

Immunization, Testing, and Health Screening for Health Care Workers (216-RICR-20-15-7) Cost Benefit Analysis February 2022

Background

On March 9, 2020, former Rhode Island governor Gina Raimondo declared a state of emergency for the State of Rhode Island due to the dangers to health and life posed by COVID-19, the new disease caused by the novel coronavirus SARS-CoV-2. Two days later, the World Health Organization (WHO) declared COVID-19 a global pandemic.

The health effects of COVID-19 are significant for both individuals and communities. As of February 2022, there have been nearly 78 million COVID-19 cases in the United States, of which, Rhode Island accounts for 353,776; and there have been 923,067 deaths due to COVID-19, of which 3,397 deaths occurred in Rhode Island.^{1,2}

By the end of 2020, SARS-CoV-2 had mutated into a more infectious strain, with the ability to be twice as contagious as the original COVID. By Spring 2021, the Delta Variant was the most predominant variant in the United States.³ Governor McKee issued a new state of emergency due to the Delta Variant on August 21, 2021. The week of July 4, 2021, Rhode Island had a “moderate transmission” rate of 11.2 cases per 100,000 people, but as of August 17, 2021, Rhode Island transmission rate had increased to “high transmission” of more than 187 cases per 100,00 people. New weekly hospitalizations had more than quadrupled within that same time period.

There are several defenses against COVID-19 which include frequent hand washing, physical distancing (i.e., staying at least six feet apart from individuals not within your households), and wearing a face covering. The most effective way to protect against COVID-19 is by receiving a vaccine.^{2,4} There are currently three different vaccines available: Pfizer-BioNTech, Moderna, and Johnson & Johnson. All individuals older than five years old are eligible to receive a vaccine. While each vaccine has varying degree of protection against infection (ranging from 66% to 95%), each vaccine offers

¹CDC. (2020, March 28). COVID Data Tracker. Centers for Disease Control and Prevention. https://covid.cdc.gov/covid-data-tracker/#trends_dailycases

² R.I.D.H. (2021, December 15). Rhode Island COVID-19 Response Data. Rhode Island Department of Health. <https://ri-department-of-health-covid-19-data-rihealth.hub.arcgis.com/>

³ Coronavirus Disease 2019 (COVID-19). (2020, February 11). Centers for Disease Control and Prevention. <https://www.cdc.gov/coronavirus/2019-ncov/variants/delta-variant.html>

⁴ U.S. Food and Drug Administration. (2021, November 18). Help Stop the Spread of Coronavirus and Protect Your Family.

substantial protection against severe illness, hospitalization and death⁵. Combining all of these infection control practices can reduce the transmission and spread of COVID-19.

COVID-19 is especially deadly for those with co-morbidities such as lung, heart and kidney disease, cancer, and diabetes. Individuals with co-morbidities have weaker immune systems and it takes more effort to fight off additional infections. When such individuals seek treatment, it is critical that the health care system take all necessary protections to ensure patient safety. Infection control is critical in the health care setting in order to ensure patients get better and not sicker.

Research has demonstrated that consistent adherence to infection control and prevention methods are challenging – and discrepant practices jeopardizes patient safety. One in six COVID-19 infections among hospitalized patients during the first six months of the pandemic could be attributed to health care-associated transmissions according to an analysis done in England⁶. No formal report was issued, however, Rhode Island experienced multiple outbreaks in skilled nursing facilities in the Spring 2020 even when these facilities were closed to non-essential personnel. Another study conducted during June and December 2020 of a large health system's health care staff found more employees were exposed by coworkers than patients. The study also discovered that many employees interacted with infectious colleagues without wearing proper protective equipment (e.g., masks, gloves, etc.)⁷.

When evaluating infection control measures, influenza is an excellent case study. Research has shown that high flu vaccination coverage among health care professionals is associated with declines in hospital-acquired influenza, also known as nosocomial influenza, in hospitalized patients and nursing facility residents.^{8,9,10} Thus, the Centers for Disease Control and Prevention (CDC) has recommended annual influenza vaccination for health care professionals. Rhode Island has codified this CDC recommendation in regulation.

Emerging evidence has suggested that breakthrough infections, meaning vaccinated individuals who become infected with COVID-19, are less infectious than unvaccinated

⁵ Self, W. H. et. al. (2021, September 23). Comparative Effectiveness of Moderna. Centers for Disease Control and Prevention

⁶ Bhattacharya, A., & Collins, S. et. al (2021). Healthcare-associated COVID-19 in England: A national data linkage study. *Journal of Infection*, 83(5), 565–572.

<https://www.sciencedirect.com/science/article/pii/S0163445321004436?via%3Dihub>

⁷ Ibiebele, J., Silkaitis, C., Dolgin, G., Bolon, M., JaneCullen, & Zembower, T. (2021). Occupational COVID-19 exposures and secondary cases among healthcare personnel. *American journal of infection control*, 49(10), 1334–1336. <https://doi.org/10.1016/j.ajic.2021.07.021>

⁸ Weinstock DM, Eagan J, Malak SA, et al. (2000) Control of influenza A on a bone marrow transplant unit. *Infect Control Hosp Epidemiol*. 21:730-732.

⁹ Salgado CD, Giannetta ET, Hayden FG, Farr BM. (2004) Preventing nosocomial influenza by improving the vaccine acceptance rate of clinicians. *Infect Control Hosp Epidemiol*, 25, 923-928.

¹⁰ Jenkin DC, Mahgoub H, Morales KF, Lambach P, Nguyen-Van-Tam JS. (2019) A rapid evidence appraisal of influenza vaccination in health workers: An important policy in an area of imperfect evidence. *Vaccine X*, 2:100036. doi: 10.1016/j.jvacx.2019.100036. PMID: 31384750; PMCID: PMC6668237.

individuals, thus decreasing transmission risk^{11,12}. Lower COVID-19 transmission and fewer COVID-19-positive health care workers translates to less risk of patients becoming infected and a reduction of staffing shortages and strains on patient care from fewer instances of staff needing to isolate and/or quarantine. It can be concluded that vaccinated health care workers pose a significantly lower risk to patients than unvaccinated health care workers.

The world will likely continue to co-exist with COVID-19 for the foreseeable future. In order to end the pandemic, or at least stabilize the currently unstable strains on the health care systems, transmission and spread of COVID-19 must be reduced. Vaccination is key in Rhode Island's approach for protecting patients, health care workers and their communities. With high vaccination rates and masking Rhode Island can reduce COVID-19 transmission and associated illness that will lead to less of a burden on our health care system.

