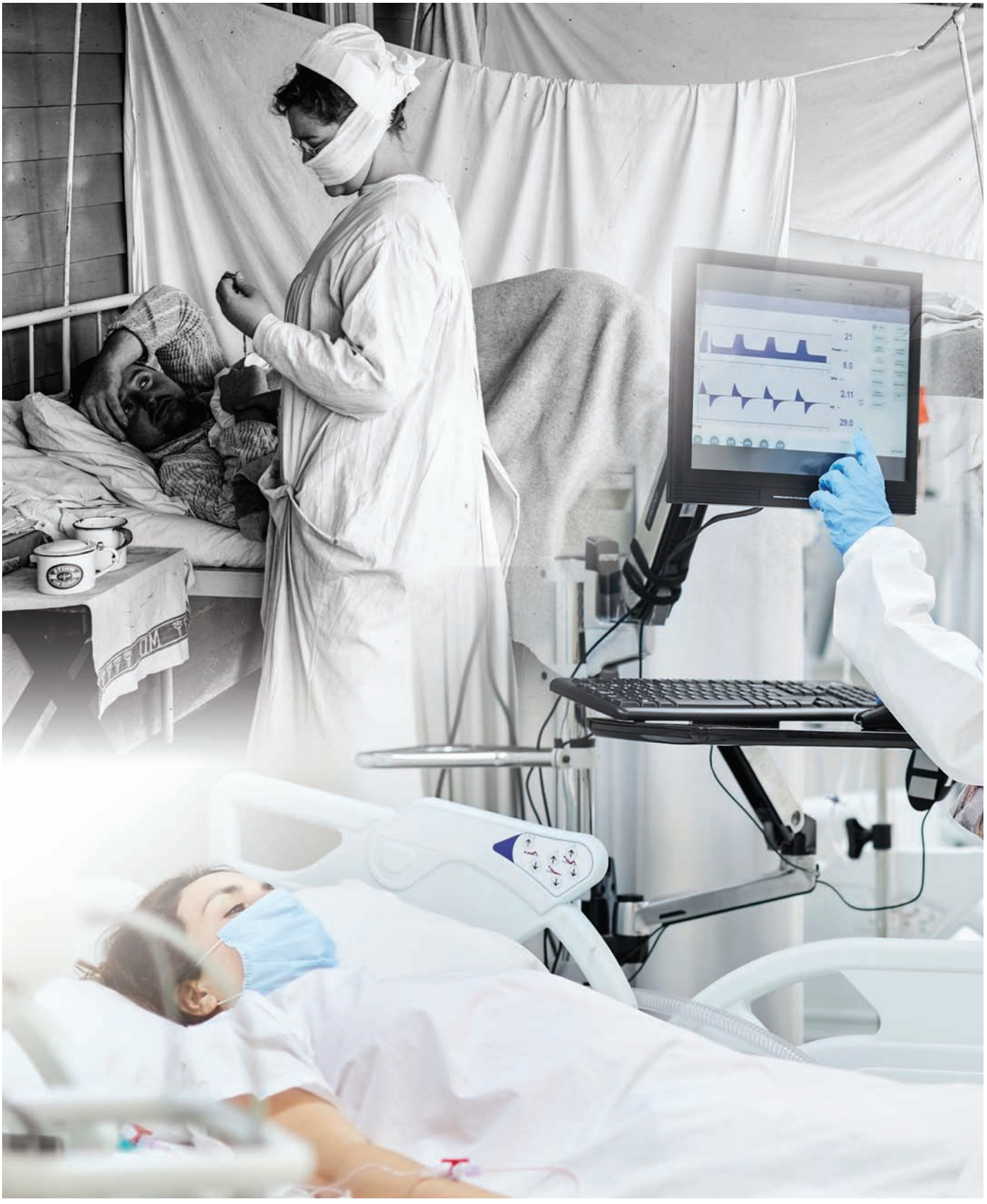

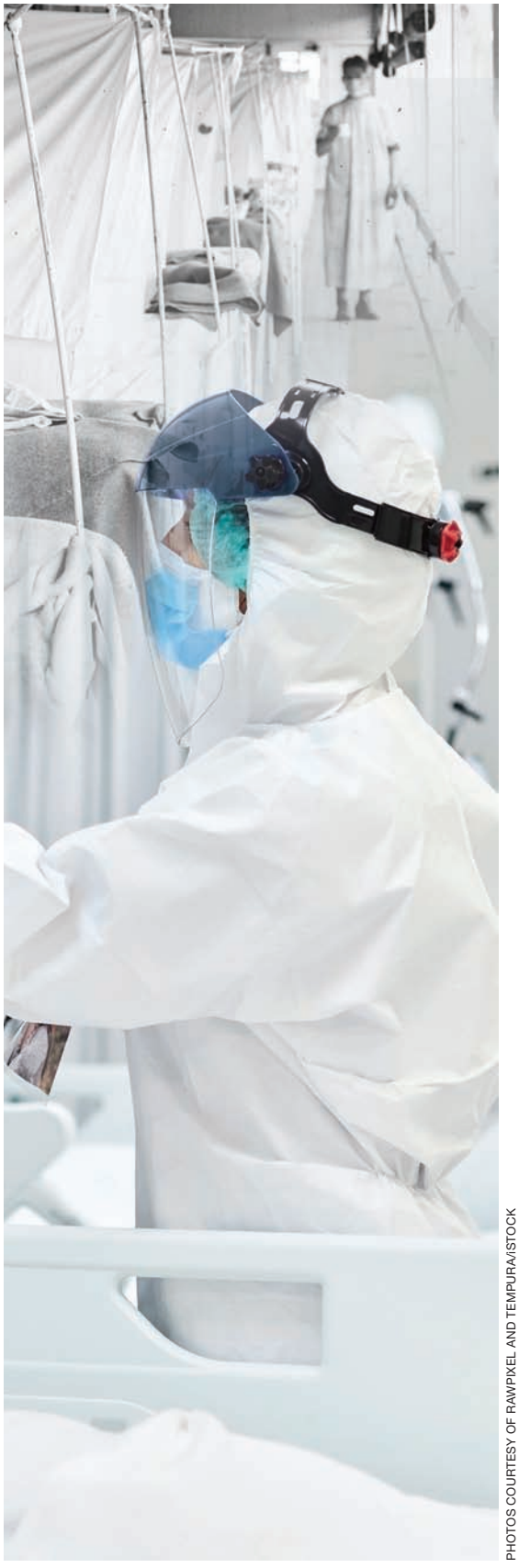

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COVID INSIGHTS

Nurses on the front line:

The 1918 influenza and COVID-19 pandemics

BY ARLENE W. KEELING, PhD, RN, FAAN

Abstract: Due to advances in science and medicine, nursing is far different today than it was in 1918. During a pandemic, however, skilled nursing care remains critical to patient outcomes. This article identifies and describes the experiences of US nurses during the 1918 influenza pandemic and compares them to the experiences of nurses responding to the COVID-19 pandemic.

Keywords: COVID-19, influenza, 1918 influenza pandemic, pandemic, social history, Spanish flu

AS THE COVID-19 pandemic continues in the US, nurses risk their own lives to provide care as essential workers. For some nurses, the front lines are hospital EDs and ICUs; for others, the battle takes place in community clinics, drive-through testing sites, patients' homes, prisons, schools, long-term-care facilities, or the offices where these professionals see patients via telemedicine.

This is not the first time nurses have played a critical role in responding to a pandemic. The 1918 influenza pandemic, sometimes called the Spanish flu, tells a similar story. This article identifies and describes US nurses' experiences during the influenza pandemic of 1918 and compares them to the experiences of today's nurses during the COVID-19 pandemic.

