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June 29, 2023

Mr. Alan Mislove
Assistant Director for Data and Democracy
Office of Science and Technology Policy
Executive Office of the President
Eisenhower Executive Office Building
1650 Pennsylvania Avenue, NW
Washington, DC 20504

Re: Request for Information: Automated Worker Surveillance and Management 88 FR 27,932 (May 3, 2023) Document No. 2023-09353, Docket ID: OSTP_FRDOC_0001.

Dear Mr. Mislove:

On behalf of more than 225,000 registered nurses (RNs) across the country, National Nurses United (NNU) respectfully submits these comments in response to the Office of Science and Technology Policy (OSTP)'s Request for Information on Automated Worker Surveillance and Management, 88 FR 27,932 (May 3, 2023) (RFI).

NNU applauds OSTP's decision to inquire about how automated worker surveillance and management (AWSM) affects workers, including nurses, and their workplaces. The federal government must take a firm stance against workplace surveillance and the algorithmic management that AWSM technology enables and implement regulations to protect worker privacy and autonomy, particularly in health care professions. OSTP's plan for the federal government should include a strong regulatory framework to combat automated technology to surveille workers and subject them to opaque algorithmic management decisions.

The health care industry has implemented a host of technologies that collect data on everything that happens in health care facilities. Many of these technologies are ostensibly designed to improve patient care, but in fact they track the activities of health care workers. Automated monitoring technology feeds into algorithmic management systems that make unreasonable and inaccurate decisions about patient acuity, staffing, and care with the goal of lowering labor costs. As a result, nurses and other health care professionals are expected to work faster, accept more patients per nurse, and reduce their use of independent professional skill and judgment. Tracking nurses is designed to facilitate routinization—breaking the holistic process of nursing into discrete tasks—with the goal of replacing educated registered nurses exercising independent judgment with lower cost staff following algorithmic instructions. In reality, each patient is unique and health care is made up of non-routine situations. Registered nurses must be permitted to develop the skill and professional judgment that safe patient care requires. The AWSM

technology-enabled process of surveillance, routinization, and interference with professional judgment puts nurses' health and safety and patients' lives at risk.

Constant surveillance also means that nurses cannot tell if management is monitoring union activity, such as conversations with union representatives or organizing discussions, which chills union activity and the ability of workers to push back against dangerous management practices. Nurses often are subject to tracking devices that could extend into their private lives and have little knowledge of how employers use their surveillance power. NNU urges OSTP to support robust regulation of AWSM technology in the workplace and by employers generally, to protect the right to collective action as well as employees personal time and privacy.

The federal government must strengthen regulations to limit automated worker surveillance and management technologies to the greatest extent possible. To the extent AWSM technology is implemented, federal regulations should ensure that workers are always notified of the types of surveillance used and the purposes of the data collection. Algorithmic management systems must be entirely transparent, so workers can understand how the decisions governing their working lives are made. Union workers must have the opportunity to bargain over implementation of any AWSM technology before the technology is selected or implemented. Worker control over the implementation and use of AWSM technology in the workplace is the only way to ensure that such systems are implemented without compromising the safety and privacy of workers or their clients. This is particularly true in the health care setting, where privacy and trust are critical to effective patient care, and clinical mistakes due to fatigue or overwork can be fatal.

In the health care context, federal regulations should protect independent exercise of clinical judgment and prevent deskilling of health care professionals. Currently, life and death decisions relating to patient acuity, treatment decisions, and staffing levels are being made by opaque AWSM systems. Recommendations from AWSM systems are meant to inform independent clinical judgment by professionals, but in practice employers often pressure health care professionals to rigidly adhere to AWSM system's recommendations with the goal of reducing operating expenses. Nurses are expected to follow clinical decisions made by AWSM technology related to patient care and treatment, rather than using their professional judgment in providing care that is consistent with each patient's unique needs, preferences, and values. Health care professionals often cannot even see the patient data or clinical research that underlies the recommendation and have no way of judging the validity of its application to an individual patient. This puts patients at risk from inappropriate recommendations in the short term and in the long-term results in the deskilling of nurses and creates a dangerous skill gap when atypical or emergency situations arise that the AWSM technology is unequipped to navigate. NNU supports policies that ensure registered nurses and other clinicians can exercise their professional judgment in determining the best course of action for their patients and override decisions made by AWSM technology when doing so is clinically appropriate without threat of discipline or discharge.

Finally, OSTP must strongly warn federal regulators against accepting new models of health care and employment based on the inaccurate and dangerous notion that ambient patient monitoring

technology and algorithmic management can replace in-person care by health care professionals and full employment protections for workers. AWSM technology is enabling dangerous new models of patient care designed to lower labor costs and push patients out of health care facilities, including acute, inpatient-level hospital care at home, telehealth supported by ambient patient monitoring and call center worker tracking systems, staffing platforms that support gig nursing, and other problematic care models that are simply inferior to traditional care at a hospital or other health care facilities, both in terms of nurse employment protections and patient outcomes..

It is essential that OSTP, and the executive branch more generally, supports robust regulation of AWSM technology in health care, particularly technology used in clinical decision-making and staffing, and ensures that recommendations made by such technology serve only as guidelines and are sound, transparent, intelligible, and supported by extrinsic evidence such as in-person examination or observation by a clinician.

NNU's responses to the RFI questions are below. In some cases, they are repetitive as they are included in each place they were responsive to the question asked.

Sincerely,

Michelle Grisat

Michelle Grisat
National Director of Health and Regulatory Policy
National Nurses United

National Nurses United's Responses to Request for Information: Automated Worker Surveillance and Management

1. If you are a *worker or organization representing workers (such as a worker center, union, or legal services provider)*, please tell us about your experiences with automated worker surveillance and management systems or the experiences of the workers you interact with, including:

a. The type of work you do (*e.g.*, describe the relevant job, employer, and industry);

National Nurses United (NNU) primarily represents registered nurses (RNs). The majority of NNU RNs work in short-term acute care hospitals in both inpatient and outpatient settings but some work in outpatient clinics, medical offices, long-term care facilities, home care, schools, and other settings.

b. Whether you are a member of a labor union;

National Nurses United, with nearly 225,000 members nationwide, is the largest union and professional association of registered nurses in U.S. history.

NNU affiliates include the District of Columbia Nurses Association, Michigan Nurses Association, Minnesota Nurses Association, New York State Nurses Association, and California Nurses Association/National Nurses Organizing Committee, which represents nurses at facilities in Alabama, Arizona, California, Colorado, District of Columbia, Florida, Georgia, Iowa, Illinois, Kansas, Kentucky, Maine, Missouri, Nevada, North Carolina, Ohio, Texas, Virginia, West Virginia, and Puerto Rico.

c. The type of automated surveillance or management you have experienced, including the location of the monitoring technology (such as an app you had to use or download; a device you had to use, carry, or wear; or a camera that monitors you);

AWSM systems are distinguishable from traditional surveillance systems in that they draw data from various devices and sources, often operating as part of independent systems, and compile this data into unified data sets, which can then be analyzed to draw conclusions and make decisions that would not be possible from a single system or device. In this sense, AWSM systems are almost always greater and more impactful than the sum of their individual parts. For example, through a combinations of radio-frequency ID tracking in badges, computer-enhanced video-cameras, electronic health records, interoffice communications devices, and even things as innocuous as special sensors on soap dispensers, health care employers are able to produce a 3-dimensional, dynamic representation of the people, objects, and movements within a particular

environment over time.[1] This would simply not be possible relying on any one of these technologies alone. Likewise, the vast and disparate nature of the data gathered by these systems[2] almost always requires that it be processed through a highly complex, and often opaque, algorithm. Most of these algorithms are "black boxes," where nurses, health care managers, and sometimes even their creators do not know precisely how they work.

Somewhat unique to the health care setting, AWSM systems are also informed and supported by an entire suite of sensors, monitors, and other technology focused on patients and patient care areas. These include sensors that monitor a patients' vital signs, cameras and other sensors that track a patients' mobility in their room or throughout the facility, technology to monitor sleep levels, and other types of patient monitoring that can be used to identify and monitor interactions with staff. This patient data is then combined with data drawn from more traditional AWSM systems and synthesized into a comprehensive and dynamic representation of nearly all RN movements and activities, then used to make clinical and employment decisions.

It is therefore inappropriate to think of AWSM systems as discrete technologies, each of which might only have a limited role in the workplace. In reality, these systems generally function together with the shared goal of surveilling and managing employees, lowering labor costs and deskilling nurses by shifting professional care responsibilities to automated, and highly flawed, systems, and attempting to reduce complex RN patient care to computer prompts and box-checking.

In addition to the AWSM systems discussed below, there may be other AWSM systems are actively surveilling and managing our members, but NNU is simply unaware of them. Despite NNU's consistent and regularly expressed position that employers have a legal obligation to provide notice and an opportunity to bargain over implementation prior to the implementation of an AWSM systems, health care employers often do not disclose the introduction of such systems to NNU and its members. While health care employers, when cornered, often will assert that these are simply updates of older, "dumber" technology, and within their management rights to implement. This is entirely specious. Yet health care employers actually may fear that effective advocacy will derail their plans to deskill RN work and replace them with less costly workers, rather than providing safe and healthy workplaces and fair pay and benefits to attract and retain

[1] Chan, et al., define "ambient intelligence" to mean a system which utilizes "computer vision-guided neural networks to continuously monitor multiple datapoints in video feeds" using "computer-vision aided infrared cameras" to monitor nurse workload. Chan, P. Y., Tay, A., Chen, D., De Freitas, M., Millet, C., Nguyen-Duc, T., Duke, G., Lyall, J., Nguyen, J. T., McNeil, J., & Hopper, I. (2023). Ambient intelligence-based monitoring of staff and patient activity in the intensive care unit. *Australian critical care : official journal of the Confederation of Australian Critical Care Nurses*, *36*(1), 92–98. https://doi.org/10.1016/j.aucc.2022.08.011

[2] "Ambient sensors will produce petabytes of data from hospitals and homes. This requires new machine-learning methods that are capable of modelling rare events and handling big data to be developed (Table 1)"[2] Haque, A., Milstein, A. & Fei-Fei, L. Illuminating the dark spaces of healthcare with ambient intelligence. *Nature* **585**, 193–202 (2020). https://doi.org/10.1038/s41586-020-2669-y

RNs.[3] As a result, some of the AWSM technology and systems discussed in this comment were identified by nurses themselves, while on the job. Given the diverse and low-profile nature of AWSM systems, there is a possibility that there is additional AWSM technology in place that our members have so far failed to recognize.

Researchers studying AWSM technology in hospitals describe a complex and diverse variety of advanced surveillance equipment that could be deployed in health care settings and used to monitor nurse activity throughout their shift. Many if not all of these would be completely invisible to a nurse while performing their duties unless they were informed about the existence of such technology. For example, researchers describe cameras equipped with "inertial sensors,"[4] "radio frequency (RF)-based non-contact human movement detectors and geolocators,"[5] "passive infrared sensors,"[6] "Raspberry Pi Infrared,"[7] geolocation enable through Bluetooth technology,[8] "temperature-humidity sensor[s],"[9] light sensors,[10] "thermal imagers,"[11] "RGB camera[s],"[12]

[3] The health care industry's end game is to replace RNs with less costly workers and to create new health care delivery models, including using RNs to lead "patient care teams" rather than provide hands-on care. The health care industry has created the staffing crisis that it is using to justify these changes instead prioritizing patient care and providing safe workplaces that would keep RNs at the bedside. NNU has several recent reports on the industry-created staffing crisis and the failure to provide a safe and health work environment. See Protecting Our Front Line: Ending the Shortage of Good Nursing Jobs and the Industry-created Unsafe Staffing Crisis available at: https://www.nationalnursesunited.org/protecting-our-front-line-report; Workplace Violence and Covid-19 in Health Care: How the Hospital Industry Created an Occupational Syndemic available at: https://www.nationalnursesunited.org/sites/default/files/nnu/documents/1121_WPV_HS_Survey_Report_FINAL.pdf ; and Deadly Shame: Redressing the Devaluation of Registered Nurse Labor Through Pandemic Equity available at: https://www.nationalnursesunited.org/campaign/deadly-shame-report.