Status Quo

The Rhode Island Department of Health (RIDOH) issued an emergency regulation on August 17, 2021 to mandate that all health care workers and health care providers be vaccinated (defined as receiving all recommended dose(s) of a COVID-19 vaccine authorized by the U.S. Food and Drug Administration (FDA)) by October 1, 2021.

Per R.I. Gen. Laws § 42-35-2.10, emergency regulations can only persist for a maximum of 180 days, meaning the current COVID-19 vaccination mandate would expire on February 12, 2022. By not moving forward with regular rulemaking, once the emergency regulation expires health care workers and health care providers would not be required to be vaccinated for COVID-19.

While the pandemic has improved since March 2020, infections have not dropped to classify it as an epidemic or endemic. As noted above, research has demonstrated that vaccination is the most effective method for controlling COVID-19^{2,4} especially when infection prevention and control methods are inconsistent.

Rhode Island is currently trending up in cases after the Thanksgiving holiday, averaging 591.9 cases per 100,000 people in the past week for a 5.2% positivity rate. Hospitalizations are also on the rise with 168 people hospitalized in the past week. In comparison, the week ending on October 30, 2021, Rhode Island had a 1.9% rate, 69 hospitalizations, and 140 cases per 100,000². While the past two years have demonstrated that COVID-19 comes in waves, it is still nowhere near under control.

There are numerous strategies available for use in the battle against COVID-19, such as masking, testing, and vaccination. However, there are currently no universal

¹¹ Center for Disease Control and Prevention. (2020, February 11). Coronavirus Disease 2019 (COVID-19). <https://www.cdc.gov/coronavirus/2019-ncov/science/science-briefs/fully-vaccinated-people.html#ref43>

¹² Shamier, M. C. et. al. (2021). Virological characteristics of SARS-CoV-2 vaccine breakthrough infections in health care workers. MedRxiv. Published. <https://doi.org/10.1101/2021.08.20.21262158>

mandated requirements by the State. Only certain settings have specific requirements at this time; yet even in those specialized settings, there is less than perfect implementation, use, and enforcement of these mitigation strategies.^{13,14} There are also various federal requirements that require certain protective measures (such as wearing a mask while in a health care facility). Despite these interventions, COVID-19 hemorrhaging the Rhode Island health care system as the piecemeal State and federal requirements allow for gaps in protective coverage allowing for COVID-19 to continue to spread; especially when health care workers work in multiple different settings.

With the health care system overwhelmed by COVID-19, other serious, critical conditions continue to ravage patients in need of other types of care. Appointments of necessary, albeit elective, procedures are furthered delayed as the medical community is in crisis.¹⁵ While Rhode Island has improved in vaccination rates and masking compliance, these abatement factors are not at the level where COVID-19 can be deemed endemic.

Health care workers work with already sick patients, and as such, all infection control measures must be taken. If they are not, Rhode Island will continue to experience high levels of COVID-19. Without additional mandated controls, the current COVID-19 trends can be expected to persist. December 2020 was the beginning of a large wave of cases, hospitalizations, and deaths due to holiday gatherings, travel, and a desire to be indoors due to weather. And the 2021 holiday season proved to be even worse than the 2020 holiday season due to the Omicron variant.

Proposed Regulation

RIDOH is proposing three key changes to the regulations pertaining to Immunization, Testing and Health Screening for Health Care Workers (216-RICR-20-15-7):

1. Expanding the definition of “health care facility” to include assisted living residences adult day care programs, and stations;
2. Requiring health care facilities to track vaccination status of its health care workers; and
3. Requiring all health care workers to be up-to-date with a COVID-19 vaccine or, if not up to date, wear an N95 mask when the COVID-19 transmission rate is substantial (50 cases per 100,000 per week)

Key Change 1 – Expanding the definition of Health Care Facility

The term health care facility, as defined in Rhode Island General Law 23-17-8(9), captures nearly all types of health care facilities licensed by RIDOH except for adult day

¹³ Licensing of Nursing Homes, 216-RICR-40-10-1 (2021).

¹⁴ Licensing Assisted Living Residences, 216-RICR-40-10-2 (2021). <https://rules.sos.ri.gov/regulations/Part/216-40-10-2>

¹⁵ State Governors’ “Stay-at-Home” and Prohibition on Elective Procedures Orders. (2020, October). McGuireWoods. <https://www.mcguirewoods.com/client-resources/Alerts/2020/10/state-governors-stay-at-home-prohibition-elective-procedures-orders>

cares (ADC), assisted living residences (ALR), and stations. Both ALRs and ADCs provide services to one of Rhode Island's most vulnerable populations – the elderly.

While adult day cares are being included in the definition of health care facilities for the purposes of this regulation, the requirement to receive a vaccination is not considered new for this facility type. The regulation, Licensing of Adult Day Care Programs (216-RICR-40-10-7), requires that all employees comply with Immunization, Testing and Health Screening for Health Care Workers (216-RICR-20-15-7). Therefore, the inclusion of ADC programs is not considered a new change, but rather, a clarification.

Assisted living residences provide an array of services to individuals who require assistance with activities of daily living. There are currently 64 licensed assisted living residences within the state. 15 or 23% of ALRs have a special license known as a limited health services license. This license permits more nursing services to be provided to residents as well as care for residents on hospice that are bed bound. As a condition of a limited health services license, all staff are required to comply with Immunization, Testing and Health Screening for Health Care Workers (216-RICR-20-15-7).¹⁶

The inclusion of ALRs in the definition of health care facility would mean that 49, or 77%, of ALR licensees would now be required to have all of their employees vaccinated for Measles, Mumps and Rubella (MMR), Varicella, Tetanus, Diphtheria and Pertussis (TDAP), Hepatitis B, Influenza (Flu) and COVID-19 and have a screening for Tuberculosis (TB). It is difficult for RIDOH to determine the number of people impacted by this new requirement. MMR, Varicella, TDAP, and Hepatitis B, and Flu are all recommended by the CDC to receive during childhood¹⁷. Furthermore, primary and secondary schools require certain vaccines as a condition of enrollment.¹⁸ For those who seek higher education, evidence of inoculation or booster doses are required to attend.¹⁹

RIDOH does not routinely collect staffing data, so it is difficult to determine the exact number of health care workers that would be impacted by this new requirement. Yet using data RIDOH receives from the 15-specially licensed ALRs regarding the influenza vaccine from the 2019-2020 season (the most recent year available), there are 836 assisted living health care workers within those facilities.²⁰ The average number of health care workers is 56. If the remaining facilities have a similar average, than the

¹⁶ Rhode Island Department of Health. (2021). Assisted Living Licenses. State of Rhode Island Department of Health. <https://health.ri.gov/licenses/detail.php?id=213>

¹⁷ Center for Disease Control. (2021, February). Birth-18 Years Immunization Schedule | CDC. Center for Disease Control and Prevention.