The 1918 influenza pandemic

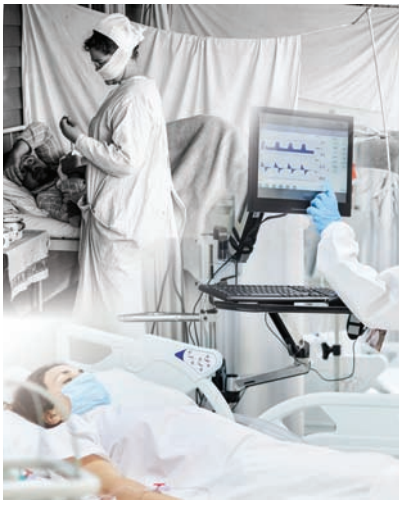
In 1918, a new and highly contagious influenza virus struck while the US was at war in Europe. It began in the Midwest, swept across the country, and spread within US military forces as they were deployed to France.[1,2] Although a mild variant of this influenza virus had erupted in military camps in the US and in Europe the previous spring, a deadly mutation began to spread in the fall. The mutation, now known as

H1N1, was unlike anything physicians and nurses had seen before. The disease was dubbed the Spanish flu because Spain, which remained neutral in World War I, was the first to acknowledge it as a major public health problem. Other countries involved in the war denied its existence in the press.[3]

This highly contagious strain of influenza, which resulted in 50 million deaths worldwide in approximately 2 years, came on suddenly, sometimes causing death within 12 to 24 hours of symptom onset.[4] Signs and symptoms included sneezing, coughing, extreme fatigue, severe headache, bone and joint pain, and fevers of 102° F (38.9° C) to 104° F (40° C). Patients often struggled to breathe due to fluid accumulation in the lungs. Additionally, some patients experienced a respiratory complication now understood to be acute respiratory distress syndrome (ARDS), leading to 60% to 70% mortality among those affected.[5,6]

This novel influenza virus was unique in that, in addition to affecting the very young and very old, it was notably deadly among healthy young adults between ages 20 and 40.[4,6] The disease wreaked havoc on crowded military bases and aboard ships, affecting strong, able-bodied members of the armed services due to limited immunity but strong, overactive immune responses.[1] The robustness of these immune responses likely fostered the increased risk for respiratory failure in this population, with the intense inflammatory response attracting white blood cells and platelets, leading to the development of exudate as cellular debris accumulated, impeding oxygen exchange, and resulting in morbid conditions such as hypoxemia.

Once it spread to towns and cities outside the military camps, the virus began to impact civilians, resulting in more than 675,000 deaths in the US.[4] The disease spread rapidly across the country, infecting people



Some realities of nursing have not changed, however, and skilled nursing care remains essential to patient comfort and outcomes.

of all social and economic backgrounds regardless of race, class, and culture.[7] It also affected caregivers, physicians, nurses, nursing assistants, emergency medical service professionals, and morticians.

In 1918, healthcare professionals had minimal understanding of the disease and no available treatments. Antiviral medications to inhibit its progress were not yet in existence, nor were antibiotics to treat associated complications such as secondary lung infections. Skilled care by nurses able to make critical patient observations and intervene appropriately was essential. Along with bed rest, excellent nursing care was considered a primary treatment. Nursing responsibilities included documenting vital signs, applying ice packs and performing sponge baths to reduce fever, and providing nutritious soups and teas. Other remedies included aspirin, mustard plasters, mentholated topical ointments, antiseptic mouthwashes, cough syrups, and digitalis.[8,9]

Nursing shortage

Due to the deployment of thousands of graduate nurses to military camps to assist in the war effort at home and abroad, the US experienced a shortage of nurses to care for its civilian population in 1918. When the pandemic arrived in Boston, Mass. that summer, nurses were already stretched thin. Hospitals soon reached capacity, and tent hospitals were erected. When those were full, sick individuals were told to remain at home where public health district nurses provided care with assistance from former tuberculosis and pediatric nurses. Volunteer society women assisted the nurses of the Instructive District Nursing Association, staffing phone lines and alerting nurses about new cases.[10]

After Boston, outbreaks erupted in New York City, Philadelphia, Pa., and Chicago, Ill., in rapid succession as the virus spread across the country. Hospitals were overwhelmed; in New York, hospitals reached capacity by early October. As healthcare facilities became overwhelmed, often serving two to three times more patients than intended in units, many patients had to receive care at home.[11]

In Philadelphia, the number of influenza cases exploded in October 1918 after 200,000 people gathered for a parade to raise money for the war effort.[12] As a result, the city had to set up temporary emergency hospitals in schools, warehouses, and churches where nuns and medical students assisted the limited number of nurses available.

