴² However, after the federal government invests in the storage facility, hospitals should continue using their normal inventory budgets to replenish the expended inventory from the stockpile.³⁴³ If health care facilities are responsible for periodically replenishing

³³⁵ See generally HOSPITAL PREPAREDNESS PROGRAM (HPP) AND PUBLIC HEALTH EMERGENCY PREPAREDNESS (PHEP) COOPERATIVE AGREEMENTS, ASSISTANT SEC'Y FOR PREPAREDNESS AND RESPONSE 34–35, www.cdc.gov/cpr/documents/HPP-PHEP-BP3-Continuation-Guidance_Supplemental-Information.pdf [hereinafter COOPERATIVE AGREEMENTS].

³³⁶ In 2020, there were 6,146 hospitals, which is 64 fewer hospitals than in 2019. *Compare Fast Facts on U.S. Hospitals, 2020*, AM. HOSP. ASS'N (Mar. 2020), www.aha.org/statistics/fast-facts-us-hospitals [<https://perma.cc/ST2A-9LZ4>], with *Archived: Fast Facts on U.S. Hospitals, 2019*, AM. HOSP. ASS'N (Jan. 2019), www.aha.org/statistics/2020-01-07-archived-fast-facts-us-hospitals-2019 [<https://perma.cc/Q9BE-8XUD>].

³³⁷ COOPERATIVE AGREEMENTS, *supra* note 335, at 36.

³³⁸ See *id.*

³³⁹ See Mitchell, *supra* note 41; *Ebola (Ebola Virus Disease)*, *supra* note 51; Maria Castellucci, *Hospital ORs May Waste Millions a Year in Disposable Medical Supplies*, MOD. HEALTHCARE (Sept. 7, 2016, 1:00 AM), www.modernhealthcare.com/article/20160907/NEWS/160909935/hospital-ors-may-waste-millions-a-year-in-disposable-medical-supplies [<https://perma.cc/39Q7-XKHU>].

³⁴⁰ See *supra* notes 337–39 and accompanying text.

³⁴¹ See generally *Breaking Down the US Federal Budget: Charts and Graphs*, UP TO US (June 3, 2020), www.itsuptous.org/blog/breaking-down-us-federal-budget-charts-and-graphs#:~:text=The%20federal%20budget%20for%20the,was%20set%20at%20%20244.79%20trillion [<https://perma.cc/B9NX-MUDP>] (evaluating the 2020 federal budget set at \$4.79 trillion); Ryan Nunn et al., *A Dozen Facts About the Economics of the US Health-care System*, BROOKINGS (Mar. 10, 2020), www.brookings.edu/research/a-dozen-facts-about-the-economics-of-the-u-s-health-care-system/ [<https://perma.cc/L7L6-PRPU>] (finding that increasing the federal government's health care funding may be optimal in some cases).

³⁴² See COOPERATIVE AGREEMENTS, *supra* note 335, at 36.

³⁴³ See Mitchell, *supra* note 41.

the expended supplies from the stockpile, they will be more likely to use first in-first out inventory strategies to reduce their maintenance costs.³⁴⁴

The expiration dates of most PPE supplies range between three to five years.³⁴⁵ When hospitals responsibly rotate the supplies within the cache, the supplies should not expire, so long as the stored amount of inventory is less than the equivalent stock of a three-year normal supply for that hospital.³⁴⁶ By avoiding the expiration of supplies, hospitals will significantly reduce the cost of resupplying the stockpile.³⁴⁷ In an emergency, if a hospital depletes all of its PPE supplies, the supply should be replenished by the federal hospital storage grant program with another ten percent match by the hospital.³⁴⁸ However, if unaffected hospitals in the same region as an affected hospital give their supplies to the affected hospital, the hospital storage grant program should replenish the unaffected hospital's supplies that it gave without requiring a matching fund.³⁴⁹ This method would encourage the use of the regional cooperative agreement approach because the

³⁴⁴ See generally *id.* First expired-first out inventory methods can also be substituted for first in-first out methods, the first expired-first out method proposes that the supplies that will expire the soonest should be utilized first to prevent waste. *Effects of Choosing Different Inventory Methods*, LUMEN, courses.lumenlearning.com/sac-finaccounting/chapter/effects-of-inventory-method-on-the-financial-statement/ (last visited Nov. 23, 2020) [https://perma.cc/D3AQ-JXU2].