¹⁸ Rhode Island Department of Health. (2021). Immunization Information for Schools and Child Care Workers. State of Rhode Island Department of Health. <https://health.ri.gov/immunization/for/schools/>

¹⁹ National Conference of State Legislatures. (2021, September). State Vaccine Requirements for College Entry. <https://www.ncsl.org/research/health/state-vaccine-requirements-for-college-entry.aspx>

²⁰ Rhode Island Department of Health. (2021a). Flu Vaccination Rates of Health Care Workers. State of Rhode Island Department of Health. <https://health.ri.gov/data/vaccination/healthcareworkers/>

health care worker population of the 49 ALRs can be estimated to be 2,744 health care workers.

The CDC reports that for the 2019 -2020 school year, that the national immunization coverage was 95% and a 2.5% exemption rate.²¹ Applying this rate to the ALR health care worker population, it is estimated that the new policy would impact roughly 68 employees. This estimate is likely an overestimate, as there are several avenues in which an employee should have been required to receive vaccinations before employment. It is also highly unlikely that the employee would be required to receive all, and more probable that only some boosters would be required.

Table 1: Cost of Vaccines

Vaccine	Cost ^a
TDAP	\$ 25.45
MMR	\$ 53.92
Varicella	\$ 94.39
Hepatitis B	\$ 34.09
Influenza	\$ 13.29
Total	\$ 240.69

- a. Costs of vaccines are from the CDC Vaccine Price List, found here: <https://www.cdc.gov/vaccines/programs/vfc/awardees/vaccine-management/price-list/index.html>

For any employee who has not received all of the aforementioned vaccines, the total cost would be \$240.69. However, as stated above, it is very unlikely for an ALR employee to not have any vaccines. It is also very unlikely that the employee would incur any actual cost of the \$240.69 price tag of the required vaccines. The costs would likely be borne by the insurance provider. Insurance purchased on the Health Insurance Marketplace is required to cover the cost of the vaccine without charging out-of-pocket costs (e.g., copays) if administered by an in-network provider. The same can also be said for most other private insurances.²²

The vaccination of ALR employees provides an additional layer of protection for residents who have higher care needs than most older adults. Residents are particularly vulnerable to communicable diseases, with as many as three million occurring every

²¹ Seither R, McGill MT, Kriss JL, et al. Vaccination Coverage with Selected Vaccines and Exemption Rates Among Children in Kindergarten — United States, 2019–20 School Year. *MMWR Morb Mortal Wkly Rep* 2021;70:75–82. DOI: <http://dx.doi.org/10.15585/mmwr.mm7003a2external icon>.

²² Center for Disease Control and Prevention. (2017, March). How to Pay for Adult Vaccines | CDC. <https://www.cdc.gov/vaccines/adults/pay-for-vaccines.html>

year in the long-term care setting.²³ These infections add additional health care costs to residents who need treatment for these vaccine-preventable diseases. ALR staff may have to provide additional care to residents with a preventable infection. These additional costs can be avoided by preventing infection in the first place by receiving a vaccine, which has been proven to be the most valuable infection control measure to both prevent infection and spread.

Also included within the definition of health care facility are stations, also known as a phlebotomy station or a drawing station, where patients go to provide biological specimens. A majority of these stations are located within a health care facility and are therefore covered under the health care facility license and requirement; however, there are several stations that are not co-located in a health care facility that would not be covered under the current regulations. Including this new facility type, and employees in the definition, requires all station employees to receive all required vaccines. Similar to above, many employees likely have received the six vaccines as they are required for primary and secondary school enrollment.¹⁸ Anyone who has received higher education would also be required to have received the required vaccines. Lastly, the Office of Occupational Safety and Health Standards (OSHA) requires individuals who work with blood or other potentially infectious materials to be vaccinated for certain pathogens, such as hepatitis B.²⁴ Unlike the ALRs where we could provide a rough estimate on the likely impacted number of health care workers, RIDOH cannot provide such an estimate for stations.

As mentioned above, the cost of vaccines (see table 1) will total \$240.69. It is very unlikely that any station employee would have to pay the full \$240.69 as he or she would have already been required to receive the listed vaccines through school or through federal requirements. By expanding the vaccination requirement for this population, there is an additional layer of protection for patients during a semi-invasive procedure.

The World Health Organization estimates that immunizations for diseases like diphtheria, tetanus, pertussis, influenza and measles prevents an average of four to five million deaths every year. They predict an additional one and a half million deaths could be further avoided if global vaccination efforts improve.²⁵ The above-mentioned vaccines have decreased disease incidence by 99% in the United States.²⁶ Even with a less than perfect immunization rate, disease can be eliminated from a population due to herd immunity. In one study of vaccine coverage in Gambia, a 70% influenza vaccine

²³ Center for Disease Control and Prevention. (2020b, June). Long-term Care Facilities | CDC. <https://www.cdc.gov/longtermcare/index.html>

²⁴ Occupational Safety and Health Administration (1970). Bloodborne Pathogens (Standard no. 1910.1030). Retrieved from: <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1030>

²⁵ World Health Organization. (2019, December 5). Immunization. <https://www.who.int/news-room/facts-in-pictures/detail/immunization>

²⁶ Andre, F. E., Booy, R., Bock, H. L., Clemens, J., Datta, S. K., John, T. J., Lee, B. W., Lolekha, S., Peltola, H., Ruff, T. A., Santosham, M., & Schmitt, H. J. (2008). Vaccination greatly reduces disease, disability, death and inequity worldwide. *Bulletin of the World Health Organization*, 86(2), 140–146. <https://doi.org/10.2471/blt.07.040089>

coverage was sufficient to eliminate that strain of flu among the population.²⁶ The application of herd immunity is especially critical when working with immunosuppressed individuals, such as residents in assisted living residents or other medical facilities.

