

# History of the Military Nurse Corps and the 1918 Influenza Pandemic: Lessons for the 2019 Coronavirus Pandemic

Laura A. Talbot<sup>\*</sup>; E. Jeffrey Metter<sup>\*</sup>; Heather King<sup>†</sup>

## ABSTRACT

During World War I, the 1918 influenza pandemic struck the fatigued combat troops serving on the Western Front. Medical treatment options were limited; thus, skilled military nursing care was the primary therapy and the best indicator of patient outcomes. This article examines the military nursing's role in the care of the soldiers during the 1918 flu pandemic and compares this to the 2019 coronavirus pandemic.

## INTRODUCTION

Rapid scientific advances have consistently occurred during the most daunting times. Crises, including military conflicts, natural disasters, and global pandemics, remove barriers, generating rapid innovation to meet the nation's needs.<sup>1</sup> The sense of urgency and identification of critical gaps in care stimulate willingness to take risks, thereby accelerating research to find life-saving solutions. Crises demand nurses to practice the fullest extent of their education and training, developing the needed approaches to provide care in austere settings. This is especially true for nurses serving in the U.S. military, whose goal is to provide high-quality care for service members.

Our nation is amid a global 2019-coronavirus disease (COVID-19) pandemic, bringing unprecedented demands on military and civilian health care. Military nurses serve vital roles in the Department of Defense's three main priorities during the COVID-19 pandemic: protecting troops and personnel; safeguarding the nation's security missions; and supporting government interagency efforts.<sup>2</sup> They are responding by setting up and manning field hospitals in the affected cities, deploying worldwide, and staffing stateside and international military treatment facilities and naval vessels. The challenges are often serving with limited availability of personal protective equipment and working long hours in environments where providers have contracted COVID-19.

Similar issues occurred during World War I (WWI) when the 1918 influenza pandemic struck. The similarities encompassed shortages of nurses and other providers, hospital overcrowding, a novel and deadly respiratory virus, and limited methods to prevent infection. The 1918 influenza pandemic caused 50 million deaths worldwide.<sup>3</sup>

Military nurses have been indispensable in caring for sick and injured service members over many conflicts. History has shown that nurses facing adversity were frequently able to overcome difficult circumstances. This commentary examines the military nursing's contribution to care for the sick and wounded during the 1918 pandemic, with comparisons to the current COVID-19 pandemic.

## WWI: INJURIES AND DISEASE ON THE WESTERN FRONT

WWI and 1918 influenza pandemic were tightly linked. WWI was a global war from July 28, 1914, to November 11, 1918. Warfare had evolved into armies with tanks, deadly artillery, U-boats, mines, and poison gas. These weapons generated horrific injuries, dismembering soldiers or producing slow lingering wounds festering into gangrene. In addition, common diseases included pneumonia, scabies, diarrhea, dysentery, sexually transmitted disease, and typhus. Western Front trenches presented other diseases including trench foot<sup>4</sup> and trench fever.<sup>5</sup>

The United States remained neutral until April 6, 1917, when it formally declared a war against Germany. The U.S. Congress subsequently enacted the 1917 Selective Service Act to increase military forces. Military training camps emerged to train and equip these men. In the fall of 1917, there were 32 Army mobilization and training camps and cantonments,<sup>6</sup> each housing 25,000 to 55,000 soldiers.<sup>7</sup> The crowded camps gave influenza the ideal environment to propagate.

Large numbers of U.S. troops began arriving in Europe by mid-1918. The Army primarily provided soldiers in the Western Front, whereas the Navy patrolled for U-boats, performed minesweeping, escorted troop and cargo ships, and laid mine fields in the North Sea against German U-boats. U.S. troop mobilization into Europe was gradual and initially supported French and British troops. It was not until September 1918 that the American Expeditionary Forces reached a military strength capable of leading the largest offensive against the Germans on the Western Front, the Battle of St. Mihiel. It was then that the influenza pandemic struck both the United States and Europe.

<sup>\*</sup>Department of Neurology, College of Medicine, University of Tennessee Health Science Center, Memphis, TN 38163, USA

<sup>†</sup>TriService Nursing Research Program, Uniform Services University of the Health Sciences, Bethesda, MD 20814, USA

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## **1918 Influenza Pandemic**

The war enabled influenza to spread into a global pandemic. The massive influenza outbreak struck first in the U.S. military training camps and was then carried by troopships to France. The 1918 flu spread globally in one to three waves over 9 months,<sup>8</sup> with death in most victims being secondary bacterial pneumonia.<sup>9</sup> Severe cases occurred at all ages, including in younger healthy adults.<sup>10</sup> Influenza hit the American Expeditionary Force the hardest in September and October 1918 when 316,089 soldiers contracted influenza, with 53,449 developing pneumonia.<sup>11</sup>