³⁴⁵ Alexandra Serban, *New Year, New PPE? See if You Should Change Yours*, HONEYWELL BLOG (Jan. 6, 2020), safety.honeywell.com/en-us/news-and-events/blog/new-year-new-ppe-see-if-you-should-change-yours [https://perma.cc/FP9W-XBRW]; *Considerations for Release of Stockpiled N95s Beyond the Manufacturer-Designated Shelf Life*, CTRS. FOR DISEASE CONTROL AND PREVENTION, www.cdc.gov/coronavirus/2019-ncov/hcp/release-stockpiled-N95.html (last updated July 20, 2020) [https://perma.cc/G9N9-BSUP]; *Frequently Asked Questions: 3M Health Care Particulate Respirator and Surgical Masks Storage Conditions and Shelf Life*, 3M (Feb. 2020), multimedia.3m.com/mws/media/8692380/3m-health-care-particulate-respirator-and-surgical-masks-storage-conditions-and-shelf-life-faq.pdf [hereinafter *3M Health Care*]; PPE CASE, CTRS. FOR DISEASE CONTROL AND PREVENTION (2018), www.cdc.gov/niosh/npptl/ppecase/pdfs/PPE-CASE-P2018-0104-508.pdf [https://perma.cc/5UKL-DNDK]; Nelson Schlatter, *Determining the Shelf Life of Gloves Shouldn't Be A Stretch*, SAFETY AND HEALTH (July 1, 2005), www.safetyandhealthmagazine.com/articles/determining-the-shelf-life-of-gloves-shouldn-t-be-a-stretch-2 [https://perma.cc/3E42-QLLY]; *How Long Does PPE Last? (Probably Not as Long as You Think)*, XAMAX: BLOG (Mar. 12, 2019), www.xamax.co.uk/blog/how-long-does-ppe-last.html [https://perma.cc/BFN5-SPVT].

³⁴⁶ See MANJIT KAUR & SARAH HALL, *MEDICAL SUPPLIES AND EQUIPMENT FOR PRIMARY HEALTH CARE: A PRACTICAL RESOURCE FOR PROCUREMENT AND MANAGEMENT* 13 (Kathy Attawell ed., 2001); Terri Rebmann et al., *Best Practices for Healthcare Facility and Regional Stockpile Maintenance and Sustainment: A Literature Review*, 15 HEALTH SEC. 409, 414 (2017).

³⁴⁷ See Christopher Cheney, *How to Limit Waste in Hospital Supply Chains*, HEALTHLEADERS (Oct. 9, 2018), www.healthleadersmedia.com/finance/how-limit-waste-hospital-supply-chains; *Medical Supply Waste: What Is It Costing You?*, CONCORDANCE HEALTHCARE SOLUTIONS (Apr. 18, 2017, 8:00 AM), www.concordancehealthcare.com/blog/medical-supply-waste-what-is-it-costing-you [https://perma.cc/38DQ-CR8R].

³⁴⁸ See generally COOPERATIVE AGREEMENTS, *supra* note 335, at 36.

³⁴⁹ See A WHOLE COMMUNITY APPROACH TO EMERGENCY MANAGEMENT: PRINCIPLES, THEMES, AND PATHWAYS FOR ACTION, U.S. DEP'T OF HOMELAND SEC. 14–16 (2011).

grant would not penalize hospitals by having them pay the ten percent match when they supplement other hospitals' supplies.³⁵⁰ Therefore, although the initial cost of the grant program will be considerable, the government and hospitals will ultimately save money while ensuring that health care providers are protected to better maintain Americans' access to health care.³⁵¹

B. Reconciling Critical Hospital Space Concerns

Most PPE supplies are compact and easy to store.³⁵² Hospitals already are required to have PPE on-hand because hospitals use it in day-to-day operations.³⁵³ Having a larger cache of PPE should not dramatically increase the space needed to hold the increased supply.³⁵⁴ Even if hospitals do not have the space to contain a storage facility, the storage facility does not have to be physically attached to the hospital.³⁵⁵ Hospitals should store PPE in clean and maintained areas.³⁵⁶ So long as hospitals store PPE in a facility that can maintain relatively constant temperatures, the PPE will remain fully-effective for its full shelf-life.³⁵⁷ Off-site

³⁵⁰ See A WHOLE COMMUNITY APPROACH, *supra* note 349.

³⁵¹ Dow et al., *supra* note 218.