Vaccines are beneficial in savings costs to the health care industry in addition to saving lives. In the United States, the recommended vaccines are estimated to save 33,000 lives, prevent 14 million cases of disease and reduces direct health care cost by \$9.9 billion and saves \$33.4 billion in indirect costs every year.²⁷ Further requirement of vaccines can save further lives and costs.

The impact of the expansion of the definition to include adult day care programs, assisted living residences, and stations may require a select few health care workers to receive additional vaccines. This requirement will provide an additional layer of safety to some of Rhode Island's most vulnerable populations and prevent unnecessary medical costs from treatment of further infections.

Key Change 2 – Data Collection and Tracking for Health Care Facilities

The proposed regulation requires the health care facility to document the vaccination status of its health care workers. While these systems are likely already in place due to identical requirements in the emergency regulation RIDOH could assume the following administrative costs to update annually a health care workers vaccination record:

There are 57,820 health care workers, if a health care administrative support spends five minutes per health care worker each year, then 289,100 minutes, or 4,818 hours per year. The U.S. Bureau of Labor Statistics provides a mean hourly wage for office and administrative support occupations in Rhode Island of \$21.87.²⁸ This would mean a statewide cost of \$105,370 each year for all health care workers.

Key Change 3 - Requiring COVID-19 vaccination or wearing of a medical grade N95 mask for health care workers

The core proposed change of the regulation is the addition of requiring the COVID-19 vaccine for health care workers, which covers all individuals, regardless of individual licensure, who work at health care facilities. If the health care worker is not up to date (defined in the regulation as receiving all recommended doses of a COVID-19 vaccine including any booster doses when eligible) then the health care worker must wear an N95 mask when the transmission rate is greater than or equal to 50 cases per 100,000 per week.

In August 2021, the Department issued an emergency regulation titled *Requirement for Immunization Against COVID-19 for All Workers in Licensed Health Care Facilities and*

²⁷ Office of Disease Prevention and Health Promotion. (2021). Immunization and Infectious Diseases | Healthy People 2020. Healthy People. <https://www.healthypeople.gov/node/3527/data-details.%C2%A0Accessed>

²⁸ Bureau of Labor Statistics . (2021, March 31). May 2020 State Occupational Employment and Wage Estimates Rhode Island. U.S. Bureau of Labor Statistics. Retrieved February 18, 2022, from https://www.bls.gov/oes/current/oes_ri.htm

Other Practicing Health Care Providers (216-RICR-20-15-8). The emergency regulation required all health care workers and health care providers (defined as anyone licensed by the Department who provides health care services) to be vaccinated by October 1. If a health care worker was not vaccinated by October 1 and no medical exemption applied, the health care worker was prohibited from entering the health care facility.

While the proposed regulation provides more options for health care workers than the emergency regulation, it reflects the projected data that we are slowly moving into an endemic stage for COVID-19.

As part of a compliance, The Department's Center for Health Facilities Regulation (CHFR) conducted a series of compliance surveys and was able to deduce the number of workers within all health care facilities. As of November 24, 2021, the most recent data available, it is estimated there are 57,820 employees in all health care facilities which would be subject to this regulation. Note, that any future employee would also be subject to this regulation.

The emergency regulation currently in place requires all health care workers to have been vaccinated against COVID-19 by October 1, 2021. CHFR required all licensed health care facilities to demonstrate compliance with the emergency regulation and required all facilities that were not in compliance by October 1, 2021 to have a plan of correction and implement said plan to achieve compliance by November 1, 2021.

Data collected from the CHFR survey indicates that under the current emergency regulation, compliance is extremely high.

Table 2: Vaccination Status of Health Care Workers at Rhode Island Health Care Facilities

Total number of health care workers in licensed health care facilities	57,820
Total number of health care workers who are vaccinated for COVID-19	56,667
Total number of health care workers with medical exemptions	299
Total number of unvaccinated health care workers without evidence of vaccination or a medical exemption	854
Percent of unvaccinated health care workers without a medical exemption	1.5%

Using the data above, it can be projected that only 854 health care workers are currently employed at a health care facility and unvaccinated against COVID-19.

Table 3: Summary of Costs to 854 Unvaccinated Health Care Workers at Health Care Facilities

	Costs of vaccine	Costs of no vaccine
Vaccine	\$0	N/A
Potential lost wages due to side effects of vaccine^a	\$136	N/A
Estimated # cases^b	2	26
Estimated # hospitalizations^b	0	2
Estimated out of pocket cost of hospitalizations^c	\$0	\$5,500 each
Estimated # of days work/wages lost^d	\$0	\$1,632 each
Total costs to 854 currently unvaccinated:	\$2,312	\$14,264

a Average duration of moderate/severe side effects are one (1) day (<https://www.cdc.gov/vaccines/covid-19/info-by-product/pfizer/reactogenicity.html>). To estimate cost of lost pay for low-wage workers without sick time, we used an estimated CNA pay of \$17/hour for an eight (8) hour shift though HK and others may earn less, and all employees may work considerably longer shifts. We applied an outside estimate of 20% experiencing moderate/severe fatigue and 10% without a sick day available to arrive at N=17. For a more thorough analysis of mandate-related costs, see <https://www.federalregister.gov/documents/2021/11/05/2021-23831/medicare-and-medicaid-programs-omnibus-covid-19-health-care-staff-vaccination#h-100>

b Incidence, hospitalization, and ED utilization rates derived from <https://www.cdc.gov/mmwr/volumes/70/wr/mm7046a4.htm>

c There are a number of studies showing wide variability of total and OOP expenses for a COVID-related stay. We used an average anticipated \$5,500 OOP in light of industry changes described in <https://www.washingtonpost.com/business/2021/09/18/covid-hospital-bills-insurance-deductible/> but also flag a) the possibility that not all health sector employees are insured and b) probable premium increases for all employees in the near future.

d Using estimated LOS in <https://www.cdc.gov/mmwr/volumes/70/wr/mm7046a4.htm> and three (3) days recovery post-release x average CNA hourly pay at \$17 x eight (8) hour days

For all 854 unvaccinated health care workers in this scenario, the total cost is \$2,312 or \$2.70 per unvaccinated health care worker. In contrast, not receiving the COVID-19 vaccine costs \$14,264 or \$16.70 per unvaccinated health care worker.

With a 1.5% mortality rate among cases, the risk of unvaccinated health care workers dying from COVID-19 is low. However, the odds of dying are 13 times higher for those who remain unvaccinated.