[4] Azevedo-Coste, C.; Pissard-Gibollet, R.; Toupet, G.; Fleury, É.; Lucet, J.C.; Birgand, G. Tracking Clinical Staff Behaviors in an Operating Room. *Sensors* **2019**, *19*, 2287. https://www.mdpi.com/1424-8220/19/10/2287

[5] Adib, F.; Kabelac, Z.; Katabi, D. Multi-person localization via RF body reflections. In Proceedings of the 12th USENIX Symposium on Networked Systems Design and Implementation (NSDI 15), Oakland, CA, USA, 4–6 May 2015; pp. 279–292. https://www.usenix.org/system/files/conference/nsdi15/nsdi15-paper-adib.pdf

[6] Suresha PB, Hegde C, Jiang Z, Clifford GD. An Edge Computing and Ambient Data Capture System for Clinical and Home Environments. *Sensors*. 2022; 22(7):2511. https://doi.org/10.3390/s22072511

[7] Suresha PB, Hegde C, Jiang Z, Clifford GD. An Edge Computing and Ambient Data Capture System for Clinical and Home Environments. *Sensors*. 2022; 22(7):2511. https://doi.org/10.3390/s22072511

[8] Sato, A.; Nakajima, M.; Kohtake, N. Rapid BLE beacon localization with range-only EKF-SLAM using beacon interval constraint. In Proceedings of the 2019 International Conference on Indoor Positioning and Indoor Navigation (IPIN), Pisa, Italy, 30 September–3 October 2019; pp. 1–8. https://ieeexplore.ieee.org/abstract/document/8911778

[9] Rienzo, M.D.; Mukkamala, R. Wearable and Nearable Biosensors and Systems for Healthcare. *Sensors* **2021**, *21*, 1291. https://www.mdpi.com/1424-8220/21/4/1291/htm

[10] Suresha PB, Hegde C, Jiang Z, Clifford GD. An Edge Computing and Ambient Data Capture System for Clinical and Home Environments. *Sensors*. 2022; 22(7):2511. https://doi.org/10.3390/s22072511

[11] Metwaly, A.; Queralta, J.P.; Sarker, V.K.; Gia, T.N.; Nasir, O.; Westerlund, T. Edge computing with embedded AI: Thermal image analysis for occupancy estimation in intelligent buildings. In Proceedings of the INTelligent Embedded Systems Architectures and Applications Workshop, New York, NY, USA, 13–18 October 2019; pp. 1–6. https://dl.acm.org/doi/abs/10.1145/3372394.3372397

[12] Zerrouki, N.; Harrou, F.; Sun, Y.; Houacine, A. Vision-based human action classification using adaptive boosting algorithm. *IEEE Sens. J.* **2018**, *18*, 5115–5121. https://ieeexplore.ieee.org/abstract/document/8355489/; Zhao, Y.; Tu, P.; Chang, M.C. Occupancy Sensing and Activity Recognition with Cameras and Wireless Sensors. In

"Bluetooth beacons and inertial measurement unit (IMU) sensors,"[13] geolocation using "the range-only extended Kalman filter simultaneous localization and mapping technique,"[14] "IMU sensor[s],"[15] sound identification through the "percussive source separation technique,"[16] the use of Doppler radar technology,[17] multichannel recording the universal serial bus (USB) microphones,[18] and others technology. Many of the above would be completely invisible when integrated into a health care facility.

In sum, while this comment seeks to respond to the individual questions identified by OSTP in its RFI, it is important to note that each of these systems is generally integrated with the others, and thus their impact on nurses and health care workplaces cannot be analyzed in a vacuum. Each individual system is thus considerably greater, and more insidious, than any one of its individual parts. AWSM systems may therefore be thought of collectively as a single, comprehensive system, of which any one of the technologies discussed below could form a small part.

(1) Electronic health records (EHRs)

The U.S. Office of the National Coordinator for Health Information Technology (ONC) offers this idealized explanation of EHRs:

> **EHRs are, at their simplest, digital (computerized) versions of patients' paper charts. But EHRs, when fully up and running, are so much more than that.**

Proceedings of the 2nd Workshop on Data Acquisition To Analysis, New York, USA, 10 November 2019; pp. 1–6. https://dl.acm.org/doi/abs/10.1145/3359427.3361911

[13] Martín, A.J.; Gordo, I.M.; Domínguez, J.J.G.; Torres-Sospedra, J.; Plaza, S.L.; Gómez, D.G. Affinity propagation clustering for older adults daily routine estimation. In Proceedings of the 2021 International Conference on Indoor Positioning and Indoor Navigation (IPIN), Lloret de Mar, Spain, 29 November–2 December 2021; pp. 1–7. https://ieeexplore.ieee.org/abstract/document/9662579

[14] Sato, A.; Nakajima, M.; Kohtake, N. Rapid BLE beacon localization with range-only EKF-SLAM using beacon interval constraint. In Proceedings of the 2019 International Conference on Indoor Positioning and Indoor Navigation (IPIN), Pisa, Italy, 30 September–3 October 2019; pp. 1–8. https://ieeexplore.ieee.org/abstract/document/8911778

[15] Martín, A.J.; Gordo, I.M.; Domínguez, J.J.G.; Torres-Sospedra, J.; Plaza, S.L.; Gómez, D.G. Affinity propagation clustering for older adults daily routine estimation. In Proceedings of the 2021 International Conference on Indoor Positioning and Indoor Navigation (IPIN), Lloret de Mar, Spain, 29 November–2 December 2021; pp. 1–7. https://ieeexplore.ieee.org/abstract/document/9662579

[16] Cantarini, M.; Brocanelli, A.; Gabrielli, L.; Squartini, S. Acoustic features for deep learning-based models for emergency siren detection: An evaluation study. In Proceedings of the 2021 12th International Symposium on Image and Signal Processing and Analysis (ISPA), Zagreb, Croatia, 13–15 September 2021; pp. 47–53. https://ieeexplore.ieee.org/abstract/document/9552140

[17] Liang, Q.; Xu, L.; Bao, N.; Qi, L.; Shi, J.; Yang, Y.; Yao, Y. Research on Non-Contact Monitoring System for Human Physiological Signal and Body Movement. *Biosensors* **2019**, *9*, 58. https://www.mdpi.com/2079-6374/9/2/58

[18] Suresha PB, Hegde C, Jiang Z, Clifford GD. An Edge Computing and Ambient Data Capture System for Clinical and Home Environments. *Sensors*. 2022; 22(7):2511. https://doi.org/10.3390/s22072511

> EHRs are real-time, patient-centered records. They make information available instantly, "whenever and wherever it is needed". And they bring together in one place everything about a patient's health. EHRs can:
>
> - Contain information about a patient's medical history, diagnoses, medications, immunization dates, allergies, radiology images, and lab and test results
> - Offer access to evidence-based tools that providers can use in making decisions about a patient's care
> - Automate and streamline providers' workflow
> - Increase organization and accuracy of patient information
> - Support key market changes in payer requirements and consumer expectations
>
> **One of the key features of an EHR is that it can be created, managed, and consulted by authorized providers and staff across more than one health care organization.**
>
> A single EHR can bring together information from current and past doctors, emergency facilities, school and workplace clinics, pharmacies, laboratories, and medical imaging facilities.[19]

As the description makes clear, the EHR have been integrated into health care operations through policy established by the federal government as well as through financial incentives (discussed below). The EHR interfaces with numerous technologies, including patient vital sign and other monitoring devices; clinical diagnostic, treatment, and prognosis algorithms; clinical datasets; staffing and scheduling software; laboratory and pharmacy ordering systems; billing and payment systems; government quality reporting systems, and health information exchange networks. The EHR, "when fully up and running" is a complex constellation of technologies that creates a digital representation of the patient that serves as a lynchpin to health care restructuring and, with it, the devolution of patient care and worker autonomy. This restructuring includes replacing RNs with patient care teams, remote patient monitoring as well as worker surveillance, management, and automation. The restructuring underway includes the replacement of RNs and other health care professionals with low-cost workers, unpaid family labor, and automation.

In contrast to the rosy picture painted by the ONC, the implementation of EHRs has been plagued by numerous problems with interoperability, errors and bias in embedded clinical diagnostic and treatment recommendations, and faulty patient safety alerts, to name just a few. Indeed, the new Cerner Corporation EHRs used by the Department of Veterans Affairs (VA),

[19] Office of the National Coordinator for Health Information Technology. (May, 2018). What Are Electronic Health Records (EHRs)? U.S. Department of Health and Human Services, Office of the Secretary. https://www.healthit.gov/topic/health-it-and-health-information-exchange-basics/what-are-electronic-health-records-ehrs. Accessed June 25, 2023. (Emphasis in original).

have resulted in major harm to veterans, including at least four deaths.[20] The VA recently announced that it would "reset" its implementation of the new multibillion dollar EHR system, halting further implementation while it focuses on problems at five locations using the new EHR.[21] Cerner Corporation was identified as among the top three EHRs in terms of market shares in U.S. hospitals.[22]

(a) The federal EHR incentive program

The Health Information Technology for Economic and Clinical Health (HITECH) Act, enacted as part of the American Recovery and Reinvestment Act of 2009, included approximately $30 billion in funding for the EHR Incentive Program. Hospitals and other eligible providers had to demonstrate that they were using their EHRs in conjunction with clinical decision support and computerized provider order entry to receive incentive payments and to avoid penalties that reduced Medicare reimbursement beginning in 2015.[23]

- **Clinical decision support (CDS).** The U.S. Agency for Healthcare Research and Quality describes computerized CDS as "computerized systems in which software algorithms generate patient-specific recommendations by matching characteristics, such as age, renal function, or allergy history, with rules in a computerized knowledge base."[24] Although these systems "generate patient-specific recommendations," they do so based on a fictitious average patient and "match" only a limited set of characteristics. Thus, these recommendations may not be appropriate at the bedside for a particular patient.

  To ensure the best care, the "decision support" must serve as a guideline that providers can override if it is not suitable. Yet many hospitals usurp provider judgment by implementing "hard stops" that prevent them from overriding computer "recommendations." For example, a hard stop may prevent a provider from leaving a computer screen until the provider takes the required action or provides an approved response. Alternatively, the computer may employ a soft stop that, for example, notifies the provider that she is not following the "recommendation" and may include notice that failure to accept the recommendation will be reported to management.

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[20] Rodriguez, S. (2023, March 21) *VA Admits Oracle Cerner EHRM Issues Contributed to 4 Veteran Deaths*. EHR Intelligence, Adoption and Implementation News. https://ehrintelligence.com/news/va-admits-oracle-cerner-ehrm-issues-contributed-to-4-veteran-deaths. Accessed June 25, 2023.

[21] Veterans Affairs Press Room. (2023, April). *VA announces reset of Electronic Health Record project*. U.S. Department of Veterans Affairs. https://news.va.gov/press-room/va-announces-reset-of-electronic-health-record-project/. Accessed June 25, 2023.

[22] Office of the National Coordinator for Health Information Technology. (October, 2022). *Hospital Capabilities to Enable Patient Electronic Access to Health Information, 2021*. U.S. Department of Health and Human Services, Office of the Secretary. https://www.healthit.gov/data/data-briefs/hospital-capabilities-enable-patient-electronic-access-health-information-2021. Accessed June 25, 2023.

[23] DesRoches, C.M., Worzala, C., & Bates S. (2013). Some Hospitals Are Falling Behind In Meeting 'Meaningful Use' Criteria And Could Be Vulnerable To Penalties In 2015. *Health Affairs*, vol. 32, no. 8:1355-1360. Retrieved from http://content.healthaffairs.org/content/32/8/1355.full.pdf+html on August 14, 2013

[24] Agency for Healthcare Research and Quality. Retrieved from http://psnet.ahrq.gov/popup_glossary.aspx?name=clinicaldecisionsupportsystem on July 25, 2013.

- **Computerized provider order entry (CPOE).** CPOE is a type of software program that physicians and other medical practitioners use to enter orders for medication, blood work, imaging, and other types of treatment and testing. It can serve as a replacement for paper order forms, but typically is linked to CDS software that affects the way that orders can be placed. For example, hospitals and medical practice groups may combine CPOE and CDS through the use of computer menu options that limit the types of orders that a medical practitioner can enter.

(b) EHR surveillance and management of RNs

Ostensibly, EHRs are used to track a patient's progress and document their care. However, in addition to simply recording and tracking patient health information, EHRs differ from traditional medical records in that they then use this information to make recommendations regarding nursing care plans, patient acuity and nurse staffing levels, and nurse performance. Previously all of these determinations were made by nurses and nurse managers through the exercise of their professional judgment.

EHRs accomplish this by processing data entered in the EHR, patient-monitoring data, and data gathered from other AWSM technology, often utilizing proprietary algorithms that are opaque to RNs and other clinicians. EHRs are used to generate a nursing care plan for each patient, assign the patient an acuity level, and determine how many patients to assign to each RN based on the patient's acuity level and care plan. Staffing levels for the subsequent shift are also determined based on these acuity levels, and nurses are called in for overtime or, for RNs on call for flexible shifts, flexed off as the system dictates.

Significantly, nurses, and often even hospital management, are unaware of what specific information the algorithm is relying on in creating nursing care plans and making acuity determinations. Indeed, some EHR systems hide the acuity score itself from bedside nurses, only making this available to hospital management. This is problematic because it prevents nurses from using their clinical experience and nursing judgment to create a nursing care plan and determine the level of care need. If an algorithm makes an inaccurate acuity determination, a nurse might be unable to provide sufficient care for all the patients for whom they are responsible, resulting in adverse health outcomes for the patient and potential discipline, termination, or loss of licensure for the nurse.

Similarly, nursing care plans are the step-by-step treatment and care plans created by RNs that outline what interventions and procedures a nurse will perform on a patient over the course of their treatment. Prior to the introduction of EHRs, RNs created nursing care plans based on their assessment of the patient and their determination of what would be clinically appropriate based on their education and years of experience. With the introduction of EHRs, nursing care plans are often automatically generated by the system, and RNs are expected to follow what the EHR dictates unless it is clinically inappropriate, in which case they may face significant barriers in changing or overriding the care plan.

Employers are using EHRs to replace RN judgment by automating the creation of nursing care plans and assigning patient acuity levels. RNs develop the nursing skill and judgment necessary to accurately evaluate a patient and create an effective care plan through education and experience in the clinical setting. Determining whether a given nursing care plan will be effective requires experience not only in drafting the plan itself, but in evaluating the factors that determine the type and amount of care that is required. By placing this responsibility in the hands of EHRs, employers' end game is to introduce problematic new models of patient care that put patients at risk. For example, employers are using "patient care teams" headed by an RN with less costly workers, often unlicensed, replacing work done by previously by RNs.

