


A Case Report of Air Force Reserve Nurses Deployed to New York City for COVID-19 Support

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ABSTRACT Initial DoD support of Federal Emergency Management Agency (FEMA) operations for New York City (NYC) coronavirus disease 2019 (COVID-19) relief included the deployment of military medics to the Javits New York Medical Station and USNS Comfort. When Air Force (AF) Reservists arrived in NYC, 64th Air Expeditionary Group leaders worked with FEMA, Task Force New York/New Jersey, and NYC chains of command to send Airmen to NYC hospitals, including Lincoln Medical Center (LMC). Within 72 hours of arrival, 60 AF Reservists, including 30 registered nurses and 3 medical technicians, integrated into LMC to provide support during April and May 2020. This assistance began during the peak of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infections. Air Force nurses provided over 6,000 hours of care to over 800 patients in the emergency department and ad hoc intensive care and medical-surgical units. As infections declined, AF nurses shifted to providing care in established units. In these units, AF nurses provided patient care and worked directly with LMC nurses to provide directed teaching experiences to improve their comfort and competency with caring for acutely ill COVID-19 patients. The deployment of AF Reservists into civilian facilities was a success and bolstered the capability of three facilities struggling to care for SARS-CoV-2 patients. This effort was recognized by military and civilian healthcare leaders and resulted in over 600 military medical personnel being sent to support 11 NYC public hospitals.

INTRODUCTION

The first case of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) in New York City (NYC) was reported on February 29, 2020.¹ The DoD began its support of Federal Emergency Management Agency (FEMA) operations for NYC coronavirus disease 2019 (COVID-19) relief efforts with the deployment of military medics/corpsmen to the Javits Medical Station and USNS Comfort. New York City public hospitals were being overwhelmed as the city reached its peak of SARS-CoV-2 infections when Air Force (AF) Reservists began arriving on April 6, 2020. As the first group of AF Reservists began in-processing into NYC, 6,045 new cases of SARS-CoV-2 infections, with a 7-day average of 5,274, were recorded.¹

After our arrival, 64th Air Expeditionary Group (AEG) leaders worked with FEMA, Task Force New York/New Jersey, and NYC civilian chains of command to send 275 Airmen into three NYC hospitals, the Jacobi, Lincoln, and Queens Medical Centers. In time, the success of this effort was recognized by civilian leaders and resulted in over 600 military medical personnel being sent to support 11 NYC public hospitals. In this case study, an overview of the accomplishments of

AF registered nurses (RNs) and medical technicians supporting one NYC hospital during the initial surge of SARS-CoV-2 infections will be provided and lessons learned from the deployment will be discussed.

Our team shared many common experiences with other healthcare professionals providing care to COVID-19-positive patients throughout the country. The efforts of our full team of providers—nurses, respiratory therapists, pharmacy staff, and a radiologic technician—deserve a larger discussion beyond the scope of this article. However, AF nurses made unique contributions, which merits a focused examination in this case study.

CASE REPORT

Air Force Reserve deployments over the past 19 years of conflict have routinely been planned events with opportunities for deployers to receive required preparation, training, and equipment. In the current case, the initial group of AF Reserve healthcare personnel was deployed within 24 hours of notice with no advanced preparation. Deploying a relatively large group of reservists in this short time frame was an extraordinary accomplishment. Minor shortfalls in the deployment process (e.g. no deployment orders prior to departure from home) were quickly corrected, and the overall sentiment of the Airmen was the overall deployment process was efficiently executed.

Within 72 hours of deployment, 60 AF Reservists, including 30 RNs and 3 medical technicians, rapidly integrated into Lincoln Medical Center (LMC) acute care units to provide staffing support during April and May 2020. Approximately 12 hours of orientation were provided by LMC staff to familiarize our team with LMC policies, the electronic charting system, and their equipment. Although the orientation was brief, it was adequate to integrate our team into the hospital. As the senior ranking nurse, the author took on the role of the Chief

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Nurse for the team. There was a constant requirement for senior officers to liaise with the LMC Chief Medical Officer and Chief Nursing Officer. It was an unprecedented situation, and our civilian colleagues were not accustomed to working with the military. We had to ensure clear communication at all times.