The proposed regulation permits a health care worker who is not up to date to wear a medical grade N95 when there is substantial transmission (50 cases per 100,000 per week). The regulation also requires the health care facility to provide the N95 mask at no charge to the health care worker.

While an N95 mask can generally be worn more than once, in a medical setting where infection control is critical, masks are a one-time use. The company 3M, a producer of

medical goods, provides a price range per respirator of \$0.76 to \$3.48, depending on the model. The median price being about \$1.47 per respirator.²⁹ Should the 854 unvaccinated health care workers choose to opt-out of a vaccine or not be up to date, a total amount of \$1,255.38 would be spent to provide the health care worker a mask per day, or a weekly cost of \$8,787.66. Of course, this cost will be much less for each health care facility as it is unlikely that not all 854 non-up to date health care workers are employed at the same facility.

Furthermore, health care facilities will not have to supply masks indefinitely, only when COVID transmission is substantial. As COVID-19 is still a relatively new disease, it is difficult to estimate the number of weeks per year that masks would be required for non-up-to-date health care workers. The historical data we do have indicates that COVID-19 behaves similarly to flu in that the prevalence increases in mid-November and does not come down until end of February. There are also slight spikes in the early fall which coincide with schools being back in session. This would estimate that in the future there are likely to be 16 weeks out of the year in which COVID-19 transmission could feasibly reach substantial transmission. This would mean that annually, it could be expected that the total cost for all health care facilities providing masks to non-up-to-date health care workers would be about \$140,602.56.

Of course, this cost could be higher if there is eventually an annual COVID-19 vaccine. Using influenza as a model, for the 2020-2021 season, about 77% of health care workers received the influenza vaccine.³⁰ In which case 13,298 health care workers would need to mask in the event of substantial COVID-19 transmission. This would mean there is a weekly cost of \$19,548.06 for all 13,298 health care workers, or a total annual cost of \$312,768.96.

While a vaccine is the more economical choice, with \$2.70 per health care worker per year, the option to wear a mask instead provides a reasonable alternative for a health care worker costing \$164.64 per health care worker per year.

For non-up-to-date health care workers, wearing an N95 mask can be cumbersome and especially so if required for the entire work day which can be longer than the traditional eight-hour work day. N95 require fit testing, and can be uncomfortable to wear for extended periods of time and can impede communications. Continuous mask wearing can also produce skin irritation, itching, and acne. Researchers in India noted while there are the aforementioned adverse effects for continuous mask wearing by health care workers, they concluded no significant reduction in quality of life as these effects

²⁹ 3M. (2021, September 16). Get the facts. N95 respirator pricing. Retrieved February 18, 2022, from <https://multimedia.3m.com/mws/media/18621790/get-the-facts-n95-respirator-pricing.pdf>

³⁰ Rhode Island Department of Health. (n.d.). Flu Vaccination Rates of Healthcare Workers. State of Rhode Island: Department of Health. Retrieved February 18, 2022, from <https://health.ri.gov/data/vaccination/healthcareworkers/index.php>

could be easily remedied by adequate hydration, frequent face washing and moisturizing.³¹

There is still the risk that health care workers leave the health care field or decide to go into private practice. Thus, the greatest potential cost to health care facilities is replacing health care workers who resign. However, there is a current emergency regulation that requires all health care workers and health care providers to be vaccinated for COVID-19. Unvaccinated health care workers without a medical exemption are prohibited from entering the health care facility after October 1, 2021. Numerous representatives from various health care industries warned RIDOH that there would be a massive shortage of staff as unvaccinated staff would resign. RIDOH does not have solid data to determine the percentage of health care workers and health care providers who left their jobs come October 1, 2021; RIDOH did receive numerous anecdotal reports from health care leaders that there was little reduction in staff due to the vaccination mandate.

These unvaccinated health care workers could obtain employment at another location in the same field or position. The threat of employee turnover due solely to a vaccination or mask mandate is unlikely to incur meaningful additional costs in light of the already high ongoing turnover rates.

Employee turnover varies widely by industry, however the average turnover rate regardless of industry is about 50% for the private sector.³² Using Payroll Based Journal data, a study published in 2021 found that nursing staff (which, for this study, includes registered nurses, licensed practical nurses, and certified nursing assistants) found that the national turnover rate from 2016 to 2017 was a median of 94%.³³ The researchers further stratified the data by location, and Rhode Island was found to have a median annual staff turnover rate between 39.3% and 73.8%. While the COVID-19 vaccination mandate may result in an increase in health care worker turnover, it is unlikely that the turnover will exceed the range the health care industry normally experiences over time.

Furthermore, in an analysis of surveys of worker intentions regarding employer decisions to require COVID-19 vaccination, data suggests that the number of employees who resign due to a COVID-19 vaccination is a fraction of the number of employees who originally threatened to do. When a vaccination mandate is announced much as 50% of the workforce may threaten to quit, but only between 1% to 3% actually leave.³⁴

³¹ Radhakrishnan, N., Sudarsan, S. S., Deepak Raj, K., & Krishnamoorthy, S. (2021). Clinical Audit on Symptomatology of Covid-19 Healthcare Workers and Impact on Quality-of-Life (QOL) Due to Continuous Facemask Usage: A Prospective Study. *Indian journal of otolaryngology and head and neck surgery: official publication of the Association of Otolaryngologists of India*, 73(4), 1–8. Advance online publication. <https://doi.org/10.1007/s12070-021-02530-y>

³² Skopovi, S., Calhoun, P., & Akinyooye, L. (2021, October 25). Job openings and labor turnover trends for States in 2020: Beyond the Numbers: U.S. Bureau of Labor Statistics. U.S. Bureau of Labor Statistics. <https://www.bls.gov/opub/btn/volume-10/jolts-2020-state-estimates.htm>

³³ Gandhi, A., Yu, H., & Grabowski, D. C. (2021). High Nursing Staff Turnover In Nursing Homes Offers Important Quality Information. *Health Affairs*, 40(3). <https://doi.org/10.1377/hlthaff.2020.00957>

³⁴ Barry, J. J., Christiano, A., & Neimand, A. (2021, September 24). Unvaccinated Workers Say They'd Rather Quit Than Get a Shot, but Data Suggest Otherwise. *Scientific American*.

The COVID-19 vaccination requirement for health care workers and health care providers is likely to cause an interim disruption for health care facilities and independent health care provider practices. Yet, the benefits of vaccination go beyond lives saved. Vaccination saves resources. More vaccinated individuals mean more hospital, nursing, or other health care facility beds are available for patients. It also means health care workers are not being incapacitated or killed from COVID-19.