As health care is not one-size-fits-all. Additionally, tale-tell signs, such as the smell of a patient's breath, skin tone, affect and demeanor, are often lost on EHR technology, yet are apparent to an experienced nurse and can be crucial to making early diagnostic decisions while there is still time to provide effective treatment. Thus, deskilling nurses also degrades patient care even where the EHR is not making a mistake – such systems simply do not, and cannot, provide the same level of care as an RN. Nurses must be able to alter expected treatment plans based on the unique circumstances of the patient and the patient's wishes and values and to use their experience and nursing judgment to provide the best course of care. Indeed, they are ethically and legally required to do so. However, they are being pressured by health care management, under threat of discipline or even termination, to conform to decisions made by EHRs that are prone to racial and ethnic bias as well as other errors that arise when one applies information that may apply to a population but not to individual patients.

Finally, and perhaps most obviously, EHRs are used to monitor work processes and identify nurses who management believes are working too slowly or visiting a patient too often relative to the patient's computer-generated acuity level. These nurses are then pressured, through formal discipline or informal coercion, into working faster and treating more patients with less support, even where they believe doing so will reduce their quality of care. While this helps to optimize hospital profits, nurses who are pressured to work faster are more prone to make mistakes or to fail to identify mistakes made by electronic systems or others. This places patients at risk.
The use of EHRs and "black box" decision-making creates several problems for RNs. In many cases, this puts them in the difficult position of being pressured, under threat of discipline, to follow clinical recommendations made by the EHRs without knowing how or why those decisions are made. This is particularly problematic for RNs and other licensed health care professionals who have a professional and ethical responsibility to ensure that their patient is receiving appropriate treatment.

Likewise, this information is then used to second guess nursing judgments that are made throughout the day, such as how much time to spend with a patient, acuity-level and staffing determinations, and even what procedures or interventions should be performed on a given patient at a given time. Nurses that fail to conform to the time or performance expectations dictated by AWSM technology are often "coached," disciplined, or otherwise coerced into simply following the decisions of the system and working faster, even if they believe that doing so would be unsafe in their professional judgment.

Even more problematic, as a consequence of being pressured to rely on the clinical decisions of EHRs and networked AWSM technology, new nurses will not be able to fully develop the skills necessary to make these decisions independently, while experienced nurses are losing this skill as a consequence of not being able to practice it regularly in the clinical setting. In other words, AWSM technology results in deskilling by shifting crucial clinical decisions, such as determining acuity and the contents of a nursing care plan, to "black box" algorithms, which make these decisions for the nurses, without indicating how or why they are made. Yet, development of these skills is essential for nurses to be able to determine when the AWSM technology has made a mistake and must be overridden, or when the system fails entirely.

(2) Patient monitoring technology

Another form of AWSM technology in the health care setting is biometric and other monitoring devices focused on patients that are used to also monitor and surveille nurse activities. As Suresha, et al. describe: "Recently, non-contact sensors or nearables such as microphones, video cameras, light-intensity sensors, temperature and humidity sensors, are becoming more popular for hassle-free patient monitoring." [25] In addition to capturing patient data, these technologies also pick up "key information about the patient's ambient environment" including the presence and activity of nurses that are treating them or are in the vicinity. This includes data related to "occupancy and human activity phenotyping," "medical equipment alarm classification," and the "geolocation of humans in a built environment."

Employers claim that patient monitoring technology can reduce nurse workloads, and the need for RN staffing, by substituting for in-person monitoring by nurses. In reality, monitoring sensor output and responding to excessive alerts can increase nurse workloads, interfere with other tasks, and pressure nurses to work faster than is safe to respond to tracked sensor alerts rather than organize their work according to their professional judgment to meet the needs of all patients. Sensor data also serves as input for the next form of AWSM in health care: AWSM ambient intelligence-based patient monitoring systems.

(3) Ambient intelligence-based patient monitoring technology

Health care facilities are beginning to implement comprehensive, ambient intelligence-based monitoring systems that process the information from patient monitoring systems through a computer algorithm, typically in combination with data from other ambient intelligence-based monitoring technology, to produce a 3-dimensional, dynamic representation of the people, objects, and movements within a particular environment over time.[26] Peter Y. Chan. et al., define "ambient intelligence" as a system:

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[25] Suresha PB, Hegde C, Jiang Z, Clifford GD. An Edge Computing and Ambient Data Capture System for Clinical and Home Environments. *Sensors*. 2022; 22(7):2511. https://doi.org/10.3390/s22072511

[26] Chan, et al., define "ambient intelligence" to mean a system which utilizes "computer vision-guided neural networks to continuously monitor multiple datapoints in video feeds" using "computer-vision aided infrared

> which utilises [SIC] computer vision-guided neural networks to continuously monitor multiple datapoints in video feeds, [and] has become increasingly efficient at automatically tracking various aspects of human movement. For example, it enables automatic tracking of entry and exit into rooms, specific gestures and activities, and interactions between individuals and objects.[27]

The ambient intelligence-based monitoring system may then generate output related to patient acuity, staffing, and patient care based on this information, which RNs are pressured or required to follow.

Ambient intelligence-based monitoring systems draw data from traditional surveillance devices, such as video cameras and microphones, specialized sensors (e.g. infrared sensors, radar, and lidar), as well as through digital tracking and metadata from systems that are not principally used for surveillance of health care employees, such as patient's electronic health records ("EHRs"), cellphones, pagers and other communication devices, and even objects as seemingly innocuous as soap dispensers and identification badges. The vast and disparate nature of the data gathered by such systems[28] typically requires that it be processed through a highly complex and opaque algorithm, indeed often times an artificial intelligence or algorithms developed through "deep learning," which by their nature make it difficult, if not impossible, to determine the clinical basis for the decision. Some of these algorithms are "black boxes," where even their creators do not know how they work because they were created through machine learning. Other systems are functionally opaque to their users because they require a high level of technical knowledge to understand. In many cases, even the health care employers who opt to implement algorithmic systems may not have access to key information about how the systems work due to protections for proprietary information by the developer.

Somewhat unique to the health care setting, ambient intelligence-based monitoring technologies are also informed and supported by an entire suite of sensors, monitors, and other technology focused on patients and patient care areas. These include sensors that monitor a patients' vital signs, cameras and other sensors that track a patients' mobility in their room or throughout the facility, technology to monitor sleep levels, and other types of ambient patient monitoring that can be used to identify and monitor interactions with staff. This patient data is then combined with data drawn from surveilling nurses directly and synthesized into a comprehensive and

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cameras" to monitor nurse workload. Chan, P. Y., Tay, A., Chen, D., De Freitas, M., Millet, C., Nguyen-Duc, T., Duke, G., Lyall, J., Nguyen, J. T., McNeil, J., & Hopper, I. (2023). Ambient intelligence-based monitoring of staff and patient activity in the intensive care unit. *Australian critical care : official journal of the Confederation of Australian Critical Care Nurses*, *36*(1), 92–98. https://doi.org/10.1016/j.aucc.2022.08.011

[27] Chan, P. Y., Tay, A., Chen, D., De Freitas, M., Millet, C., Nguyen-Duc, T., Duke, G., Lyall, J., Nguyen, J. T., McNeil, J., & Hopper, I. (2023). Ambient intelligence-based monitoring of staff and patient activity in the intensive care unit. *Australian critical care : official journal of the Confederation of Australian Critical Care Nurses*, *36*(1), 92–98. https://doi.org/10.1016/j.aucc.2022.08.011

[28] "Ambient sensors will produce petabytes of data from hospitals and homes. This requires new machine-learning methods that are capable of modelling rare events and handling big data to be developed (Table 1)" Haque, A., Milstein, A. & Fei-Fei, L. Illuminating the dark spaces of healthcare with ambient intelligence. *Nature* **585**, 193–202 (2020). https://doi.org/10.1038/s41586-020-2669-y

dynamic representation of nearly all RN movements and activities, which can then be used to make clinical and employment decisions.

EHRs provide a useful example of how technology primarily used to monitor patients are also used to manage and surveille nurses. As seen in the case of EHRs, such ambient intelligence-based monitoring technology can have a significant effect on the practice of nursing, including how nurses develop essential nursing skills and provide care for their patients. In fact, ambient intelligence-based monitoring and EHRs may be integrated. It is therefore critical that regulations governing ambient intelligence-based monitoring technology also consider and address the degree to which ambient intelligence-based monitoring technology is used to surveille and manage nurses.

(4) Computer-vision aided cameras

One of the most common AWSM technology seen in health care workplaces is computer-vision aided cameras. Computer-vision aided cameras differ from traditional security cameras in important ways. As Chan, et al., describe, computer-vision aided surveillance cameras utilize "computer vision-guided neural networks to continuously monitor multiple datapoints in video feeds" often using "computer-vision aided infrared cameras" and other types of advanced sensors to monitor employee activity.[29] Such systems automatically track various aspects of human movement, including, for example, "automatic tracking of entry and exit into rooms, specific gestures and activities, and interactions between individuals and objects."[30] Likewise, such systems work together to track nurses, patients and others across wide geographic areas, including between different rooms and work areas, different wards within a hospital, and even between different hospitals.[31]

As with much AWSM technology, the "large volumes of discrete time-series data" gathered by these cameras and imaging sensors are then fed into an algorithm, and combined with data from other AWSM technologies, to create a comprehensive representation of all of a nurse's actions in a given day, which allows for "observability of granular workplace activity." [32] The algorithm then, often without any human interaction, makes determinations based on this data regarding patient treatment, RN staffing levels, and nurse performance. Additionally, "cameras and imaging sensors supply data for learning" can be cross-referenced with data from other sources

[29] Chan, P. Y., Tay, A., Chen, D., De Freitas, M., Millet, C., Nguyen-Duc, T., Duke, G., Lyall, J., Nguyen, J. T., McNeil, J., & Hopper, I. (2023). Ambient intelligence-based monitoring of staff and patient activity in the intensive care unit. *Australian critical care : official journal of the Confederation of Australian Critical Care Nurses*, *36*(1), 92–98. https://doi.org/10.1016/j.aucc.2022.08.011

[30] While it is unclear if the exact ambient intelligence system studied by Chan et al. has been implemented in any US hospitals, our members of confronted a number of highly similar systems in their workplaces.

[31] Gerke, S., Yeung, S., & Cohen, I. G. (2020). Ethical and Legal Aspects of Ambient Intelligence in Hospitals. *JAMA*, *323*(7), 601–602. https://doi.org/10.1001/jama.2019.21699

[32] Womack, D. M., Hribar, M. R., Steege, L. M., Vuckovic, N. H., Eldredge, D. H., & Gorman, P. N. (2020). Registered Nurse Strain Detection Using Ambient Data: An Exploratory Study of Underutilized Operational Data Streams in the Hospital Workplace. *Applied clinical informatics*, *11*(4), 598–605. https://doi.org/10.1055/s-0040-1715829

to further inform how an AWSM system analyzes the data and makes clinical decisions, often without any human intervention or oversight.[33]

However, the nature of the data being collected, how that data is being analyzed, and what assumptions are being made from that data in clinical decision-making is almost entirely hidden from the clinical professionals who are tasked with overseeing that decision-making process and are ultimately responsible for the health and safety of the patient. NNU has seen first-hand how recommendations made by computer-vision aided cameras and other AWSM technology can interfere with safe, therapeutic health care that meets the needs of each individualized patient. Likewise, such comprehensive tracking interferes with nurses' right to engage in protected, concerted activity, invades their privacy, is frequently used to support discipline that is entirely unfounded.

(5) Electronic identification badges

Another common form of AWSM technology in health care workplaces is the use of electronically-enabled identification badges ("ID badge") to track employees' movement throughout a facility. In hospitals and other health care facilities, nurses are typically required to swipe their ID badge upon entering the facility, upon entering specific rooms, such as rooms where medication, food, or supplies are located, upon entering certain operational areas, such as radiology rooms or operating rooms, and sometimes upon entering patient rooms. The identity of the nurse, the time of the swipe, and the location of the swipe are all generally recorded, and fed into an algorithm that, when combined with data drawn from other AWSM technology, can create a dynamic representation of their movement and activities throughout the day.

In addition, many ID Badges also now include radio frequency identification ("RFID"), which allows the system to actively track a nurse's location at all times in a facility as they pass by special RFID enabled sensors, even without swiping, which are distributed throughout the facility. This type of passive tracking allows for even closer surveillance of a employees' activities, and, significantly, can take place at any time without employees' knowledge. Moreover, even if it is not actively tracking when a nurse enters a private space, such as a bathroom or their car, as most do, an RFID system can determine when a nurse is in such locations by process of elimination, since it can actively track their movements over time everywhere else in the facility.

The constant tracking of nurse locations through ID badges creates significant privacy concerns, as nurses may be tracked when they are going to the bathroom or engaged in other private activities, or while they are off duty but still at the facility, such as during breaks or before or after their shift. Constant surveillance also chills protected concerted activity, as it allows management to identify who is talking to whom, and from this, determine union leaders and supporters. Even in workplaces that are already unionized, conversations with shop stewards or

[33] Yeung, S., Downing, N. L., Fei-Fei, L., & Milstein, A. (2018). Bedside Computer Vision - Moving Artificial Intelligence from Driver Assistance to Patient Safety. *The New England journal of medicine*, *378*(14), 1271–1273. https://doi.org/10.1056/NEJMp1716891

union representative may be tracked, and unlawfully used by management in making employment decisions without the nurses or their union ever being aware.