Lincoln Medical Center is a 362-bed hospital located in the borough of the Bronx.² Of the five NYC boroughs, the Bronx has the lowest socioeconomic status, including household income, poverty level, and education level, as well as the highest percentage of Black or African American and Hispanic residents.³ In data collected through April 25, 2020, Wadhwa et al.³ reported that the Bronx saw the highest number of SARS-CoV-2 infections resulting in hospitalization (634 per 100,000) and deaths (173 per 100,000) compared with the other NYC boroughs.

A typical day for the team began with boarding buses at the Javits Center in Manhattan for a 30- to 45-minute ride to the Bronx to begin a 12-hour shift, with each nurse working three to four shifts per week. For much of our time in NYC, the streets were empty, but gradually increasing activity was seen as time passed. Unlike many hospitals that have designated COVID-19 units, LMC was presumed to be 100% COVID-19 positive, and an N-95 mask was donned before personnel entered the hospital. We found that the LMC employees' morale was low when our team arrived. Several of their coworkers and friends had died from COVID-19, one just days before our arrival. However, the LMC staff continued to proudly serve their community.

Initial Efforts

Air Force nurses and medical technicians at LMC were initially focused on supporting the emergency department (ED) and ad hoc intensive care and medical-surgical units. The newly opened intensive care unit (ICU) was a converted mother-baby unit, and the medical-surgical unit had been the employee health clinic. Both converted units were needed because of the overwhelming number of COVID-19-positive patients LMC was treating. Staffing for these units was predominantly supported by the AF Reserve and travel nurses who had been contracted to supplement the LMC staff. The AF nurses were current with their expeditionary skills training, but LMC staff helped AF nurses adapt to the new setting and understand and comply with local policies.

The ICU was especially difficult for our nurses. A team nursing model was used to increase the number of critically ill patients assigned to each ICU nurse. With a team model, ICU nurses were typically augmented by two civilian or AF medical-surgical nurses. The ICU RN would oversee complex nursing care for up to four patients, while medical-surgical nurses provided more routine patient care. Although the ad hoc ICU was not ideal, the team was able to work together to ensure that the highest possible level of care was achieved.

Nearly all patients in the ad hoc ICU were mechanically ventilated. At the time, internal data showed that the estimated mortality was ~80% for mechanically ventilated patients and mortality increased to over 90% if a mechanically ventilated patient developed renal failure (S. Hernandez, written communication, April and May 2020).

Air Force nurses augmenting the ED and ad hoc medical-surgical unit were challenged with high acuity and high volume of COVID-19-positive patients. Many COVID-19-positive patients in the ED quickly decompensated and required intubation. Although many of the patients with COVID-19 were stable in the ad hoc medical-surgical unit, it was not uncommon for one to two patients per shift to progress into respiratory failure and require intubation and transfer to an ICU.

A pulmonary critical care physician and certified RN anesthetist from our team worked with LMC leadership to establish a prone repositioning team in an effort to improve the oxygenation and survival of mechanically ventilated patients.⁴ In mid-April, five AF nurses joined providers and respiratory therapists to fully staff the prone team. Before our arrival, LMC did not have the staffing to dedicate to this effort. An analysis of the team's efforts indicated that mechanically ventilated patients' oxygenation saturation index and partial pressure of arterial oxygen significantly improved in patients who were prone and estimated that one in eight deaths could be prevented with proning.⁴

Despite the high mortality rates, AF nurses provided relief to the LMC staff and a level of care for patients that may not have been otherwise possible. During the first month of supporting LMC, the hospital had a daily average of 145 COVID-19-positive patients (peak $n=177$) in the inpatient setting, 96 of whom were mechanically ventilated (peak $n=112$), and an average daily census of 235 patients (peak $n=298$; S. Hernandez, written communication, April and May 2020). By May 7, SARS-CoV-2 infections in NYC had decreased to 1,237 new daily cases, with a 7-day average of 1,347.¹ The census at LMC had likewise decreased, and the hospital was providing care for fewer than 100 COVID-19-positive patients for the first time since we had arrived. In less than a month, AF nurses provided over 6,000 hours of care to more than 800 patients, of which over 380 were mechanically ventilated.