³⁵² See generally *Personal Protection Equipment (PPE) Storage*, VITALVALT (Apr. 28, 2020), vitalvalt.com/personal-protection-equipment-ppe-storage/ [https://perma.cc/K3FG-6KH9]; *PPE Dispensers*, CEILBLUE, www.ceilblue.com/collections/ppe-dispensers (last visited Nov. 29, 2020) [https://perma.cc/HU84-WB2R].

³⁵³ See *How to Use Personal Protective Equipment*, NURSINGTIMES (Dec. 12, 2014), www.nursingtimes.net/clinical-archive/infection-control/how-to-use-personal-protective-equipment-12-12-2014/ [https://perma.cc/3TCZ-PQKF]; Ruth Barratt et al., *Clinician Perceptions of Respiratory Infection Risk; A Rationale for Research into Mask Use in Routine Practice*, 24 INFECTION, DISEASE & HEALTH 169 (2019); PREVENTING TRANSMISSION OF PANDEMIC INFLUENZA AND OTHER VIRAL RESPIRATORY DISEASES: PERSONAL PROTECTIVE EQUIPMENT FOR HEALTHCARE PERSONNEL, INST. OF MED. OF THE NAT'L ACADS. (Elaine L. Larson & Catharyn T. Liverman eds., 2010).

³⁵⁴ See *supra* notes 352–53 and accompanying text.

³⁵⁵ See Terri Rebmann et al., *supra* note 346, at 412, 415. See generally *COVID-19 Forcing Healthcare Providers to Rethink Just-In-Time Supply Chain Management*, IRON MOUNTAIN, www.ironmountain.com/resources/general-articles/c/covid-19-forcing-healthcare-providers-to-rethink-just-in-time-supply-chain-management (last visited Nov. 29, 2020) [https://perma.cc/8EJG-JWH2]; SCOTT HSIANG-JEN CHENG & GRAHAM WHITTEMORE, AN ENGINEERING APPROACH TO IMPROVING HOSPITAL SUPPLY CHAINS, MASS. INST. OF TECH. 4 (2008), cti.mit.edu/sites/cti.mit.edu/files/library/public/theses_2008_Cheng_Whittemore_ExecSumm.pdf [https://perma.cc/BT8J-DFY4].

³⁵⁶ 6.3 *Personal Protective Equipment (PPE)*, UNIV. OF MINN. DEP'T OF ENV'T HEALTH & SAFETY, dehs.umn.edu/63-personal-protective-equipment-ppe#:~:text=Storage%2C%20and%20Disposal-,PPE%20must%20be%20appropriately%20cleaned%2C%20maintained%2C%20and%20stored%20according%20to,or%20exposed%20to%20UV%20light (last visited Nov. 29, 2020) [https://perma.cc/2XFJ-GP9S].

³⁵⁷ See *id.*; *PPE Storage & Inspection of Disposable Protective Clothing*, INT'L ENVIROGUARD (Aug. 13, 2019), int-enviroguard.com/blog/storage-and-inspection-disposable-protective-clothing/ [https://perma.cc/QS83-J5SW].

storage is typically inexpensive.³⁵⁸ Hospitals can still rotate inventories by placing the new supply of PPE in the back of the storage container and transferring a portion of the older PPE supply from the front of the storage container to the hospital periodically.³⁵⁹ Though this method is less convenient, the value of the supplies that save the lives of health care providers and preserve access to health care outweighs the inconvenience of a short trip to retrieve supplies every few months.³⁶⁰

C. Addressing the Expiration of Supplies in Storage

Purchasing tangible supplies, including PPE, presents challenges because the supplies are perishable and eventually expire.³⁶¹ The typical shelf life of N95 respirators, surgical masks, and isolation gowns is five years.³⁶² Nitrile gloves have a five-year shelf life, but natural latex gloves only have a three-year shelf life.³⁶³ Safety glasses have a three-year shelf-life.³⁶⁴ These shelf-lives are calculated based on the presumption that the supplies are being stored under constant, ideal conditions.³⁶⁵ Stable, ideal conditions are met when supplies are kept in a clean and steady environment away from moisture, chemicals, and extreme temperatures.³⁶⁶ Maintaining constant conditions is safer because health care providers will have a reduced chance of using equipment that has expired before its shelf-life, decreasing

³⁵⁸ See Joyce Durham, *Ending the Era of Super-Sized Health Care Facilities*, BECKER'S HOSP. REV. (Feb. 7, 2013), www.beckershospitalreview.com/strategic-planning/ending-the-era-of-super-sized-health-care-facilities.html [<https://perma.cc/U4H5-JCY9>]; Patterson Pope, *How to Best Utilize Your Inventory in the Modern Hospital*, HEALTHCARE BUS. TODAY (Feb. 26, 2016), www.healthcarebusinesstoday.com/how-to-best-utilize-your-inventory-in-the-modern-hospital/ [<https://perma.cc/CF7Y-XK7Z>].