Benefits

There are numerous benefits to becoming vaccinated. First, getting vaccinated could save one's life, and if a breakthrough infection occurs, it is incredibly rare that one would end up with severe illness or be hospitalized. Getting vaccinated also reduces the likelihood of spreading it to others. Data are still emerging on the effectiveness of reducing transmission of COVID-19, especially with the emergence of variants such as Delta and Omicron. A study conducted in the United Kingdom looked at a total of 602 households divided into two populations, unvaccinated and vaccine households; found vaccinated households had 50% fewer cases of COVID than the unvaccinated.³⁵ In another study the results were slightly better. This second study found a 60% reduction in cases transmitted.³⁶ While the data are variable on the exact reduction in transmission each vaccine offers, it is clear that there is a decline.

Researchers at Indiana University studied the impact vaccination had during the early months of the 2021 vaccine roll out. Comparing states with high versus low vaccination rates they determined that by early May the vaccines saved almost 140,000 lives and prevented three million cases of COVID-19. While each state had variable associated deaths depending on rates of vaccination, the researchers averaged that each state experienced a reduction of five deaths per 10,000 people.³⁷

Applying this study to the Rhode Island health care workers, the number of deaths saved from vaccination can be estimated. A common tool employed in cost-benefits analyses paces the value of a statistical life at \$9.1 million dollars.³⁸ Therefore, if the 854 unvaccinated health care workers would account for 0.427 lives saved, or a benefit of \$3,885,700 million to Rhode Island.

A vaccinated health care workforce is the most powerful way to reduce risk of transmission and infection; yet even health care workers and patients who are up to date can still become infected and transmit COVID-19. For health care workers who do

<https://www.scientificamerican.com/article/unvaccinated-workers-say-theyd-rather-quit-than-get-a-shot-but-data-suggest-otherwise/>

³⁵ Wilder-Smith, A. (2021). What is the vaccine effect on reducing transmission in the context of the SARS-CoV-2 delta variant? *The Lancet Infectious Diseases*. Published. [https://doi.org/10.1016/s1473-3099\(21\)00690-3](https://doi.org/10.1016/s1473-3099(21)00690-3)

³⁶ Mallapaty, S. (2021, October 5). COVID vaccines cut the risk of transmitting Delta — but not for long. *Nature*. <https://www.nature.com/articles/d41586-021-02689-y>

³⁷ Gupta, S., Cantor, J., Simon, K. I., Bento, A. I., Wing, C., & Whaley, C. M. (2021). Vaccinations Against COVID-19 May Have Averted Up To 140,000 Deaths In The United States. *Health Affairs*, 40(9), 1465–1472. <https://doi.org/10.1377/hlthaff.2021.00619>

³⁸ Rhode Island Office of Management and Budget & Rhode Island Office of Regulatory Reform. (2015, September). *Analyzing Regulatory Benefits and Costs*. Rhode Island Office of Regulatory Reform.

<http://www.omb.ri.gov/documents/reform/regulatory-review/ORR-Review-Analyzing-Regulatory-Benefits-and-Costs.pdf>

not want to be up to date with their COVID-19 vaccine, they have the option to wear an N95. Masking offers some proactive protection against COVID-19 depending on the type of mask used (e.g., cloth, surgical, N95) and proper usage of the mask. Research has proven masks can reduce the spread of COVID-19 – even with lower grade masks (i.e., cloth masks).^{2,39} However, given that health care workers will be interacting with some of Rhode Island’s most vulnerable, requiring the worker to wear a medical grade mask, which offers the most protection, is reasonable. N95 masks are designed to filter particles less than one micrometer (μm) and provide better source control than any other mask type.

Pre-COVID-19 data on the effectiveness of masking to prevent infection was inconclusive at best, but now a plethora of data exist showing even cloth masks can provide some protection against COVID-19.^{40,41} Where data is limited is exactly how many COVID-19 infections can be prevented due to masking. In one study that analyzed looked at masing behaviors in 200 countries, the researchers found that in places where mask masking was the norm or recommended by the government, per capita mortality was four times lower.⁴² In another study looking at COVID-19 transmission in the U.S. from states that did and did not implement mask mandates between April and May 2020 found mask mandates reduced COVID-19 growth rate by two percentage points. The data further suggests that more than 200,000 COVID-19 cases were averted by May 22, 2020 due to mask mandates.⁴³

While it is difficult for the Department to put a value on the number of infections and/or deaths saved by requiring non-up-to-date health care workers to wear an N95 mask, the data is clear that such a requirement not only protects the health care worker from being infected by patients but also prevents occult positive health care workers from infecting patients. The last benefit to this regulation is the enticement of vaccination of health care workers who would otherwise not be up to date with their COVID-19 vaccination and who do not want to deal with wearing an N95 mask for the duration of their workday. While the Department cannot reasonably estimate the number of health care workers who would choose this option, it is definitely a benefit that would reduce COVID-19 transmission in the health care facility.

³⁹ Howard, J. et. al. (2021). An evidence review of face masks against COVID-19. Proceedings of the National Academy of Science of the United States of America, 118(4). <https://doi.org/10.1073/pnas.2014564118>

⁴⁰ Dugdale CM, Walensky RP. Filtration Efficiency, Effectiveness, and Availability of N95 Face Masks for COVID-19 Prevention. *JAMA Intern Med.* 2020;180(12):1612–1613. doi:10.1001/jamainternmed.2020.4218

⁴¹ Michael Klompas, Chanu Rhee, Meghan A Baker, Universal Use of N95 Respirators in Healthcare Settings When Community Coronavirus Disease 2019 Rates Are High, *Clinical Infectious Diseases*, Volume 74, Issue 3, 1 February 2022, Pages 529–531, <https://doi.org/10.1093/cid/ciab539>

⁴² Leffler, C. T., Ing, E., Lykins, J. D., Hogan, M. C., McKeown, C. A., & Grzybowski, A. (2020). Association of Country-wide Coronavirus Mortality with Demographics, Testing, Lockdowns, and Public Wearing of Masks, *The American Journal of Tropical Medicine and Hygiene*, 103(6), 2400–2411. Retrieved Feb 18, 2022, from <https://www.ajtmh.org/view/journals/tpmd/103/6/article-p2400.xml>

⁴³ Lyu, W., & Wehby, G. L. (2020). Community use of face masks and covid-19: Evidence from a natural experiment of state mandates in the US. *Health Affairs*, 39(8), 1419–1425. <https://doi.org/10.1377/hlthaff.2020.00818>

Both RIDOH and the federal government knew that getting all Americans vaccinated would be no easy feat. This is in part due to the number of people in the country but also largely driven by the vast amount of misinformation circulated in connection with these vaccines, with outlandish claims such as the COVID-19 vaccines cause horrible allergic reactions and infertility or are unsafe for those who are pregnant or breastfeeding, among other perceived safety concerns. This apprehension should and must be addressed for individuals to feel comfortable receiving the COVID-19 vaccine. Individuals' beliefs must be respected and thus vaccination mandates must not be imposed capriciously. Thus, a reasonable alternative to being up to date is to wear a medical grade N95 mask when transmission is substantial.