Later Efforts

As infections declined, the team's Chief Nurse, other military nurse leaders, and our LMC counterparts met to explore options to ensure that the LMC nursing staff could better meet the challenges of a future COVID-19 surge. The civilian and military nursing leadership agreed that AF nurses would shift to providing care in the hospital's permanent in-patient medical units. In these units, AF nurses continued to provide patient care and worked directly with the LMC mental health and outpatient clinic nurses to provide directed teaching

experiences to improve their comfort and competency with caring for COVID-19-positive patients.

The hospital had made previous attempts to utilize inpatient mental health and outpatient clinic nurses in inpatient care settings during the surge of COVID-19-positive patients to assist with providing patient care, but most needed more training than was possible at the time. The clinical background of these RNs varied greatly, and some of the inpatient mental health and outpatient clinic nurses had not worked with acutely ill patients since completing their nursing degree program. As part of this initiative, the LMC nurses were initially provided focused refresher training in didactic and simulation settings focused on caring for acutely ill patients. Then, a rotating schedule was developed for each AF nurse to be paired up with two LMC RNs for up to four, 12-hour shifts. The LMC nurses were initially assigned one patient and progressed to taking additional patients as they completed more shifts and as the units' patient census allowed. We recognized that many of the LMC nurses were initially skeptical of the training, but most were grateful for the experience after working a few shifts with us. Before our redeployment, AF nurses provided a total of 119 training days to ~30 LMC RNs.

DISCUSSION

Air Force nurses at LMC provided excellent care for our patients and essential assistance to support the hospital staff. However, it is necessary to engage in critical reflection to ensure that lessons learned are codified. These lessons are distinct from operational lessons, which were discussed during several after-action reporting sessions. Although the identified lessons are focused on our team's experience, they are likely transferrable to a broader audience.

Improving Competency With Crisis Standards of Care

The Institute of Medicine⁵ defines crisis standards of care as follows:

A substantial change in usual health care operations and the level of care it is possible to deliver, which is made necessary by a pervasive (e.g., pandemic influenza) or catastrophic (e.g., earthquake, hurricane) disaster. This change in the level of care delivered is justified by specific circumstances and is formally declared by a state government, in recognition that crisis operations will be in effect for a sustained period.

Generally speaking, the USA is capable of providing a high level of quality health care to its citizens, and the U.S. Military has provided a high standard of care to wounded service members in austere conditions for almost two decades. In the first days of our deployment, many of us struggled to adjust to the reality of the pandemic, including the need to adapt from our normal, expected level of patient care to crisis standards of care. Although many of us had experienced mass casualty events, we were used to these resolving in time and returning to normal operations. In contrast, our experience could be

likened to a mass casualty event that improved slowly over a month's time.

We were successful in adapting and excelling in a short period of time, but the delay in adaptation could be greatly shortened by improving competency and training for military healthcare personnel with crisis standards of care. This training is essential to prepare military nurses for a future near-peer/peer advisory conflict, where military nurses will be more likely to be required to provide care in austere or modified environments with limited and constrained resources. Training could be accomplished at the unit level as part of recurring readiness training. As healthcare professionals, we must be ready to adjust to the realities of caring for wounded service members without having a grace period of adapting to such an environment.

Resilience and Moral Distress

Resilience consists of "assets and resources within the individual, their life and environment"⁶ that promote a "capacity for adaptation and 'bouncing back' in the face of adversity."⁶ Moral distress may be defined as the "experience of knowing the right thing to do while being in a situation in which it is nearly impossible to do it."⁷ The high mortality of critically ill patients and crisis standards of care caused moral distress for AF nursing personnel throughout our time at LMC. This distress was somewhat eased by frank and open discussions that allowed team members to express feelings about their moral distress, the importance of the mission, and ethical and legal considerations caused by the pandemic conditions. The 64th AEG leadership also obtained increased military chaplain and mental health professional support during our deployment.

The American Association of Critical Care Nurses has stated that healthcare personnel will experience an increase in moral challenges while providing patient care during a crisis response.⁸ In one study with civilian nurses working in high-stress acute care settings, researchers found that resilience did not independently prevent the experience of moral distress.⁹ However, moral distress was correlated with emotional exhaustion ($r = 0.49$; $P < .01$) and depersonalization ($r = 0.42$; $P < .01$), whereas resilience was negatively correlated with emotional exhaustion ($r = -0.31$; $P < .01$) and positively correlated with personal accomplishment ($r = 0.59$; $P < .01$).⁹ Finding ways to assist service members to develop a higher level of resilience and mitigate moral distress is necessary to maintain a fit and ready force in preparation for a response to future crises.