(6) Cell phones and other communication devices

Much like ID Badges, nurses have long been expected to carry communication devices to communicate with other staff while on shift. These devices are increasingly being used to passively surveille nurses by feeding data from these devices into AWSM technology. Our members report that hospitals and other health care facilities are increasingly recording and logging all nurse conversations that take place through employer-provided communication devices. In addition to logging the contents of the conversations themselves, these communications can be digitally encoded, and this data can be used to track nurse activity and performance, particularly when combined with data from other AWSM sources.

As with ID Badges, communication devices can be used to determine a nurse's location at the time a given communication was made, either through using a GPS unit within the device or through triangulating the location through the wifi signal or cell signal used to make the call. Indeed, nearly every smartphone, the primary device used for communication in the workplace by many of our members, is equipped with GPS and a myriad of other technology that allow it to be tracked and located, sometimes even when the device is turned off. Worse still, these devices are sometimes brought home with nurses at the end of their shift, allowing them to potentially be tracked wherever they might bring their cell phone in their free time.

Additionally, communication devices are unique in that, by their nature, they are capable of passively recording ambient sounds. This is particularly true of modern smartphones, which use active listening to allow activation of automated assistants and other accessibility features. This, too, encroaches on nurse privacy and may impede organizing and collective bargaining activities. Indeed, even if these devices are not passively recording employee conversations or tracking employees outside of work hours, the mere potential of such surveillance is enough to effectively chill union activity.

(7) Hand-washing monitoring

Hand-washing monitoring systems are another form of AWSM technology used to surveille nurses in health care workplaces. This typically involves camera systems or sensors that monitor hand washing stations. This video and sensor data is then combined with data from other AWSM technology to determine the identity of the nurse, the instances in which they wash their hands, how long they spend washing their hands, how frequently they wash their hands, and other related information, and make determinations and recommendations regarding whether a nurse is complying with hand-washing requirements.

As with all AWSM technology, such systems are problematic to the extent that it is unclear what data is being recorded and how this data is being used. Hand-washing monitoring systems often appear in bathrooms, breakrooms, and other private spaces, where nurses have a reasonable expectation of privacy. It is unclear if such systems are recording or sensing video or audio data,

or how this data might be combined with other data to create a comprehensive depiction of nurses' activities within these private spaces. Granular surveillance of private activities in bathrooms and break rooms presents clear privacy concerns. It also creates the impression that management is surveilling activity in these locations, which will chill protected concerted activity.

d. Whether the automated surveillance or management was used during a labor organizing drive;

While NNU is not aware of any specific instances in which AWSM technology was used as part of an adverse employment action or to stymie an organizing campaign, the nature of this technology, which allows it to generate a dynamic, real-time account of all nurse activities within a health care facility, means that surveillance of organizing activity inevitably occurs. Employers may be using AWSM technology to take adverse action against nurses for engaging in protected activity based on the information gathered by AWSM technology without explicitly identifying AWSM technology as the basis for the adverse action. The ubiquitous nature of this surveillance inherently creates the impression that nurses are constantly being observed and surveilled by management. Thus, the presence of this technology alone is enough to interfere with nurses' labor rights and chill protected, concerted activity.

By implementing AWSM technology without limits that prevent surveillance of protected concerted activity and without explaining to nurses, and their collective bargaining representative where relevant, how those systems work, health care employers create the impression of near constant surveillance. Depending on the AWSM technology, this may extend to activities outside of work hours and away from work areas, thereby interfering with protected concerted activity. In addition to providing a more detailed account of a nurse's daily activities, AWSM technology has the capability of monitoring nurses at times and in locations where they previously were not subject to surveillance, often times through the devices they are required to carry with them, such a cell phones and ID badges. Without relevant information related to how these systems work and an opportunity to bargain over when and how nurses will be monitored, nurses reasonably may assume that they are subject to surveillance at nearly all times. This impression is more or less confirmed when they are shown detailed, three-dimensional images compiled from multiple different data sources depicting their movements and activities throughout the day. (See Attachment 1, examples of imaging technology capabilities provided to National Nurses United by management.) This impression of constant, pervasive surveillance chills union organizing and protected concerted activity. Nurses may fear that they will be identified as union supporters or troublemakers and subject to retaliation if their employer can identify them as a union supporter or a proponent of a collectively bargaining for change in their workplace.

Federal law has long made clear that employees must be free of the interference and coercion caused by employer surveillance during organizing.[34] Likewise, well-established precedent makes clear that even the impression of surveillance can violate the act.[35] For example, in *Community Counseling & Mentoring Services,* 371 NLRB No. 39, the National Labor Relations Board (NLRB) "held that an employer unlawfully created the impression of surveillance where its president remarked to employees during a staff meeting that he would know if they talked about work issues among themselves because he had 'eyes' and/or 'ears' at the facility."[36] Just as in *Community Counseling & Mentoring Services,* nurses that work as hospitals and other health care facilities that implement AWSM technology know that their employer has "eyes" and "ears" at the facility, and that their employer may know if they talk about work issues among themselves. Thus, as in *Community Counseling & Mentoring Services,* the mere presence of this type of surveillance technology is sufficient to interfere with nurses' protected rights and constitute a violation of the Act. Indeed, NLRB General Counsel Jennifer Abruzzo appeared to acknowledge this earlier this year in announcing a partnership with the Consumer Finance Protection Bureau to address practices of employer surveillance, monitoring, data collection, and employer-driven debt, stating "[e]mployers' practices and use of artificial intelligence tools can chill workers from exercising their labor rights."[37]

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[34] "Since the earliest days of the Act, surveillance of employees by an employer, whether with supervisors, rank-and-file employees, or outsiders, has consistently been held to violate Section 8(a)(1)." Higgins, J. E., Arnault, B.T., Bock, R.A., Gaylord, A.M. (2022). *The developing labor law: The board, the courts, and the National Labor Relations Act* (Eighth Edition.), Chapter 6. Interference With Protected Rights. Bloomberg BNA. (citing *Consolidated Edison Co. v. NLRB*, 305 U.S. 197 (1938). *See, e.g*., *Cook Family Foods*, 311 NLRB 1299 (1993) (guard's use of binoculars to monitor and report vehicles entering and leaving union campaign headquarters parking lot two days prior to election violated §8(a)(1)); *Impact Indus*., 285 NLRB 5, 5 n.2 (1987) ("well-nigh continuous scrutiny of employee handbilling"), *remanded by* 847 F.2d 379 (7th Cir. 1988), *on remand*, 293 NLRB 794 (1989). In *Elder-Beerman Stores Corp*. *v*. *NLRB*, 415 F.2d 1375 (6th Cir. 1969), *cert*. *denied*, 397 U.S. 1009 (1970), instructing a supervisor to engage in surveillance of employees' union activities and by discharging him for failure to comply.

[35] "The law is equally clear that an employer violates Section 8(a)(1) if it creates the impression among employees that it is engaged in surveillance, because by highlighting its "anxiety" concerning union activities it tends to inhibit an employee's future union activities." Higgins, J. E., Arnault, B.T., Bock, R.A., Gaylord, A.M. (2022). *The developing labor law: The board, the courts, and the National Labor Relations Act* (Eighth Edition.), Chapter 6. Interference With Protected Rights. Bloomberg BNA; (citing, *inter alia*, *Sam's Club*, 342 NLRB 620 (2004) (store manager created impression of surveillance when he told employees he heard the employees were circulating a petition where the petition was not circulated openly); *Music Express E. Inc*., 340 NLRB 1063 (2004) (employer created impression of surveillance when it told employees where the next union meeting would be held); *Golden State Foods Corp*., 340 NLRB 382 (2003) (supervisor's comment that "eyes are on you and you need to watch your step" to pro-union employee created impression of surveillance and violated Act).

[36] Higgins, J. E., Arnault, B.T., Bock, R.A., Gaylord, A.M. (2022). *The developing labor law: The board, the courts, and the National Labor Relations Act* (Eighth Edition.), Chapter 6. Interference With Protected Rights. Bloomberg BNA. (citing *Community Counseling & Mentoring Services, LLC*, 371 NLRB No. 39 (2021))

[37] Office of Public Affairs. (2023, March) *National Labor Relations Board and Consumer Financial Protection Bureau Announce New Partnership to Address Employer Surveillance, Monitoring, Data Collection, and Financial Practices in the Workplace.* National Labor Relations Board. https://www.nlrb.gov/news-outreach/news-story/national-labor-relations-board-and-consumer-financial-protection-bureau. Accessed June 28, 2023.

In order to prevent unlawful interference with employee rights, OSTP must support rules that require health care employers to meet their collective bargaining obligations prior to implementing AWSM technology. This includes providing notice to nurses and their union that the employer intends to implement such systems, proving sufficient information regarding the capabilities and uses of these systems to enable understanding and meaningful bargaining, and bargaining over their implementation and effects prior to implementation. OSTP must also ensure that these systems include limits that prevent them from being used to surveille protected, concerted activity, and that these limits are openly communicated so that employees know when they are and are not being surveilled and recorded.

e. <u>Whether and when your employer informed you about their use of automated worker surveillance and management systems;</u>

In addition to the AWSM technology discussed above, it is likely that other types of AWSM technology are actively surveilling and managing our members, but NNU is simply unaware of them. As discussed in NNU's response to questions 1.c. and elsewhere in these comments, health care employers frequently fail to notify NNU or its members when new AWSM technology is being implemented in the workplace, taking the position that these are simply updates of older, "dumber" technology, and within their management rights to implement without notice to the union or an opportunity to bargain. Thus, some of the AWSM technology and systems discussed in this comment were identified by nurses themselves, while on the job. It is therefore quite likely that other AWSM technology has already been implemented that our members have not yet identified.

The NLRB has long held that it is violation of the National Labor Relations Act to make unilateral changes during the course of a collective bargaining relationship concerning matters that are mandatory subject of bargaining, absent waiver by the union or impasse following good faith negotiations.[38] Indeed, this is one of the rare *per se* categories of prohibited conduct, and is therefore a violation of the NLRA even where the employer is acting under a good faith belief

[38] *NLRB v. Katz*, 369 U.S. 736 (1962). *See also,* Higgins, J. E., Arnault, B.T., Bock, R.A., Gaylord, A.M. (2022). *The developing labor law: The board, the courts, and the National Labor Relations Act* (Eighth Edition.), Chapter 13. Duty to Bargain. Bloomberg BNA; *Litton Fin. Printing Div. v. NLRB*, 501 U.S. 190, 198, (1991) ("[A]n employer commits an unfair labor practice if, without bargaining to impasse, it effects a unilateral change of an existing term or condition of employment."). *See generally Beverly Health & Rehab. Servs., Inc*., 317 F.3d 316 (D.C. Cir. 2003) (unilaterally replacing HMO coverage); *BP Amoco Corp. v. NLRB*, 217 F.3d 869, (D.C. Cir. 2000) (modifications to health plan). *See also Vincent Indus. Plastics v. NLRB*, 209 F.3d 727 (D.C. Cir. 2000) (changes in attendance policy, working hours, work duties, and time-keeping method); *Loral Defense Sys.-Akron v. NLRB*, 200 F.3d 436 (6th Cir. 1999) (change in health care plans); *Pavilions of Forrestal*, 353 NLRB 540 (2008) (unilateral implementation of health insurance plan); *First Student, Inc*., 353 NLRB 512 (2008) (unilateral enforcement of previously unenforced "driving under the influence" policy); Union Tribune Publishing Co., 353 NLRB 11 (2008) (unilateral change in drug and alcohol testing policy).

that it has no duty to bargain.[39] As Judge Harry Edwards explained in *NLRB v. McClatchy Newspapers*:

> A unilateral change not only violates the plain requirement that the parties bargain over "wages, hours, and other terms and conditions," but also injures the process of collective bargaining itself. "Such unilateral action minimizes the influence of organized bargaining. It interferes with the right of self-organization by emphasizing to the employees that there is no necessity for a collective bargaining agent."[40]

It is equally clear that the implementation of ASWM technology constitutes a mandatory subject of bargaining. In *Anheuser-Busch, Inc.*, 342 N.L.R.B. 560, the NLRB held that an employer violated the act by unilaterally implementing surveillance cameras without giving notice or bargaining with the union because the cameras were trained at work and break areas.[41] In so doing, the Board concluded that "the use of hidden surveillance cameras in the workplace is a mandatory subject of collective bargaining."[42] Just as the introduction of mere surveillance cameras constitutes a mandatory subject of bargaining because they *can* record employees in *some* work area, so too does AWSM technology, which creates a comprehensive, dynamic depiction of employees and their actions throughout the day. Thus, by failing to provide notice of the implementation of this technology or an opportunity to bargain, health care employers are clearly engaging in *per ser* violations of the NLRA.

Moreover, because of this lack of notice to nurses or their representatives, NNU is likely unaware of the full extent of AWSM technology being used in our members' workplaces. AWSM technology is myriad and often difficult to recognize. Researchers studying AWSM technology in hospitals describe a complex and diverse variety of advanced surveillance equipment that has been deployed in health care settings and can be used to monitor nurse activity throughout their shift. Many if not all of these would be completely invisible to a nurse while performing their duties unless they were informed about the existence of such technology. For example, researchers describe cameras equipped with "inertial sensors,"[43] "radio frequency (RF)-based non-contact human movement detectors and geolocators,"[44] "passive infrared

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[39] Higgins, J. E., Arnault, B.T., Bock, R.A., Gaylord, A.M. (2022). *The developing labor law: The board, the courts, and the National Labor Relations Act* (Eighth Edition.), Chapter 13. Duty To Bargain. Bloomberg BNA.