Additionally, patient care comes with numerous risks and special obligations. Health care workers have an ethical responsibility to do no harm; and spreading communicable diseases can and does cause tremendous harm. This is especially true when working with a vulnerable population. Patients expect that their health care teams will take all reasonable precautions to ensure they are safe – including developing additional illnesses. The evidence is clear that vaccination is the best method to protect patients from communicable diseases but masking also offers reasonable protection to patients.⁴⁴

⁴⁴ Field R. I. (2009). Mandatory vaccination of health care workers: whose rights should come first?. *P & T : a peer-reviewed journal for formulary management*, 34(11), 615–618.

Regulatory Alternatives

Alternative 1 – Routine Testing

The Department considered permitting health care workers who do not want to receive the vaccine to be tested regularly. Testing is a powerful tool against COVID-19, but instead of being proactive, it is reactive. Testing offers a snapshot in time, designed to only determine if an individual was infected at that moment; even then, the results have limitations.

Regular testing has been implemented in a variety of settings to allow individuals to get back to normal life. However, even regular testing does not prevent the spread of COVID-19. Collegiate athletics implemented regular testing to allow students to play sports, but outbreaks were fairly common.⁴⁵ Long term care facilities saw similar outcomes among both staff and residents.⁴⁶ The reasoning for outbreaks among populations who are regularly tested are from false negatives, meaning a result indicating an individual is negative when in fact the individual is positive. As stated above, testing only provides a snapshot in time and an individual may be given a negative result because their viral loads are too low for the test to detect.

Furthermore, even weekly testing is not always enough to catch infections before it is too late. People become infectious within four to seven days of becoming infected (and possibly sooner if infected with the Delta or Omicron variant). Transmission can begin before signs of symptoms are discernible, if symptoms even appear. Therefore, a test a week after a person was infected is moot. More frequent testing could reduce instances of escaped detection, but it would come at increased costs of time, money, and resources.

It is likely that boosters, or annual vaccination will be required for COVID-19 moving forward. The proposed regulation does require health care workers and health care providers to stay up-to date with all doses recommended by the CDC. This would include receiving booster doses when eligible. Booster doses are administered due to the waning protectiveness from the original primary series of the COVID-19 vaccine. As the name implies, a booster dose provides an additional boost of immunity.

Strain specific vaccines may be developed and required in the future in the event of a variant that is ineffective against current vaccines. Similar to how strain specific influenza vaccines are developed each year. These vaccines would offer the most protection against specific COVID-19 variants. The concept of boosters is not novel;

⁴⁵ Gage K Moreno, Katarina M Braun, Ian W Pray, Hannah E Segaloff, Ailam Lim, Keith Poulsen, Jonathan Meiman, James Borcher, Ryan P Westergaard, Michael K Moll, Thomas C Friedrich, David H O'Connor, Severe Acute Respiratory Syndrome Coronavirus 2 Transmission in Intercollegiate Athletics Not Fully Mitigated With Daily Antigen Testing, *Clinical Infectious Diseases*, Volume 73, Issue Supplement_1, 15 July 2021, Pages S45–S53, <https://doi.org/10.1093/cid/ciab343>

⁴⁶ Gandhi, M., Yokoe, D. S., & Havir, D. V. (2020). Asymptomatic Transmission, the Achilles' Heel of Current Strategies to Control Covid-19. *New England Journal of Medicine*, 382(22), 2158–2160. <https://doi.org/10.1056/nejme2009758>

many other vaccines, such as diphtheria, pertussis, and tetanus, require booster doses after a period time. The requirement of boosters would ensure that health care workers and health care professionals have the most protection against the virus and thus allow them to protect their vulnerable patients.

And even though it will be required annually, from a cost perspective a one-time, annual vaccination or masking are the clear winners. Currently, the federal government is covering the cost of the vaccine and administration of the vaccine regardless of insurance coverage. And while COVID-19 tests are available at no cost in Rhode Island, that might not always be the case in the future.

Cost of Test^a	\$ 14,508 ^b
Cost of time out of work^c	\$ 2,825.16
Administrative costs to track testing^d	\$ 2,904.66
Total	\$ 20,237.82
a. Cost of COVID-19 test PCR test at a CVS Minute Clinic (individual test is \$139)	
b. This accounts for total cost of twice weekly testing per year	
c. Average salary of the top six profession types in health care setting is \$21.16 and assumes two hours per week needed to be tested. Salary data taken from https://www.bls.gov/oes/current/oes_ri.htm	
d. Assumes four hours of administrator time to set up the testing tracking system and one hour per week thereafter to track testing	

A free, vaccine or N95 mask is clearly a more cost-effective strategy to the \$20,237.82 annual costs for frequent testing. Not to mention, \$17,333.16 could fall on the unvaccinated individual when the COVID-19 testing is no longer free in Rhode Island.