## **Army Nurse Corps**

The Army Nurse Corps was in existence for 16 years prior to the United States declaring war (est. February 2, 1901), and the Army Nurse Corps Reserve was added in 1916. Military nursing proved to be a unique and complex discipline, requiring resilience and adaptability during deployment, with knowledge of the military organization and lifestyle. This became acutely apparent during WWI with recruitment of large numbers of civilian nurses. The force of trained Army nurses increased from 403 at the beginning to 21,480,<sup>7</sup> with over 9,000 deployed overseas. Qualifications of the Army nurses included female, white, unmarried, 25–35 years of age, 3-year commitment, and graduation from a civilian nurse training school.<sup>12</sup>

Army nurses gradually moved into military hospitals, providing structure and discipline and eventually managing hospital's day-to-day affairs. They were considered Army officers but without official military rank.

The demand for military nurses abroad triggered a shortage of U.S. civilian nurses. This shortage was exacerbated by risk of death due to close interactions while caring for influenza cases. Nursing practice and science had to adapt and develop approaches to maintain and improve patient care.

## **Nursing on the Western Front**

There was no effective medical treatment for the 1918 Influenza. The Army Nurse Corps was critical for soldier's care. Symptom management by skilled supportive nursing care was the best predictor of positive patient outcomes and decreases in mortality rates. This care consisted of duties such as administering medications, monitoring vital signs, fever control, providing hydration, rest, dressing changes, open-air therapy, bed baths, clean bedding, feeding, back and chest rubs with camphorated sweet oil,<sup>13</sup> and cleaning the ward.

Army nurses served in a myriad of settings, from hospital centers, evacuation hospitals to mobile surgical teams. Mobile hospitals, usually tents, were designed for activity near front lines with approximately 20 nurses. Typically, nurses were kept from the battlefield; however, there were reports of special surgical teams serving in front-line field hospitals.

The 1918 influenza pandemic became superimposed on war adversities, complicating care for the wounded. Combat wound infections were common due to lack of hygiene. Trench warfare with muddy dugouts became cesspools of germs where the greatest killers were diseases and infections from dirt and human waste. In the pre-antibiotic era, extensive wound debridement and irrigation with antiseptic solutions such as Dakin's solution<sup>14</sup> (0.5% sodium hypochlorite) were the treatment of choice, with the nurses employing rigorous sanitation regimens to promote healing.

During the war, there were 134 deaths in the Army Nurse Corps,<sup>12</sup> the majority (127) from influenza and pneumonia, none killed by enemy action.

## **Nursing in Military Camps in the United States**

Of the 40 largest U.S. military camps, 26 camps had 25% of the soldiers sick with influenza and pneumonia, with eight camps reporting more than 500 deaths during the second wave.<sup>15</sup> Over-crowding and inadequate hospital facilities (Fig. 1) contributed to rapid spread of influenza.<sup>16</sup> Inundated with sick and dying soldiers, the military nurses endured grueling hours with physical and emotional strain. Long shifts of 12 or more hours often led to exhaustion, and in spite of these adversities, excellent nursing care was reported.<sup>17</sup>

## **Navy Nurse Corps**

The Navy Nurse Corps was officially established by Congress in 1908. In 1918, there were 25 U.S. Naval hospitals and 5 abroad where Navy nurses were primarily assigned. The Navy transported 2,511,047 soldiers to France.<sup>18</sup> Influenza taxed resources during this massive transport. With crowded berths (Fig. 2), large numbers of cases developed onboard. Of the Army troops transported, 8.8% became ill, and of those, 5.9% died. The morbidity rate for the Navy was 8.9%, and the death rate was 1.7%.<sup>19</sup>

At the beginning of WWI, the Navy Nurse Corps added over 160 active duty nurses, which reached about 1400 by the end of the war. During WWI, 19 Navy nurses died on active duty and over half from influenza. Three of four Navy crosses awarded to wartime Navy nurses went to flu victims.<sup>20</sup>

## **Capacity of Skilled Military Nursing in WWI**

U.S. Military nurses in WWI saved lives both in Europe and in the United States. Military nurses offered care and educated the public regarding preventing the spread of infectious diseases. They demonstrated that skilled nursing care improved patient's morbidity and mortality. Military nurses (all women during this period) could handle unrelenting conditions with their skills. Military nurses were recognized by the Army and Navy with medals and rank. At a time when women were not allowed to vote in the United States, the women serving in the Army and Navy Nurse Corps rendered service



**FIGURE 1.** An emergency hospital during influenza epidemic (Camp Funston, Kansas) showing crowded conditions in a confined space. Patients were arranged in an attempt to limit contagion. Image courtesy of the National Museum of Health and Medicine. (NCP 1603, OHA 250: New Contributed Photographs Collection, Otis Historical Archives, National Museum of Health and Medicine.) The National Museum of Health and Medicine Permission require a completed permissions form which was completed in July 2020, and an appropriate image credit was provided.