[40] *NLRB v. McClatchy Newspapers,* 964 F.2d 1153, 1162 (D.C. Cir. 1992) (quoting *May Dep't Stores Co. v. NLRB*, 326 U.S. 376, 385 (1945)). The NLRB expressed similar views in *Page Litho, Inc*., 311 NLRB 881 (1993); *See also* Higgins, J. E., Arnault, B.T., Bock, R.A., Gaylord, A.M. (2022). *The developing labor law: The board, the courts, and the National Labor Relations Act* (Eighth Edition.), Chapter 13. Duty to Bargain. Bloomberg BNA.

[41] *Anheuser-Busch, Inc.*, 342 N.L.R.B. 560, 560 (2004).

[42] *Anheuser-Busch, Inc.*, 342 N.L.R.B. 560, 563 (2004).

[43] Azevedo-Coste, C.; Pissard-Gibollet, R.; Toupet, G.; Fleury, É.; Lucet, J.C.; Birgand, G. Tracking Clinical Staff Behaviors in an Operating Room. *Sensors* **2019**, *19*, 2287. [Google Scholar]

[44] Adib, F.; Kabelac, Z.; Katabi, D. Multi-person localization via RF body reflections. In Proceedings of the 12th USENIX Symposium on Networked Systems Design and Implementation (NSDI 15), Oakland, CA, USA, 4–6 May 2015; pp. 279–292. [Google Scholar]

sensors,"[45] "Raspberry Pi Infrared,"[46] geolocation enable through Bluetooth technology,[47] "temperature-humidity sensor[s],"[48] light sensors,[49] "thermal imagers,"[50] "RGB camera[s],"[51] "Bluetooth beacons and inertial measurement unit (IMU) sensors,"[52] geolocation using "the range-only extended Kalman filter simultaneous localization and mapping technique,"[53] "IMU sensor[s],"[54] sound identification through the "percussive source separation technique,"[55] the use of Doppler radar technology,[56] multichannel recording the universal serial bus (USB) microphones,[57] and others technology. Nearly all of the above would be completely invisible once integrated into a health care facility.

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[45] Suresha PB, Hegde C, Jiang Z, Clifford GD. An Edge Computing and Ambient Data Capture System for Clinical and Home Environments. *Sensors*. 2022; 22(7):2511. https://doi.org/10.3390/s22072511

[46] Suresha PB, Hegde C, Jiang Z, Clifford GD. An Edge Computing and Ambient Data Capture System for Clinical and Home Environments. *Sensors*. 2022; 22(7):2511. https://doi.org/10.3390/s22072511

[47] Sato, A.; Nakajima, M.; Kohtake, N. Rapid BLE beacon localization with range-only EKF-SLAM using beacon interval constraint. In Proceedings of the 2019 International Conference on Indoor Positioning and Indoor Navigation (IPIN), Pisa, Italy, 30 September–3 October 2019; pp. 1–8. https://ieeexplore.ieee.org/abstract/document/8911778

[48] Rienzo, M.D.; Mukkamala, R. Wearable and Nearable Biosensors and Systems for Healthcare. *Sensors* **2021**, *21*, 1291. https://www.mdpi.com/1424-8220/21/4/1291/htm

[49] Suresha PB, Hegde C, Jiang Z, Clifford GD. An Edge Computing and Ambient Data Capture System for Clinical and Home Environments. *Sensors*. 2022; 22(7):2511. https://doi.org/10.3390/s22072511

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[51] Zerrouki, N.; Harrou, F.; Sun, Y.; Houacine, A. Vision-based human action classification using adaptive boosting algorithm. *IEEE Sens. J.* **2018**, *18*, 5115–5121. https://ieeexplore.ieee.org/abstract/document/8355489/; Zhao, Y.; Tu, P.; Chang, M.C. Occupancy Sensing and Activity Recognition with Cameras and Wireless Sensors. In Proceedings of the 2nd Workshop on Data Acquisition To Analysis, New York, USA, 10 November 2019; pp. 1–6. https://dl.acm.org/doi/abs/10.1145/3359427.3361911

[52] Martín, A.J.; Gordo, I.M.; Domínguez, J.J.G.; Torres-Sospedra, J.; Plaza, S.L.; Gómez, D.G. Affinity propagation clustering for older adults daily routine estimation. In Proceedings of the 2021 International Conference on Indoor Positioning and Indoor Navigation (IPIN), Lloret de Mar, Spain, 29 November–2 December 2021; pp. 1–7. https://ieeexplore.ieee.org/abstract/document/9662579

[53] Sato, A.; Nakajima, M.; Kohtake, N. Rapid BLE beacon localization with range-only EKF-SLAM using beacon interval constraint. In Proceedings of the 2019 International Conference on Indoor Positioning and Indoor Navigation (IPIN), Pisa, Italy, 30 September–3 October 2019; pp. 1–8. https://ieeexplore.ieee.org/abstract/document/8911778

[54] Martín, A.J.; Gordo, I.M.; Domínguez, J.J.G.; Torres-Sospedra, J.; Plaza, S.L.; Gómez, D.G. Affinity propagation clustering for older adults daily routine estimation. In Proceedings of the 2021 International Conference on Indoor Positioning and Indoor Navigation (IPIN), Lloret de Mar, Spain, 29 November–2 December 2021; pp. 1–7. https://ieeexplore.ieee.org/abstract/document/9662579

[55] Cantarini, M.; Brocanelli, A.; Gabrielli, L.; Squartini, S. Acoustic features for deep learning-based models for emergency siren detection: An evaluation study. In Proceedings of the 2021 12th International Symposium on Image and Signal Processing and Analysis (ISPA), Zagreb, Croatia, 13–15 September 2021; pp. 47–53. https://ieeexplore.ieee.org/abstract/document/9552140

[56] Liang, Q.; Xu, L.; Bao, N.; Qi, L.; Shi, J.; Yang, Y.; Yao, Y. Research on Non-Contact Monitoring System for Human Physiological Signal and Body Movement. *Biosensors* **2019**, *9*, 58. https://www.mdpi.com/2079-6374/9/2/58

[57] Suresha PB, Hegde C, Jiang Z, Clifford GD. An Edge Computing and Ambient Data Capture System for Clinical and Home Environments. *Sensors*. 2022; 22(7):2511. https://doi.org/10.3390/s22072511

Finally, and perhaps most significantly, the argument that this is merely an update of older technology that does the same thing is simply spurious. AWSM technology is unique from older forms of surveillance in that it creates an ecosystem of various data sources that are combined through black-box algorithmic processing to produce a dynamic depiction of a nurse's activities throughout the day that would be impossible from any one sensor or camera. Each individual system is thus considerably greater, and more insidious, than any one of its individual parts. AWSM technologies must therefore be thought of collectively as a single, comprehensive electronic management system, of which any one of the above technologies could form a small part.

f. <u>Whether you (or, if relevant, your representative, like a labor union) have any input or control over how, where, and over what automated surveillance occurs;</u>

NNU and the nurses it represents often has little or no input over how, where, and over what surveillance occurs. Health care employers often fail to provide adequate notice or an opportunity to bargain prior to implementing AWSM technology, despite the fact that these system often have a drastic impact on nurses' terms and conditions of employment.[58] Rather, health care employers typically take the position that such matters fall within their "management rights," even if there is no clear contract language on this point in the relevant Collective Bargaining Agreement or Memorandum of Understanding. This prevents nurses and their unions from knowing precisely which AWSM technologies are operating in their workplace, how they work, what they are monitoring, and how they are used in clinical and employment decisions until after the are implemented.

Employers generally assert that these powerful AWSM technologies are just updates of older technology that has long been in the workplace, such as treating computer-vision aided cameras the same as traditional security cameras, or EHRs as electronic versions of old paper medical records. However, these technologies are much more than modern iterations of well understood tools. Rather, AWSM technologies pull vast and diverse data from an entire ecosystem of monitoring equipment, such as those described above, and process this information through opaque algorithms that then make clinical and employment decisions.

For instance, around 2017, a large health system located in California did provide notice to NNU that it intended to implement a patient acuity and RN workload program known as Epic Acuity. While it refused to bargain over implementation, claiming that this was within its management rights, it did agree to engage in bargaining over the effects of the new technology. This system replaced the prior system. Like many modern systems, Epic Acuity is a points-based acuity

[58] This includes things such as staffing levels, privacy, and discipline resulting from time spent on various nursing activities such as rounding, charting, hand-washing, performing various procedures, treatments and interventions, and performing other duties like helping patients bathe or use the restroom.

system that uses an algorithm to review information entered into the EHR by doctors and nurses and based on this information, assigns an acuity score, which was used to determine the number of RNs that would be required in a given department on a given shift.

Almost immediately, this system began to have serious problems. Like other patient acuity and RN workload software, Epic Acuity assumed that RNs and other clinicians had the capacity to update EHRs in real time. Thus, Epic Acuity made acuity and RN workload decisions based on this assumption. However, in reality, overworked RNs are often not able to chart until the last hour of their shift, when the next shift overlaps with theirs and there are extra hands to take on patient-care duties, allowing time to chart. This, however, leads the system to assume that fewer RNs are required on the subsequent shift, which, in turn, leads to RNs on the subsequent shift being overutilized and not having time to chart, causing a vicious cycle.

Likewise, the acuity scores provided by Epic Acuity called for fewer staff than the prior system in the same exact circumstances, leading to fewer RNs available to provide care for sicker, more numerous patients. While Epic Acuity is a "black box" system, and thus RNs are unaware how it makes acuity determinations, NNU was able to secure, through collective bargaining, two worker committees to oversee the transition and implementation of this technology. NNU was also able to secure a one-month transitionary period, in which both the old technology and the new technology, Epic Acuity, operated simultaneously. By comparing utilization rates and patient care and direct care hours produced by both systems, these committees were able to determine that in at least two locations, on a daily basis, Epic Acuity was providing fewer RN hours than the previous system for the same patient care unit. Thus, by implementing Epic Acuity, this health system was effectively forcing RNs to care for more patients with less support. While the health system claimed to make changes to the system after NNU reported this problem, NNU was unable to confirm this, as the health system will not provide information regarding what specifically was changed in the algorithm. Likewise, these changes can take months, if not years, to implement, leaving nurses in the lurch while health care management struggles with refining and understanding the technology it has already implemented.

Thus, to the extent the NNU or its members have had any input or control over how, where, and over what automated surveillance occurs, this has been the result of aggressive collective bargaining by the union, and the diligent work of its members in worker committees, comparing output data and drawing statistical conclusions. NNU and its members are not provided the same information as the employer about how this system works or how it will be implemented. Instead, they are typically presented with the introduction of AWSM technologies as a *fait accompli* and may be given an opportunity to bargain over the effects of its implementation. This is simply insufficient to fulfill the legal obligation of health care employers, or to allow NNU and other unions to protect their members against the abuse of these systems.

In sum, in regulating AWSM technologies, OSTP must ensure that employers provide notice and a meaningful opportunity to bargain over implementation prior to implementation. This technology is simply too powerful and disruptive to be treated as an update of older non-networked technology, nor does this accurately capture the major effect that implementing this

technology can have on nurses' terms and conditions of employment, as demonstrated above. Anything short of full transparency and bargaining engagement will inherently create the impression among nurses that they are subject to near constant surveillance, and that their words and actions are always being recorded by hidden, advanced monitoring devices, and that this information is being compiled and analyzed by algorithms that then produce a detailed and dynamic representation of everything they do throughout the workday. OSTP must therefore champion regulations that require full and complete transparency prior to the introduction of these technologies, and that ensure health care employers meet and respect their bargain obligations.

g. Whether you know how the data generated by surveillance is used for management or other purposes (including purposes related to employment or labor market competition);

For RNs, questions 1.g., 1.i., and 1.k. are interrelated. NNU's response to question 1.g. will focus on how health care employers use surveillance data to facilitate workforce restructuring, including deskilling professional nursing and eroding registered nurse scope of practice.

Health care employers use the data generated by surveillance in implementing AWSM technologies and systems, particularly EHRs and other health information technology (HIT), for workforce management as well as to restructure health care delivery, including the workforce. This includes attempts to routinize and deskill the profession of nursing with the goal of replacing licensed registered nurses with lower cost staff, including unlicensed staff, and unpaid laypersons. The health care industry's aims include replacing RNs at the bedside and instead having them lead patient care teams, sometimes remotely, with lower cost workers doing the work RNs have done previously.

(1) AWSM Systems Lead to the Deskilling of Registered Nurses and Erodes Their Scope of Practice.

Employers are using AWSM technology to deskill professional nursing and erode RN scope of practice. In so doing, they aim to increase their net income by reducing labor costs and capitalizing on the industry-created RN staffing crisis[59] to justify shifting important patient care responsibilities to unlicensed and lesser-licensed staff as well family caregivers and patients themselves. This happens in large part through the routinization of patient care and deskilling of RNs coupled with a shift to telehealth and alternative care settings. Health care employers

[59] NNU has several recent reports on the industry-created staffing crisis and the failure to provide a safe and health work environment. See Protecting Our Front Line: Ending the Shortage of Good Nursing Jobs and the Industry-created Unsafe Staffing Crisis available at: https://www.nationalnursesunited.org/protecting-our-front-line-report; Workplace Violence and Covid-19 in Health Care: How the Hospital Industry Created an Occupational Syndemic available at: https://www.nationalnursesunited.org/sites/default/files/nnu/documents/1121_WPV_HS_Survey_Report_FINAL.pdf ; and Deadly Shame: Redressing the Devaluation of Registered Nurse Labor Through Pandemic Equity available at: https://www.nationalnursesunited.org/campaign/deadly-shame-report.

frequently mandate as "best practices" those work processes that reduce labor costs and improve their bottom line.