Vaccines and testing are not an either-or in pandemic mitigation measures. The best strategy has always been to use them in combination, and a failure to include vaccines in the pandemic battle strategy will result in a much longer war against COVID-19.⁴⁷

Alternative 2 – “Natural Immunity”

The Department considered exempting health care workers from receiving the COVID-19 vaccine or masking if they could demonstrate they had previously been infected with COVID-19. The data regarding infection-induced immunity, also known as “natural immunity”, is still largely inconclusive regarding the strength of antibody response and the length of the anti-body response. Furthermore, while serology testing for COVID-19 may be performed on a blood sample, the FDA currently does not recommend such

⁴⁷ Wu, K. J. (2021, September 27). The Nonsensical Loophole in Biden’s Vaccine Mandate. The Atlantic. <https://www.theatlantic.com/science/archive/2021/09/biden-vaccine-mandate-testing-loophole/620204/>

testing to determine COVID-19 protection or immunity.⁴⁸ Therefore, the CDC still recommends everyone, including those who have been previously infected with COVID-19, to get vaccinated.⁴⁹

Omicron, the newest COVID-19 variant, has recently emerged and while scientists are still learning about the new variant, a few things are known. First it is more infectious than previous variants and second re-infection risk — the risk that a person had been infected, recovered, and later became infected again -- is higher than with previous variants. Rates of re-infection are rising especially among those who derive their immunity solely from previous infection.⁵⁰ In the face of this new variant, the CDC has redoubled its consistent messaging: to urge those who are unvaccinated to get vaccinated and those who are vaccinated to get a booster. The COVID-19 vaccine is the best protection to prevent infection, slow transmission, and reduce the likelihood of new variants emerging.⁵¹

Exempting previously infected individuals from the proposed regulations would require health care facilities to regularly measure each staff members antibodies to ensure patient safety in addition to additional administrative burdens to track and evaluate the continuing sufficiency of individual antibody counts. Furthermore, no technology is currently recommended or exists to even track declining antibodies; while there is much to learn in connection with this alternative, it is not feasible to implement at this time because no standard to assess sufficient antibody immunity has yet emerged nor are there agreed-upon mechanisms through which such a standard could be reliably articulated.

Alternative 3 – Mandating COVID-19 vaccine for all health care workers and health care providers

The Department considered requiring all health care workers and health care providers to be vaccinated – Identical to what is currently required in the emergency regulation, *Requirement for Immunization Against COVID-19 for All Workers in Licensed Health Care Facilities and Other Practicing Health Care Providers* (216-RICR-20-15-8).

Being up to date with a COVID-19 vaccine is still the most effective protection measure anyone can take, especially health care workers, in protecting themselves and others

⁴⁸ Center for Devices and Radiological Health. (2021, May 19). Antibody (Serology) Testing for COVID-19: Information for Patients and Consumers. U.S. Food and Drug Administration. <https://www.fda.gov/medical-devices/coronavirus-covid-19-and-medical-devices/antibody-serology-testing-covid-19-information-patients-and-consumers>

⁴⁹ Center for Disease Control. (2021c, December 15). Omicron Variant: What You Need to Know. Centers for Disease Control and Prevention. <https://www.cdc.gov/coronavirus/2019-ncov/variants/omicron-variant.html>

⁵⁰ Gage K Moreno, Katarina M Braun, Ian W Pray, Hannah E Segaloff, Ailam Lim, Keith Poulsen, Jonathan Meiman, James Borchert, Ryan P Westergaard, Michael K Moll, Thomas C Friedrich, David H O'Connor, Severe Acute Respiratory Syndrome Coronavirus 2 Transmission in Intercollegiate Athletics Not Fully Mitigated With Daily Antigen Testing, *Clinical Infectious Diseases*, Volume 73, Issue Supplement_1, 15 July 2021, Pages S45–S53, <https://doi.org/10.1093/cid/ciab343>

⁵¹ Gallagher, B. J. (2021, December 3). Covid: First data points to Omicron re-infection risk. BBC News. <https://www.bbc.com/news/health-59520945>

from COVID-19 infection, illness and death. When the emergency regulation was issued, Rhode Island was in a very different place in terms of infection rates, hospitalizations and deaths. To ensure Rhode Island's health care system was the most prepared, especially as it entered the holiday season where COVID-19 was going to put an even greater strain on the health care system, it necessitated a COVID-19 vaccination mandate among health care workers and health care providers.

As of mid-February, cases, hospitalizations and deaths are rapidly declining. With the highest vaccination rate in the United States, Rhode Island is well equipped with shifting the COVID-19 strategy from a pandemic to an endemic. With the current emergency regulation in place, vaccination rates among health care workers and health care providers are exceptionally high, with an estimated 854 health care workers who are unvaccinated. When the emergency regulation went into place, the Department conducted random audits of health care providers to determine compliance. Using this data, the number of health care providers who are unvaccinated could be deduced.

Table 5: Summary of Health Care Providers Vaccination Status

Total number of active health care provider licenses	94,607
Total number of health care providers actively working^a	83,065
Estimated total of health care providers working in a health care facility^b	37,967
Estimated total of health care providers not working in a health care facility	45,098
Estimated percent of health care providers who have primary series complete^c	94.6%
Estimated number of health care providers not completely vaccinated	2,435
Estimated percent of health care providers completely vaccinated or intending completion^d	98.0%
Estimated number of health care providers not working a health care facility and not intending to be vaccinated or complete vaccination	902

a. 87.8% using BLS data for all occupational license types

(<https://www.bls.gov/opub/mlr/2019/article/professional-certifications-and-occupational-licenses.htm>)

b. using est. 2/3 facilities staff licensed in <https://www.bls.gov/opub/ted/2020/registered-nurses-made-up-30-percent-of-hospital-employment-in-may-2019.htm> (fairly close to ~50% estimate in <https://www.census.gov/library/stories/2021/04/who-are-our-health-care-workers.html>)

c. RI estimated completion for adult general population=85.6%; 9-point lead among healthcare workers vs. general population per <https://www.npr.org/2021/09/18/1037975289/unvaccinated-covid-19-vaccine-refuse-nurses-health-care-workers>

d. 1+ doses @ 95.2% of general population; assumes 3-pt lead among healthcare workers

It is estimated that 902 health care providers would not intend to be vaccinated. This would mean the total sample of health care workers and health care providers who do not intend to be vaccinated is 1,756. With 102,918 health care workers and health care providers in the state, that means only 1.7% of the health care worker and provider population is not vaccinated for COVID-19.

Being up to date with a COVID-19 vaccine offers the most protection for an individual. Yet, it is unlikely that the 1.7% of unvaccinated health care workers and health care providers will receive the vaccine since two fully FDA authorized vaccines are readily available.

As the State prepares to move into the endemic phase, the Department must shift policies to match the new stage. Having an up to date COVID-19 vaccine workforce offers the most benefit but does come with the most costs. And it is unlikely that the 1.7% of unvaccinated health care workers and health care providers will receive the vaccine since two fully FDA authorized vaccines are readily available.

Health care workers are trained to use N95 masks for other communicable diseases where no vaccine is available (e.g., Tuberculosis) and are an effective source control and COVID-19 transmission is vastly diminished using an N95 mask compared to other mask types. The proposed regulation offers two options for health care workers both of which will protect vulnerable patients against COVID-19.