**FIGURE 2.** Bunks aboard a troop transport ship. Image courtesy of the National Archives. (National Archives, III-SC-37123.) The National Archives does not require permission to publish once the appropriate photo credit is provided. Policy statement: <https://historyhub.history.gov/message/1046>.

exceeding expectations. Through their experiences during WWI and 1918 influenza, they advanced nursing science and practice in practical ways through management of the ill and wounded.

### COVID-19 PANDEMIC

Currently, we are months into a global pandemic with uncertainty, fragmented information, and constant change. Reported deaths worldwide have reached over 1,332,390,<sup>21</sup> stretching the capability of the global healthcare system. The number of nurses who have died from COVID-19

worldwide is 1500, rivaling the number of nurses who died during WWI.<sup>22</sup> Nurses have always been on the forefront, caring for the sick and wounded during war, epidemics, and disasters, putting them in harm's way. In many respects, the concerns associated with this current global crisis relate to nursing's pivotal role in the care and management of critically ill patients, like the 1918 influenza pandemic. In the current COVID-19 pandemic, nursing care has become increasingly more complex and significantly more technical in nature. There has been an increase in technology and mechanization, including the use of ventilators, adding another layer to the

care of the most seriously ill. Additionally, isolation techniques have become a major addition to patient care.

In both pandemics, there has been a shortage of nurses and other providers. The U.S. military recruited more than 21,000 nurses during WWI, leaving a shortage of civilian nurses. In today's pandemic, there has been staff shortages requiring nurses to work long grueling shifts in their PPE armor of mask, gloves, gown, face shield, and bouffant caps in providing care. With increasing concerns about contracting the virus alongside a lack of sufficient PPE and coping with rising numbers of new COVID patients, the result is high levels of mental stress within the nursing community. Fear, exhaustion, and isolation tax nurses' physical and emotional health, and these have not been adequately addressed.

In the current pandemic, a very inconsistent message has been delivered to the public. When many U.S. states required mandatory lockdown in March 2020, the message was clear, shelter-in-place and only go-out for essential needs. However, four months later, the staged reopening resulted in a public inundated by conflicting messages. There were many contributing factors, including a poorly understood virus, inadequate testing kits and testing practices, lack of transparency in worldwide case reporting, and politicians and scientist delivering rapidly emerging, conflicting information. For example, hoarding of medical PPE masks was initially discouraged to make them available for healthcare professionals. Once masks became readily available, and emerging research supported an asymptomatic airborne viral spread, facial coverings were encouraged but inconsistently used across the United States.<sup>23</sup>

### ***Military Operations during COVID-19***

The military, unlike the general public, has efficient methods for operating in uncertain environments. Military doctrine emphasizes risk management in peacetime and uncertainty management in wartime.<sup>24</sup> The two approaches enable structure and organization during peace, and agility in conflict. During peacetime, the military strictly follows protocols to keep troops safe and organized, while avoiding unnecessary injuries or accidents. During wartime, decision-making is distributed, and flexibility is given to soldiers facilitating agility and effectiveness.

The military's approach has offered clear communication and direction to military personnel during the current pandemic and in 1918. To mitigate spread in the military, the Secretary of Defense put a stop movement order in place for military service members on March 11, 2020, protecting U.S. personnel and preserving operational readiness. The order was lifted on May 22, 2020, shifting to conditions-based, phased approach for personnel movement and travel. Pre-deployment and post-deployment requirements during COVID-19 are currently in place as the military returns to standard operations of training and troop deployment.<sup>25</sup>

Uncertainty is an important component of operations during war. During WWI, hospitals spanned a spectrum of accommodations from makeshift facilities to erected tentage or preexisting buildings. Military nurses provided care in most austere and uncertain conditions. We are seeing similarities with National Guard setting-up triage tents in hospital parking lots to deal with the number of COVID-19 patients. This occurred nationwide as states declared national emergencies. Further, the Military deployed field hospitals to major U.S. cities including New York City and Seattle, and the Navy deployed two hospital ships, USNS Mercy (T-AH 19) to Los Angeles and USNS Comfort (T-AH 20) to New York City, to increase patient capacity. In July, the Secretary of the Army commented that more than 50,000 Active Duty, Reserve, and National Guard soldiers were dispatched to assist states in support of COVID-19. This occurred simultaneous to deployment of 178,000 additional soldiers to the Middle East, Europe, the Asia-Pacific region, and elsewhere.<sup>26</sup>

### ***Pandemic Readiness***

COVID-19 was first reported in December 2019, when an outbreak occurred in Wuhan, China. It rapidly spread throughout China and worldwide. On March 11, 2020, the World Health Organization declared COVID-19 a pandemic based on more than 118,000 cases in 114 countries and territories.<sup>27</sup> This is the fifth pandemic since the turn of the 20th century.<sup>28</sup> Moreover, pandemic frequency has increased over recent decades and is likely to continue.<sup>29</sup> Factors contributing to this trend include growing populations, evolution of antimicrobial resistance, transmission of infectious disease between species, global travel and trade, acts of bioterrorism, and decentralized public health systems not designed for severe pandemics. The high probability of recurring global pandemics accentuates the need for health protection and medical readiness.