Routinization leads to the deskilling of work processes and health professionals. Skill is the ability, drawn from education and experience, to do something expertly. It can also be defined as *the effective exercise of professional judgment in non-routine situations.* Following prescribed rules, as a machine would, enables an employee to perform tasks, but it does not make the employee skilled. They can do their job as long as there are no surprises. But when something unexpected happens, the rules break down, yet caring for patients means facing the unexpected every day. Skilled health professionals such as RNs can cope with the unexpected. They know because of their education and experience and are able to rely on their own judgment. The exercise of judgment is the essence of skill.

Health care employers utilize AWSM technologies and algorithmic recommendations regarding staffing, workload, and patient care to routinize work processes, and, to the greatest extent possible, deskill the complex RN profession by reducing it to a series of tasks prompted by a computer screen and entered into the EHR. The health care industry has long worked to fragment complex, holistic RN nursing care into discrete tasks, which can then be routinized with variations eliminated. While this is often touted by employers as a way to raise quality standards, it is typically merely a way to speed up and intensify work. Given that patients are unique and complex, variation of patient care to match the needs, values, and preferences of particular patients is not a defect; to the contrary, it is essential. It is why RNs are valued for their education, experience, and professional judgment.

RNs typically are unable to review recommendations made by AWSM technology. RNs are pressured to work faster and rely on the output of opaque technologies but are also ethically obligated to ensure that the nursing care they provide is appropriate. AWSM technologies, particularly when deployed in health care settings, frequently make determinations and recommendations that are incorrect or potentially harmful. If RNs do not have the information necessary to catch these mistakes, there is no way to prevent these errors from harming patients.

Moreover, RNs typically do not have control over the number of patients assigned to them. In fact, California is the only state that places a numerical limit on the number of patients that can be assigned to an RN providing inpatient hospital care. The limits are based on the type of patient care unit they are working in and can be reduced, but not increased, based on the acuity of the patients assigned. Thus, RNs do not control if they have the time and resources to care for patients. Increasingly, AWSM technology-based acuity systems make staffing determinations.

(2) Algorithmic management systems prevent nurses from exercising and maintaining nursing judgment.

As with RN skill, employers seek to use AWSM technology to minimize the role of RNs' professional judgment. RNs' professional judgment reflect their education, expertise, and experience in clinical decision making. Routinizing decision-making processes related to nursing

care and reducing those processes to entering data into an EHR in response to computer prompts limits RNs ability to exercise and maintain the efficacy of their professional judgment. To the degree this happens, nurses may lose their ability to recognize and correct errors made by AWSM technology or other providers, problematically making them replaceable with non-RNs, as described above.

Yet the development and use of hands-on nursing skill and judgment when assessing and providing care for a patient is an essential and necessary element for the provision of high-quality nursing care. For instance, sleepiness and dilated pupils can indicate that a patient a suffered a hemorrhagic stroke.[60] Likewise, foul-smelling breath can indicate an abdominal obstruction, whereas breath that smells like Juicy Fruit gum can indicate a patient is suffering from diabetic ketoacidosis. Typically, these observations are made in passing in the course of providing care for a patient, including during activities that are typically not diagnostic in nature, such as helping a patient ambulate or use the restroom. Overreliance on sensors and algorithmic recommendations within facilities and use of models that use ambient intelligence-based patient monitoring to require nurses to provide care remotely, discussed further below, prevent nurses from having the opportunity to make these hands-on observations that are essential for providing quality nursing care.

Moreover, the AWSM systems that facilitate this "remote care" often themselves prevent nurses from using their judgment, even when they are aware that the system is making an error. For instance, one member described an instance in which an AWSM system at the UC Davis Medical Center reported that her patient was septic, even though she knew from 15 years of experience and her own assessment that this was not the case.[61] While the algorithm did not provide the rational for its decision, as is typical with AI-supported AWSM systems, it likely failed to take into account that the patient's elevated white blood cell count, normally correlated with a septic infection, could have resulted from the fact that the patient also suffered from Leukemia.[62] While the UC Davis Medical Center allows nurses to override the assessment of the system, this can only be done with doctor approval, and can result in discipline for the nurse if their assessment is incorrect. The RN was therefore placed in the difficult situation of either risking her job or performing a treatment protocol that she believed was unnecessary and could put the patient at an increased risk of harm.

NNU survey findings reveal deep problems with the use of algorithms in health care. (See Attachment 2 for a summary of these findings.) NNU surveyed registered nurses about their

[60] Bannon, L., (2023, June 15) When AI Overrules the Nurses Caring for You: Artificial Intelligence Raises Difficult Questions About Who Makes the Call in A Health Crisis: Man or Machine? *The Wall Street Journal*, https://www.wsj.com/articles/ai-medical-diagnosis-nurses-f881b0fe. Accessed June 29, 2023.

[61] Bannon, L., (2023, June 15) When AI Overrules the Nurses Caring for You: Artificial Intelligence Raises Difficult Questions About Who Makes the Call in A Health Crisis: Man or Machine? *The Wall Street Journal*, https://www.wsj.com/articles/ai-medical-diagnosis-nurses-f881b0fe. Accessed June 29, 2023.

[62] Bannon, L., (2023, June 15) When AI Overrules the Nurses Caring for You: Artificial Intelligence Raises Difficult Questions About Who Makes the Call in A Health Crisis: Man or Machine? *The Wall Street Journal*, https://www.wsj.com/articles/ai-medical-diagnosis-nurses-f881b0fe. Accessed June 29, 2023.

experiences with algorithms in 2021. Out of 795 RNs who responded to the relevant questions, 172 respondents (21.6%) said they were not allowed to "override clinical practice guidelines, clinical pathways, or electronic or computer-based tools that [they] believe are not in the best interest of the patient", 200 respondents (25.2%) could only do so with the approval of a doctor or supervisor, and 204 respondents (25.7%) did not even know if they were allowed to override the recommendations. Only 117 respondents (14.7%) were allowed to override algorithms based on their own judgment. The fact that a majority of registered nurses who responded cannot override or do not know if they can override algorithms is concerning because 246 (31.0%) said they had been "been prompted by a clinical practice guideline, clinical pathway, or electronic or computer-based tool to make choices about patient care, patient care staffing, or other clinical issues that [they] believed were not in the best interest of the patient based on [their] clinical judgment and scope of practice."

As AWSM systems become increasingly pervasive, RNs professional judgment may atrophy, and RNs may lose the ability to exercise their professional in situations where AWSM technology cannot do so. Assessing patients and developing a nursing care plan is a skill, grounded in education and professional judgment, which must be maintained and exercised, or it may be lost. Indeed, it is for this reason that clinical experience is a key requirement to become licensed as an RN. Removing opportunities to exercise professional judgment and maintain these skills will leave RNs and patients with limited recourse in circumstances where the system is ineffective.

In sum, health care employers seek to minimize nursing judgment from the provision of health care and use AWSM and HIT technologies to shift patient care to others in order to reduce labor costs. However, the law requires that certain health care duties legally be performed by a licensed RN precisely because the license indicates that they have sufficient knowledge, experience, and judgment to safely manage those responsibilities. RNs are left with the legal and ethical responsibility to care and advocate for their patients but without the time, autonomy, or information they need to do so safely. Health care employers are actively lobbying to change statutes and regulations to enable this shift. They have been utilizing the industry-created RN staffing crisis to justify these changes, dramatically degrading the quality of care provided at US health care facilities.

OSTP must ensure that all federal regulators understand that AWSM technology cannot safely or ethically replace the exercise of judgment by a professional. Policies adopted to regulate AWSM technology at health care facilities must prevent the routinization of core nursing tasks that results in the deskilling and of nurses and the erosion of nursing judgment.

h. <u>Whether you (or, if relevant, your representative, like a labor union) have any visibility into the data collected on you or how it is used, including whether data on you collected by surveillance can be shared with other companies, trade groups, or third parties;</u>

As discussed in NNU's response to questions 1.c., 1.e., and 1.f., health care employers often fail to notify NNU or its members when new AWSM technology is being implemented in the workplace, taking the position that these are simply updates of older, "dumber" technology, and within their management rights to implement without notice to the union or an opportunity to bargain. Likewise, management rarely provides information about what new data is being collected and how this data is being used. To the extent the NNU or its members have had any knowledge, input or control over how, where, and over what automated surveillance occurs, this has been the result of aggressive collective bargaining by the union, and the diligent work of its members in worker committees, comparing output data and drawing statistical conclusions. NNU and its members are not provided the same information as the employer about how this system works or how it will be implemented. Typically, they are merely presented with the introduction of AWSM technologies as a *fait accompli* and may be given an opportunity to bargain over the effects of its implementation.

While nurses have some sense of how this data is being used when they must interact with these systems as part of providing care, such as knowing that EHR information and metadata is being used to determine acuity levels and staffing requirements, they have no insight into whether the data is also being shared with other companies, trade groups, or third parties. The risk that such data sharing may be taking place only serves to amplify the clinical, collective bargaining, nursing practice and privacy concerns highlighted in this RFI response. Also, somewhat unique to the health care setting, the sharing of data might implicate the Health Insurance Privacy and Portability Act, which has strict rules about maintaining the privacy of patient health information.

Furthermore, as discussed throughout this comment, RNs and other clinicians typically have no way of knowing how the data being collected is being used to make and inform clinical decisions, such as acuity determinations and nursing care plans. Indeed, no one, including the designers of the AWSM systems themselves, may know precisely how this information is being used if it is processed through a machine-learning algorithm or similar AI technology. This prevents nurses from double checking these systems to ensure they have reached the correct conclusion. This also prevents RNs maintaining and exercising the nursing skills and professional judgment to make these determinations without relying on AWSM technology. The lack of transparency about how AWSM data is being used thus has important clinical implications for the practice of nursing as well. OSTP must therefore demand complete transparency regarding the operation of these systems before they are implemented in health care workplaces.

i. <u>How the use of automated surveillance and management systems has changed how you do your job or how your employer treated you at your job;</u>

The use of AWSM systems has greatly impacted how RNs do their jobs. Health care employers use AWSM systems to undermine use of skill and judgment by registered nurses, as discussed in

section g. and throughout this response, and to support new models of health care, like so-called hospital-at-home programs and gig nurse staffing platforms, which put patients in danger and degrade RNs' terms and conditions of employment. Employers aims include replacing RNs at the bedside and instead having them lead patient care teams, often remotely, and/or making periodic virtual visits of patients.

(1) AWSM systems are the basis for new, problematic health care delivery models that put RNs and patients at risk in order to maximize corporate profits, such as hospital-at-home models, telehealth, and gig-nurse staffing models.

AWSM technology supports and facilitates the proliferation of dangerous new care models such as hospital-at-home programs for acute "in-patient" care, telehealth, and gig-nursing. Hospital-at-home uses patient monitoring and communications technology to facilitate leaving patients in need of acute hospital care in their homes with limited visits from health care professionals. The proliferation of telehealth models where nurses counsel patients remotely enable nurse-patient interactions to be tracked closely, facilitates nurses being penalized based on tracking metrics, and undermines safe patient care. Gig nurse staffing platforms manage RN staffing by algorithm. They take advantage of the ability of technology platforms to plug nurses into individual shifts to move away from care models where experienced, consistent, nursing care is provided in environments familiar to them, supporting their ability to provide safe patient care. In contrast, with gig staffing, nurses with limited orientation or unit-specific expertise are expected to care for patients in unfamiliar facilities.

These schemes seek to dramatically lower labor costs by replacing hands-on skilled hospital care with technology, gadgets, contract workers, and free labor by family caregivers and patients. The shift to acute hospital care in the home and telehealth also improves profits for health care employers by eliminating their overhead expenses related to building, running, and maintaining a hospital. .

However, as described below, these programs are dangerous for patients and undermine working conditions and employment protections for nurses.

(2) AWSM technology and ambient intelligence-based monitoring systems support hospital-at-home models, degrading the ability of RNs to provide safe patient care, increasing the acuity of patients in hospitals, and threatening to increase hospital closures and lead to the loss of jobs.

The emergence of AWSM technology has enabled the alarming growth of hospital-at-home programs for acute "in-patient" care. Instead of admitting patients in need of acute inpatient care, who would otherwise be traditionally hospitalized, they are sent home with patient monitoring technology, including visual, audio, and biometric monitoring devices, to be "admitted" for "hospital care" at their home. The patient is told a team of medical professionals will monitor

them remotely from a medical hub. These hubs could be many miles away, or even in a different state, from the patient. Staff is sent out to check on the patient as the need arises.

(a) AWSM technology combined with pandemic-era crisis standards of care has led to increased use of hospital-at-home models.

NNU's response in this section largely focuses on the CMS Acute Hospital Care at Home (AHCaH) program. (For additional information, see Attachment 3, National Nurses United's September 2022 Report "Medicare's Hospital at Home Program is Dangerous for Patients.")