Although the DoD and AF have made substantial efforts to increase service member resilience, there is limited published evidence that these efforts have been successful. The RAND Center for Military Health Policy Research assessed resilience programs in 2011 and found "generally very little rigorous research [...] across the different resilience factors."¹⁰ Across the reviewed programs, RAND found a lack of consistency in definitions of resilience, outcomes, and evaluation measures;

they also reported that inadequate buy-in and logistical support from military leadership were barriers to program implementation.¹⁰ Subsequent literature reviews have identified a continued lack of resilience program evaluation or evidence for the efficacy of military resilience programs.^{11,12} Therefore, it is essential efforts continue to research and develop evidence-based and focused efforts to enhance resiliency into military nursing competencies.

Continuous Training

When we initially arrived at LMC, we found that several of the RNs on our team had not worked with acutely ill patients in some time. This was an understandable side effect of Reserve members seeking opportunities to grow into new areas of nursing practice, such as advanced practice, management, and education, as part of their civilian employment. Although these nurses were initially uncomfortable working with high-acuity COVID-19-positive patients, we needed to maximize our support for the Lincoln staff. To ensure their comfort with working critically ill patients with COVID-19, AF nurses were identified to serve as ICU and medical-surgical subject matter experts to provide these nurses just-in-time training and consultation, when needed, for caring for high-acuity patients with COVID-19. With the assistance of our subject matter experts, we found that these nurses were able to rapidly regain underutilized skills, and they eventually became subject matter experts who were able to train LMC RNs.

As we continued to work in LMC units, the team's Chief Nurse ensured all RNs and medical technicians had their comprehensive medical readiness tasks and required clinical competencies validated by the team's subject matter experts. As the number of patients with COVID-19 declined, we sought additional opportunities for training. For example, we were able to provide American Heart Association–approved basic, advanced, and pediatric life support courses to recertify team members on days they were not staffing in units. As the hospital's patient census decreased, a few of the nurses on our team were able to complete cross-training in the ICU or ED.

The Reserve component will always need to seek a balance between filling open positions and ensuring individual reservists maintain a balance of clinical currency needed in the case of short-notice deployments. Reserve leaders can mitigate shortfalls of civilian clinical experience by working with their subordinates to engage in and evaluate the effectiveness of their training. Reserve Chief Nurses and nursing leaders should continue to seek opportunities to provide meaningful training to enhance their Airmen's proficiency in their respective readiness skills requirements based upon their assigned AF Specialty Codes and Unit Training Codes. Finally, as Reserve nurses pursue less clinically involved positions in their civilian careers, Reserve nurse leaders must work to assist these personnel to remain clinically prepared and competent in their assigned military.

CONCLUSION

In this case study, the author has provided a report of AF Reserve nursing personnel deploying into a civilian hospital to bolster their capability to care for COVID-19-positive patients. These courageous citizen Airmen answered their nation's call to deploy on short notice into an uncertain environment and accepted the risk of contracting SARS-CoV-2. Despite this risk, they succeeded in providing essential assistance at the height of SARS-CoV-2 infections in NYC to over 800 COVID-19-positive patients. The team also ensured the transfer of knowledge to LMC RNs who received focused training to help them be better prepared to provide effective nursing care for a future surge of COVID-19-positive patients. The team was also able to seek additional opportunities to enhance our own clinical skills to better prepare ourselves for future missions.

Civilian healthcare leaders recognized the high value and quality of care provided by AF military healthcare personnel. After the USNS Comfort redeployed and the Javits Medical Station closed, AF, Army, and Navy medics/corpsmen supplemented patient care capacity at eight additional NYC public hospitals. During future surges of COVID-19 or another crisis, similar deployments are likely to provide the best outcomes for relief efforts. Furthermore, the successful short-notice deployment of a relatively large number of reservists demonstrated the value of the reserve component and can be used by military planners as a model to rapidly integrate reservists into future conflicts.

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DISCLAIMER

The views expressed in this supplement do not necessarily represent the official policy or position of the TriService Nursing Research Program, the Uniformed Services University of the Health Sciences, the Department of Defense, or the U.S. Government.

CONFLICT OF INTEREST STATEMENT

The authors have no known conflicts of interest of financial or material support disclosures.

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