Coronavirus deaths among U.S. service members to date are rare. Positive cases among Active Duty members average 5.3%, lower than the national average of 8.7%.<sup>30</sup> By mid-August, the cumulative number of US military members infected with COVID-19 reached 34,584 cases, with 538 hospitalized and 5 deaths.<sup>31</sup>

Though most service members do not require hospitalization, the COVID-19 pandemic brought unprecedented demands on military and civilian health care. A rapid increase of COVID-19 patients generated large increases in patient volume in civilian systems, triggering shortages of hospital beds, medical personnel, drugs and supplies, and the need for expanded intensive care units with specialized equipment and nursing staff. This highlighted the need for rapid surge capability and implementation of public health measures.

Striking similarities exist between the COVID-19 pandemic and the 1918 Influenza. During the 1918 pandemic, face masks, handwashing, and social distancing were emphasized by the Department of the Navy.<sup>32</sup> The military is in a unique situation to rapidly adapt public health measures,

including social distancing, travel restrictions, and uniform face mask requirements through military orders, regulations, and the Uniform Code of Military Justice. A foundational concept is chain of command that identifies an accountability structure.

### **Crisis Standards of Care**

During pandemics, healthcare providers' priorities change with recognition of limits surrounding scarce resource allocation. The shift is from "patient-centered practice" to "public-focused" care promoting equitable distribution of available resources. This scarcity of resources was seen in WWI when the civilian shortage of nurses was heightened by the mobilization to military nursing to care for combat soldier.

Military nurses follow the International Council of Nurses and the American Nurses Association Code of Ethics, as well as Uniform Code of Military Justice. Crisis standard of care is a framework offering concrete guidance for a system-wide response in fair allocation of resources during a disaster or emergency.<sup>33</sup> The American Nurses Association's *Crisis Standard of Care: COVID-19 Pandemic* has issued guidance for nursing issues occurring under emergency conditions. As resources dwindle and hospitals approach surge capacity, competition will increase for resources such as testing supplies, PPE, ventilators, vaccines, hospital capacity, and workforce availability. For military nurses, flexibility staffing models and just-in-time training are considered in allocating resources and in assuring competency with novel or rarely used skills.<sup>34</sup> The response for military treatment facilities is presented in the Department of Defense (DoD) COVID-19 Practice Management Guidelines.<sup>35</sup>

### **DISCUSSION**

Nursing care provided by military nurses reduced morbidity and mortality in service members during WWI and 1918 pandemic. The increased risk of global pandemics is high and a threat to national security. Military nurses are front-line providers with a history of responding to the nation's health-care needs. Their skills are needed for healing, recovery, and rehabilitation and is labor-intensive, time-consuming, and constant. In the absence of effective treatments, nursing care is essential, making differences between life and death. Military nurses are more than the sum of military officer and nurse. They are part of a military culture and lifestyle where honor and integrity are core values. They have unique, distinctive abilities adjusting to changing circumstances under a plethora of challenges.

Military nursing research builds the scientific foundation for clinical practice associated with force health protection, nursing competencies, ethics, and leadership. War and pandemics are events where military nursing skills are preeminent, including knowledge, leadership skills, military competence, and resilience. It is imperative for military nurses to conduct research for advancing military nursing science and practices centered around unique aspects of nursing care.

The current pandemic demonstrates areas where research is needed. The psychological distress and fears associated with caring for patients with highly infectious disease puts burdens on front-line providers. Limited staffing yields exhausted providers feeling the burden of providing quality health care with little rest and insufficient recovery time. The anxiety associated with putting aside professional standards of care to adapt to limited PPE (resulting in conditions where providers are increasingly susceptible to infection) is immense. In addition, there is stress associated with contracting COVID-19, leading to self-isolation for fear of bringing it home to loved ones. Further isolation occurs when staff working on the designated COVID unit are avoided. Based on past epidemics, management of acute work demands, and addressing psychological distress could be minimized with sufficient staffing, provision of personal protective equipment, and training on how the disease spreads.

History shows that nursing practices adapt to maximize effectiveness of care and safety for patients and front-line workers. Under war/pandemic conditions, the strategy of expanding staff functions through just-in-time training and education has been used to address patient surges. This is an ongoing process as the current pandemic proceeds, and knowledge of the virus and the effectiveness of current care are evaluated and continuously updated.

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