The growth and development of AWSM technology enabled initial acute hospital care at home programs funded by both public and private insurers and health maintenance organizations (HMOs). However, the rapid growth in hospital-at-home programs was supported by waivers to certain conditions of participation in the Medicare and Medicaid programs implemented in the early months of the Covid-19 pandemic. Specifically, the U.S. Centers for Medicare and Medicaid Services (CMS), through AHCaH program, waived certain CMS Hospital Conditions of Participation, including a key provision which requires "nursing services to be provided on premises 24 hours a day, seven days a week and the immediate availability of a registered nurse for care of any patient."[63] These waivers have been extended by statute through the end of 2024. While programs providing acute, inpatient-level hospital care in the home existed previously, the CMS waivers enabled the rapid growth of these models. As of a June 16, 2023, update, CMS lists 283 hospitals run by 125 systems in 37 states that have current CMS waivers to run these AHCaH programs.[64]

In an emergency, patients in a fully operational hospital can be treated immediately under CMS's 24-hour nursing services requirement for acute care facilities. But for patients being treated at home, CMS only requires an emergency response to a patient's home within 30 minutes. From there, a patient may need to be transported to a hospital, a process that can further delay lifesaving care. Moreover, after a doctor performs an initial medical history and physical exam for an AHCaH patient, CMS does not require any additional in-person registered nurse or doctor visits with the patient. Instead, the AHCaH program requires just two in-person patient visits a day by an RN or community paramedic. Thus, through this program, hospitals are able to receive full reimbursement at inpatient rates for "treating" patients in their homes, despite not providing nearly the same level of nursing coverage or care.

As a result, the AHCaH program allows hospitals to drastically reduce labor and overhead costs by pushing patients out of the hospital, while still collecting the same reimbursement rates from CMS. This, in turn, increases profits for hospital employers. At the same time however, this

[63] U.S. Centers for Medicare & Medicaid Services. (Undated). *Acute Hospital Care at Home Individual Waiver Only (not a blanket waiver)*. U.S. Department of Health and Human Services https://qualitynet.cms.gov/acutehospital-care-at-home. (Accessed June 28, 2023)

[64] U.S. Centers for Medicare & Medicaid Services. (2023, June). *Approved Facilities/Systems for Acute Hospital Care at Home*. U.S. Department of Health and Human Services. https://qualitynet.cms.gov/acute-hospital-care-at-home/resources. (Accessed June 28, 2023)

greatly decreases the quality of care received by these patients, as they no longer have access to the equipment, medical resources, and regular in-person evaluations by licensed RNs. Instead, many of the duties previous performed by RNs are shifted to untrained and inexperienced relatives or partners and are unqualified to identify and respond to the myriad of health emergencies that may arise when treating a patient in need of acute care. In some cases, patients may be in their homes alone.

(b) Hospital-at-home models impact workers and endanger patients by increasing the acuity of patients in hospitals.

Treating patients needing acute inpatient-level care in their home degrades the quality of care received by patients from what typically received at hospitals. The AHCaH program hurts nurses by shifting work previously performed by them in hospitals to untrained volunteers. It also allows hospitals to move patients with less severe conditions outside of the hospital, increasing the average acuity of patients in the hospital and the workloads of nurses working within the hospital.

The AHCaH program and similar programs do not and cannot provide patients with the ongoing, in-person assessment and treatment by RNs and other health care professionals that acute care requires. Although the bulk of patient care in hospitals is provided by registered nurses, hospitals employ a wide variety of health care professionals who are readily available 24 hours a day, including doctors, respiratory therapists, and pharmacists. Within the inpatient hospital setting, RNs and other health care professionals are able to draw on the collective experience of nursing, medical, pharmaceutical, and other staff.[65] This knowledge base is lost when a patient's care is shifted to the home and a patient's family may be required to provide this care with limited outside support. Some hospitals currently participating in the AHCaH program do not require another person to be present in the home. Instead, they may leave the patient alone for long stretches of time or provide intermittent support from home health aides to supplement the twice daily visits from an RN or community paramedic.

RNs are particularly concerned about what will happen to AHCaH patients when they code. A patient's condition can go from bad to life threatening in just minutes. However, the AHCaH program only requires an emergency response within 30 minutes rather than requiring that an emergency response be available immediately. Without immediate attention from health care professionals and access to necessary treatment resources, patient morbidity and mortality rates increase.[66] In contrast to the AHCaH program, most acute care hospitals have trained and certified staff readily available to respond to emergencies. These emergency response teams most often consist of an RN and a respiratory therapist, as well as either a physician, an

[65] Dzikowicz, D. J., Schmitt, L. A., Gastle, K., Skermont, A., & Carey, M. G. (2020). Comparing an All-RN Unit to a Mixed-Skill Unit at a Hospital. *The Journal of nursing administration*, *50*(12), e14–e22. https://doi.org/10.1097/NNA.0000000000000954

[66] Recio-Saucedo A et al. 2018. What Impact Does Nursing Care Left Undone Have on Patient Outcomes? Review of the literature. Journal of Clinical Nursing. 27(11-12): 2248- 2259. doi:10.1111/jocn.14058.

advanced practice registered nurse, or a physician assistant.[67] It is the registered nurse, based on the regular monitoring and assessing of patient status, who most often initiates the rapid response emergency code. Delaying emergency response by 15 minutes or more is shown to increase the likelihood of intensive care unit admission or death in a variety of conditions.[68]

Our members have already seen the serious consequences of trying to replace acute, inpatient-level hospital care performed by experienced RNs and other health care professionals with home care performed largely by the patient and their family members. One member reported seeing Covid patients who were sent home with an iPad and other monitoring equipment return to the emergency department with oxygen levels "so low their lips were blue, and they needed immediate lifesaving interventions," and another patient was returned to the hospital by ambulance "with a dangerously high fever resulting from a serious infection and was nearly septic."[69]

In sum, acute, inpatient-level care at home, without the resources available at a hospital, including24-hour nursing care, is simply inferior to traditional care in a hospital at preventing negative patient outcomes. RNs see it as depriving patients of professional, 24/7 nursing care, with the most vulnerable, least resourced, and often Black, Indigenous, Brown, and other patients of color and their households suffering the worst outcomes and perhaps death. Nurses at the bedside in hospitals are put at risk as hospitals use the reduction in patients to justify reducing RN staffing, while simultaneously increasing average patient acuity.

(c) Acute-hospital-care-at-home programs shift nursing care to family members, burdening unpaid caregivers, taking work from skilled professionals, and putting patients in danger.

With no in-person professional nursing staff available 24/7 in patient homes, the burden of care inevitably falls upon members of the patient's immediate household -- typically family members with no medical education, knowledge, or training. Caring for a patient at home puts enormous strain on the entire household, especially the caregivers who are very often the women, who must balance jobs, childcare, and other responsibilities with the enormous burden of providing acute medical care.

In addition, the idea that family members can provide hospital-level care is absurd and unsafe. Registered nurses often serve as the last line of defense for patients against medical errors, especially in the area of medication administration. RNs receive significant training on passing,

[67] Mitchell OJL, Motschwiller CW, Horowitz JM, Friedman OA, Nichol G, Evans LE, Mukherjee V. Rapid Response and Cardiac Arrest Teams: A Descriptive Analysis of 103 American Hospitals. Crit Care Explor. 2019 Aug 7;1(8):e0031. doi: 10.1097/CCE.0000000000000031. PMID: 32166272; PMCID: PMC7063949.

[68] Chen J et al. 2015. Delayed Emergency Team Calls and Associated Hospital Mortality: A Multicenter Study. Critical Care Medicine. 43(10): 2059-2065. doi:10.1097/ ccm.0000000000001192.

[69] Berger, R. and Hwang, L., *Don't Try This At Home: The national hospital industry is peddling programs to treat acute-care patients in their residences, instead of in the hospital where they belong*. National Nurses United. https://www.nationalnursesunited.org/article/dont-try-this-at-home. Accessed June 28, 2023

handling, and wasting medication, and discipline for medication errors can be severe. Yet hospitals, such as UC Irvine Medical Center in Irvine, Calif., write in documents submitted to the state health department supporting its hospital-at-home program that patients and family/caregivers can give oral, subcutaneous, intramuscular, and even intravenous medications if they are assessed on their knowledge and skills. A remote RN is supposed to watch over video when oral medications are given and document the medication administration in the record. But this is a far cry from the level of protection offered when a RN is responsible for the handling and administration of medication and the patient is in a brick-and-mortar hospital with life-saving equipment and rapid response teams. Likewise, adjustments in medication are often called for based on observations of the patient, such as the smell of the breath or the feel of their chest, which can be difficult, if not impossible, to recognize through remote monitoring. Placing these duties in the hands of a lay person with only remote nurse oversight is dangerous to the patient and unfair to the individual who must assume these time-consuming and intellectually and emotionally taxing duties. Reliance on unpaid caregiving puts an unfair burden on women, who are disproportionately forced to leave the paid workforce or otherwise sacrifice to provide that care.

(d) Hospital-at-home models supported by AWSM technology place unreasonable burdens on nurses and other providers providing care and will further exacerbate the nurse staffing crisis and lack of available hospital beds.

The new care models enabled by AWSM technology, particularly acute hospital care at home programs, have the potential to lead to hospital closures and the loss of permanent, unionized, nursing jobs. If acute hospital care at home programs are allowed to grow, hospitals will close at at higher rates—especially small-to-medium and more rural facilities. Already, overall hospital bed capacity nationwide is declining, dropping from 1.5 million in 1975 to about 919,000 in 2019, according to the American Hospital Association and Statista. And as more and more patients are sent home, hospitals will use the lower patient census as justification to close inpatient beds and further cut RN staffing, exacerbating the closure of community hospitals. Brick-and-mortar rural hospitals, already an endangered species, may go extinct. These programs are designed to make hospitals appear less relevant for our communities, and to make it easier to close hospitals, especially those that don't make money or serve a high proportion of patients without private insurance. However, if the pandemic has taught us anything, it is that we need more hospitals, beds, and experienced, qualified RNs, not fewer.

(2) AWSM systems promote the use of telehealth, removing nurses from the bedside and displacing hospitals and other in-patient care models in order to lower labor costs.

The most widespread form of remote RN care is telehealth, nursing care provided remotely through telecommunications technology, typically a phone or webcam equipped computer. This is happening for patients treated in brick-and-mortar hospitals as well as in the home. Such systems have long been in place, however recent changes in telecommunications technology have made it possible for data and metadata related to phone calls or videoconferences to be

recorded, coded, and algorithmically analyzed. This allows hospital employers to determine how much time a nurse spends with each patient, how many patients a nurse treats during their shift, and even, to some extent, the affect and emotional state of the nurse during the call, all without ever having to observe any of the interactions themselves.

However, as described above, there are numerous reasons why nursing care performed in person is far superior to nursing care provided over the phone or video. Likewise, just as algorithms making clinical and employment decisions in hospitals frequently make errors, so do algorithms coding and reviewing RN performance during these calls. Yet it is often unclear what led an algorithm to make a particular determination. Thus, it can be very difficult to prove that an employment decision related to nursing performance identified by an opaque algorithm is inappropriate and should be overturned.

Furthermore, RNs simply cannot do their jobs as effectively if they are unable to physically interact with their patients. As described in Section 1.c. and elsewhere in NNU's responses, tale-tell signs as innocuous as the smell of a patient's breath or skin tone can be crucial in leading an RN to order a life-saving intervention. If such a patient were merely seen via telehealth, this crucial information would likely be lost, and could result in a death that would have otherwise been prevented. Telehealth thus puts patients at risk and leads to the deskilling of nurses.

Likewise, sometimes the system itself forms a barrier to the effective provision of nursing care. For instance, as recounted in a recent article in the Wall Street Journal, one member who worked in a call center as an advice nurse for a large California-based health system was prevented from recommending the care that she thought was appropriate because the system had no option for her to do so.[70] Nurses at this call center use algorithms to categorize the illness of the caller, which involves entering information into a drop-down menu based on patient's symptoms. When a patient called complaining of cough, chest pains, and fever, the nurse began processing the call through the cough/cold and flu algorithm. However, this algorithm did not provide an option for recommending an emergency room or doctor visit "unless the patient was spitting up at least 2 tsp of frank [visible] blood."[71] The nurse therefore only advised a phone appointment with a doctor several hours later. Tragically, the patient was later diagnosed with pneumonia, acute respiratory failure and renal failure and died several days later. In reviewing the case, an arbitrator correctly determined that the nurse was "pressured by this policy" and "viewed it as a directive," and therefore ordered the health system to pay 3 million dollars in damages. Nevertheless, the nurse was also held responsible.[72] This sad and unnecessary episode is a powerful example of how reliance on AWSM technology, particularly as a substitute for nursing skills and judgement, can be extremely dangerous to both nurses and their patients.

[70] Bannon, L., (2023, June 15) When AI Overrules the Nurses Caring for You: Artificial Intelligence Raises Difficult Questions About Who Makes the Call in A Health Crisis: Man or Machine? *The Wall Street Journal*, https://www.wsj.com/articles/ai-medical-diagnosis-nurses-f881b0fe. Accessed June 29, 2023.
[71] Ibid.
[72] Ibid.

Telehealth is no replacement for direct, hands-on patient care by an experienced RN. While such systems have been in use in a limited capacity for years, advancements in AWSM technologies that support telehealth have resulted in it becoming increasingly widespread. In regulating AWSM technology, the federal government should ensure that it also regulates problematic new health care models, such as telehealth and remote patient monitoring, to ensure that their use does not degrade overall standards of care for patients and subject nurses to opaque and unfair performance measurement systems.

(3) AWSM systems support gig nurse staffing models, which results in the loss of workplace and labor rights for nurses.