³⁵⁹ See Cynthia Hayward, *Out of Space and Money? Creative Ways to Improve Space Utilization*, SPACEMED ESSENTIALS (Nov. 15, 2018), blog.spacemed.com/out-of-space-and-money-creative-ways-to-improve-space-utilization/ [<https://perma.cc/3CNF-LLBR>]; *First In, First Out Method (FIFO)*, ACCOUNTING TOOLS (Dec. 3, 2018), www.accountingtools.com/articles/2017/5/13/first-in-first-out-method-fifo#:~:text=Overview%20of%20the%20First%2Din%2C%20First%2Dout%20Method&text=The%20FIFO%20flow%20concept%20is,removed%20from%20the%20inventory%20account [<https://perma.cc/TH6A-KC67>].

³⁶⁰ See Dow et al., *supra* note 218; *Shortage of Personal Protective Equipment*, *supra* note 5.

³⁶¹ See Serban, *supra* note 345.

³⁶² *Stockpiled N95 Respirators*, CTNS. FOR DISEASE CONTROL AND PREVENTION (July 20, 2020), www.cdc.gov/coronavirus/2019-ncov/hcp/release-stockpiled-N95.html [<https://perma.cc/DU5W-9G8B>]; *3M Health Care*, *supra* note 345, at 1; PPE CASE, *supra* note 345, at 2.

³⁶³ Schlatter, *supra* note 345.

³⁶⁴ *How Long Does PPE Last?*, *supra* note 345.

³⁶⁵ See *How Should PPE Be Stored?*, CREATIVE SAFETY SUPPLY, www.creativesafety.com/qa/ppe/how-is-ppe-stored#:~:text=The%20storage%20of%20personal%20protective,designated%20solely%20for%20storing%20PPE, (last visited Nov. 29, 2020) [<https://perma.cc/54DP-SYHN>].

³⁶⁶ See *id.*

the PPE's effectiveness and increasing the health care provider's risk of exposure.³⁶⁷ It is cheaper and safer for hospitals to ensure the use of first in-first out methods of their PPE stored within a clean and well-maintained storage space.³⁶⁸

VII. CONCLUSION

The COVID-19 pandemic has shown the egregious deficiency in United States hospitals' preparedness for emergencies such as pandemics.³⁶⁹ Access to health care should be a formally recognized human right in the United States.³⁷⁰ Therefore, the government should ethically be held to the duty of ensuring the safety of health care providers in emergencies.³⁷¹ Health care providers are essential to health care access for Americans.³⁷² Thus, the federal government should reimplement and reinvest in the U.S. Department of Health & Human Service's Hospital Preparedness Program.³⁷³ A new hospital storage grant program will help resolve America's preparation deficiencies and ensure health care providers are equipped with the best opportunity to avoid contracting illnesses through providing consistent access to personal protective equipment.³⁷⁴ If the federal government does not take responsibility for this deficiency through its ethical duty to provide Americans reliable access to health care, Wyoming should implement a similar state-wide grant program to create storage spaces and fund the initial supply of PPE that is essential to Wyoming hospitals to protect its residents.³⁷⁵ American lives matter, and the implementation of a hospital grant program better preparing the nation for future emergencies is a critical step in saving American lives in future medical emergencies.³⁷⁶

³⁶⁷ See *Stockpiled N95 Respirators*, *supra* note 362; Andrew Jacobs et al., 'At War with No Ammo': Doctors Say Shortage of Protective Gear Is Dire, N.Y. TIMES (Mar. 19, 2020), www.nytimes.com/2020/03/19/health/coronavirus-masks-shortage.html.

³⁶⁸ See *supra* notes 366–67 and accompanying text.

³⁶⁹ See *supra* notes 17–22 and accompanying text.

³⁷⁰ See *supra* notes 243–54 and accompanying text.

³⁷¹ See *supra* notes 255–68 and accompanying text.

³⁷² See *supra* notes 23–29 and accompanying text.

³⁷³ See *supra* notes 304–16 and accompanying text.

³⁷⁴ See *supra* notes 310–11 and accompanying text.

³⁷⁵ See *supra* notes 317–20 and accompanying text.

³⁷⁶ See *supra* notes 305–16 and accompanying text.