Health care employers also use the data from AWSM systems to undermine wages and working conditions for workers through the use of gig RN staffing models. Gig work platforms enable the use of detailed information on worker activity and the pay that workers will accept to find the lowest pay level possible and to undermine worker power and organizing. Health care employers are increasingly using RN staffing platforms to improve their bottom lines.

Gig work is self-scheduled work, usually through a digital platform or app. Uber, Lyft, Door Dash, and similar tech companies use this model to employ workers. It is a highly exploitative work model in which employees are often misclassified as independent contractors, and thereby deprived of many workplace benefits and protections, including overtime, workers' compensation, paid sick days, paid family leave, health and safety protections, discrimination and sexual harassment protection, health and unemployment insurance guarantees, and labor rights. This allows health care employers to dramatically decrease labor overhead costs and thereby increase profits, with little regard for nurses or patients.

Uber, Lyft, and Door Dash are already violating worker rights by misclassifying drivers as independent contractors, which shifts the costs normally borne by the employer onto the worker and prevents workers from organizing. Now health care Big Tech investors and employers are stepping up efforts across the country to misclassify RNs so they can increase their profits and undermine collective power. CareRev and ShiftKey are two examples of platforms and apps already drawing RNs into gig work, with many more anticipated.

One RN with ten years of experience working at an acute care hospital in Missouri reported that her hospital's use of CareRev to provide additional RNs during the Covid-19 pandemic resulted in full time nurses becoming overburdened.[73] Since the outset of the Covid-19 pandemic, the hospital was operating with fewer nurses and was filling this gap with travel nurses. While the exact timing is unclear because the hospital never provided notice to nurses or their union, around the summer of 2021, the hospital began using CareRev to provide per diem nurses in addition to travel nurses, who typically have multi-week contracts.

CareRev is an app-based platform, where nurses sign up, click boxes indicating their competencies, and are added to a pool of nurses who can then be assigned to hospitals that have

[73] This information is derived from a conversation between an NNU member and NNU staff on June 23, 2023.

contracted to use the application. Prior to working at the hospital, CareRev RNs are required to complete a one-day orientation demonstrating that they were familiar with the physical layout of the facility. Once this is completed, a nurse can see available shifts on the application and sign up for those shifts up to two hours before the shifts starts. Nurses using the application were also permitted to cancel a shift they had selected up to 30 minutes prior to the start of the shift. The rate of pay for each shift is dynamic and based on demand in the same way as Uber or Lyft, with rates going up the closer it gets to the start of the unfilled shift. The rates are also generally higher than those provided to full-time staff, such that a full-time RN with nine years of experience makes roughly $35 per hour, whereas CareRev nurses started out making as much as $120 per hour. While this was later reduced to $80 per hour, and then to $60 per hour, it is still considerably more than the hospital's regular RN employees. Moreover, many of the RNs hired at this rate through CareRev were new graduates, who had considerably less experience than the hospital's staff RNs.

Not surprisingly, issues started to arise immediately. The application allowed CareRev nurses, through no fault of their own, to be placed in a given department (for instance, the Ear, Nose, and Throat (ENT) Department) without also indicating whether they were qualified and willing to do the work that was required in that department (such as performing and managing tracheotomies in the ENT Department). As a result, the more experienced nurses were required to take on the more difficult, higher acuity patients at a higher rate than was safe or appropriate, and to provide on-the-job training to CareRev nurses.

Using CareRev also complicated work performed by RNs who were regular hospital employees by making scheduling even less predictable than usual. That is, because CareRev nurses can cancel their shift up to thirty minutes before it starts, nurses employed by the hospital are often unaware how many CareRev nurses will actually show up the next morning. This puts a greater burden on the regular staff, who must pick up the slack. Moreover, this cycle was self-perpetuating. Nurses who previously worked as regular hospital employees increasingly began to quit those jobs and sign up for CareRev, knowing they could double their pay and gain greater flexibility while likely working for the same facility, treating the same patients. This then caused greater unpredictability and increased workload for nurses who were regular hospital employees, incentivizing them to move to gig work as well.

As this case study demonstrates, a gig-work model deprives workers of important workplace rights and degrades patient care as gig nurses often lack familiarity with the patient population and the facility. Moreover, the automated management algorithms that underpin gig work are designed to extract profit as a middleman between health care facilities and RNs. They do not and cannot safely manage RN patient care assignments.

j. Whether your employer has used information from an automated surveillance and management system in support of any discipline against you—and if so, what the action was, how and when you were informed, and what information was provided to you or your representative (such as a labor union);

Employers have used data from ASWM technology to support allegations of misconduct, despite the unreliability of this data and its inability to include the full context of employee actions. Employers also may use it to prompt discipline without informing employees. Employers have also disciplined nurses for failure to comply with recommendations made by AWSM technology, which dangerously undermines the crucial role of a RNs as patient advocates.

The nature of AWSM technology, which allows it to generate a dynamic, real-time account of employee activities within a health care facility, means that surveillance can be constant, and employers may act on information learned through surveillance without notifying employees or their unions. Employers may be using AWSM technology to take adverse action against nurses for engaging in protected activity using information gathered through AWSM technology without explicitly identifying AWSM technology as the basis for the adverse action.

Moreover, AWSM technology is often inappropriately used as the primary evidence to corroborate allegations of misconduct made by management. For example, one member who was accused of taking an extended break period by management was presented with a digital rendering, apparently drawn from several different AWSM sources, indicated that she entered and left the department at a given time. Significantly, however, this evidence did not rule out the possibility that she remained outside the department for a legitimate purpose other than taking a break, or that she simply misplaced her RFID badge or communication device, and the system was therefore misinterpreting her location. Even more concerning, there was no way to tell if the AWSM technology was simply malfunctioning. The fact that these systems are often opaque with respect to how they reach the conclusions they draw is a strong reason why using AWSM technology should not be used as the sole or primary basis for discipline.

Furthermore, the threat of discipline for questioning assessments and decisions made by AWSM technology is drastically undermining the profession of nursing by preventing nurse from learning, developing, and practicing core nursing skills that are essential for providing high quality nursing care. As described throughout this comment, AWSM technology is increasingly being used to make clinical decisions, such as acuity determination and nursing care plans directly. While nurses typically have the authority to override the clinical decisions AWSM technology makes, they may be subject to discipline if they attempt to do so, and a doctor or nurse supervisor disagrees with their determination. This threat of discipline for performing a core nursing task—ensuring that the nursing care plan and overall treatment of the patient are appropriate—is extremely disruptive to the practice of nursing. It discourages nurses from developing the skills to make these determinations on their own, and, in turn, leaves nurses unprepared to override the system when it makes a faulty determination or to step in if the system fails completely.

k. How automated surveillance and management has affected you—whether positively or negatively—including any economic, safety, physical, mental, and emotional impacts;

The use of AWSM systems has had substantial impacts on the nursing profession. Health care management uses AWSM systems to undermine the use of skill and judgment by registered nurses and to support new models of health care, like so-called acute hospital care at home programs and gig nurse staffing platforms, which put patients in danger and degrade RNs' terms and conditions of employment. In the long-term, these changes are likely to have economic consequences as lower-cost labor replaces RNs and RNs transition into new roles. The health care industry has created the staffing crisis that it is using to justify these changes instead prioritizing patient care and providing safe workplaces that keep RNs at the bedside.[74]

In the short-term, nurses face safety, physical, mental, and emotional impacts as the reliance on AWSM technology creates unrealistic and unsafe standards with respect to work speed and intensification and increased patient load. It is well established that high workloads and pressure to work faster are associated with adverse patient events, errors of omission, job dissatisfaction, and increased patient mortality.[75] Despite this, hospitals and health care providers are constantly searching for mechanisms to maximize the number of patients served without increasing payroll. AWSM technology allows them to accomplish this by shifting duties previously performed by humans to monitoring systems. However, as described above, these systems are prone to errors which can be difficult for clinicians to recognize and prevent. Likewise, these errors can have a dramatic impact on patient care. (See Attachment 4, National Nurses United Comments to AHRQ on Use of Clinical Algorithms That Have the Potential To Introduce Racial/Ethnic Bias Into Healthcare Delivery, for in-depth discussion of issues with clinical algorithms.)

The problem of reliance on AWSM technology and algorithmic management systems in health care settings is exacerbated when a hospital or health system uses an average as a benchmark for clinical performance. When AWSM technology is used to establish clinical benchmarks, RNs and other clinicians are pressured to increase patient "throughput". However, that pressure endangers patients who may take longer to care for in the emergency department or operating room or need a longer hospital stay.

In addition to work intensification, health care employers are using AWSM technology to promote what it refers to as "working at top of license," a practice in which professionals are encouraged to only focus on the most advanced practices that their license permits. A necessary

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[74] NNU has several recent reports on the industry-created staffing crisis and the failure to provide a safe and healthy work environment. See Protecting Our Front Line: Ending the Shortage of Good Nursing Jobs and the Industry-created Unsafe Staffing Crisis available at: https://www.nationalnursesunited.org/protecting-our-front-line-report; Workplace Violence and Covid-19 in Health Care: How the Hospital Industry Created an Occupational Syndemic available at: https://www.nationalnursesunited.org/sites/default/files/nnu/documents/1121_WPV_HS_Survey_Report_FINAL.pdf; and Deadly Shame: Redressing the Devaluation of Registered Nurse Labor Through Pandemic Equity available at: https://www.nationalnursesunited.org/campaign/deadly-shame-report.

[75] Womack, D. M., Hribar, M. R., Steege, L. M., Vuckovic, N. H., Eldredge, D. H., & Gorman, P. N. (2020). Registered Nurse Strain Detection Using Ambient Data: An Exploratory Study of Underutilized Operational Data Streams in the Hospital Workplace. *Applied clinical informatics*, *11*(4), 598–605. https://doi.org/10.1055/s-0040-1715829

and unspoken corollary of this principal, however, is that nurses are encouraged to spend less time with patients, leaving tasks such as checking on the patient, helping with ambulation, and other important care responsibilities to unlicensed staff. This prevents nurses from developing the rapport with their patients and deprives them of opportunities to observe their patient and understand their clinical needs and personal idiosyncrasies. As described throughout this comment, nurses play an integral role in making treatment and care decisions and are often the main point of contact and intermediary between the patient and the health system. "Working at top of license" is an attempt to remove them from this role and replace them with lower cost labor. This, however, will result in worse patient outcomes, as nurses will not have sufficient familiarity and rapport with their patients to recognize the tell-tale signs that often indicate that drastic changes in a nursing care plan or acuity determination are necessary. Likewise, taking nurses away from the bedside prevents them from developing the skills to recognize such signs, and to apply nursing judgment to determine the best clinical path forward. Thus, while "working at top of license" might seem like a benign policy designed to increase efficiency, in reality it will have a drastic effect on health care by removing nurses as the primary intermediary and point of contact for patients, and thereby preventing them from using and developing nursing skills and judgment that are necessary to be responsive to patients' needs and form an effective care plan.

l. How automated surveillance and management systems have affected your workplace rights, including rights around collective action, labor organizing, collective bargaining, pay, reasonable accommodations, health and safety, discrimination, and harassment—or your expectation of retaliation when exercising these rights;

See NNU's responses to questions 1.d., 1.e., 1.f., and 1.j.

m. How these systems have impacted your non-working hours, personal time, or the privacy of other members of your household;

AWSM technology clearly interferes with the personal time and privacy of nurses while they are on break or in private spaces at the facility. As described above, AWSM technology allows comprehensive tracking of almost all nurse movement and activity at the health care facilities where it is implemented. This includes during nonwork times, such as breaks, when management has no legitimate basis for tracking the movements, activities, and conversations of its employees. Movement tracking also covers nonwork spaces that used to be important venues for engaging in protected activity, such as break rooms and parking lots. While these spaces were originally available to confer with other nurse about terms and conditions of employment, mistreatment by supervisors, dangerous working conditions, and other matters free from the interference or oversight of management, this is no longer the case, as nurses correctly assume that they are being surveilled and monitored electronically through AWSM technology. This, in turn, chills the exercise of those protected rights.

Furthermore, by implementing this technology without explaining to nurses or their representatives the full extent of its capabilities and how it works, health care employers create the impression of near constant and total surveillance, even outside of work hours and workspaces, even if the AWSM technology implemented by the employer does not actually have this capability. For instance, a nurse likely does not know which of the devices they carry are being used to track their movements and record their conversations and may very well assume they are bringing at least some of this technology home with them, either in the RFID badges, their communications devices, or even their uniforms. This impression of surveillance leads nurses to alter their behavior outside of work hours as well, as they never know when or how the boss might be listening.

In sum, the ubiquitous nature of AWSM technology almost inherently leads to nurses being surveilled and monitored whenever they are at the facility, even outside of work time and in private spaces, such as breakrooms, bathrooms, and parking lots. Moreover, the opaque nature of this technology, and employers' frequent practice of refusing to provide notice, information, and an opportunity to bargain prior to implementation, exacerbate this problem by causing the impression of surveillance to extend outside of the facility as well, to all aspects of nurses' lives.

To protect employee privacy, personal time, and personal space, the federal government must require that employers make clear the capabilities of AWSM technology, provide an explanation of how it can be used to track and monitor nurses, and engage in meaningful bargaining with the employees about whether and how such technology is be implemented .

p. Whether you work for an employer that receives Federal funds (for instance, as a Federal contractor).

The vast majority of NNU members, potentially all of them, work for a health care provider that receives federal funds, particularly funds for Medicare and Medicaid programs.