The nursing shortage was critical. When asked what was most needed to overcome the epidemic, the city health commissioner replied: "Nurses, more nurses, and yet more nurses... We have many beds that might be opened to patients. But without enough nurses to tend [to] those we already have, we are helpless."[2]

Nursing experiences

In many locations, the 1918 influenza outbreak was exacerbated by poor

housing, overcrowding, poverty, and a lack of indoor plumbing.[7] These factors are now known as social determinants of health.[13] In a November 1918 report from Chicago, the assistant superintendent of the Visiting Nurse Association described the conditions nurses faced: "Because of bad housing conditions and overcrowding, we were very hard hit on the west side of Chicago and are still getting calls where entire families are ill. Dirty streets, dirty alleys and just as dirty houses. …The Ghetto was a hotbed of influenza."[14]

In New York, director of Henry Street Settlement and chair of the Nurses' Emergency Council Lillian Wald described an incident in upper Harlem in which a nurse found a mother with influenza, the father with pneumonia, two children with measles, and a 4-week-old infant. She reported that the family "had been without care of any kind until the case was reported to the visiting nurse." She later added, "This is a situation duplicated in hundreds of homes."[15]

However, the pandemic was not confined to large cities. When it spread to small towns and isolated rural areas, a confluence of factors such as extreme poverty, small hospitals, scarce supplies, and limited healthcare staff challenged the ability of communities to respond effectively. For example, hundreds of inhabitants of one Appalachian coal mining town, including two physicians, died from the influenza strain, leaving just one nurse to provide care.[16]

Similarly, the virus spread "like wildfire" in a logging camp in northern Michigan, where the inhabitants had been sure that the cool climate and uncrowded, rural area would protect them. Anne Colon, a country nurse, described the conditions: "The sick and well were all huddled together. In many cases the family had only one bed … There was a roaring fire in each house, the windows were nailed down, and the doors shut tight. The people were afraid of fresh air and it took a good deal of tact … to get air to them … Altogether we had between forty to fifty cases."[17]

Isolation and poverty also complicated nurse responses in small towns along the coast. One Red Cross nurse, identified only as MKB, was sent to Morehead City, N.C., a fishing community with a population of 3,000, and found entire families ill. Many were crammed into shanties with an "abundance of fresh air because of numerous cracks."[18]

Meanwhile, Black nurses faced even more dire circumstances, especially those working in the racially segregated Jim Crow south. As Bessie Hawse, a Black nurse, recounted, "Eight miles from Talladega in the back woods, a colored [sic] family of 10 were in bed and dying for want of attention. No one would come near … As I entered the little country cabin, I found the mother dead in bed … the remainder of the family running a temperature of 102 to 104 … I rolled up my sleeves and killed chickens and began to cook … I only thought of saving lives. I milked the cow, gave medicine and did everything I could to help."[19]

A collaborative response

In cities such as Boston, New York, Philadelphia, and Chicago, nurses had well-established social networks to turn to for assistance. Settlement Houses such as Hull House in Chicago and Henry Street Settlement in New York provided critical support. Typically, these offered social and educational opportunities for immigrants. During the 1918 influenza pandemic, however, their contributions were geared toward provisions and necessities. According to Mary Westphal, a visiting nurse in Chicago, "Hull House helped us wonderfully, supplying warm gowns, baby clothes, bed linens when needed, soup and other foods for families that could not provide it for themselves."[14]

Other organizations also supported the nurses. In New York, local churches established soup kitchens, and society women and men volunteered as drivers, allowing the nurses to bring blankets, food, and supplies as they made home visits. When Philadelphia was overwhelmed, volunteers from the Junior League and local women's colleges accompanied nurses during rounds, cleaning houses, feeding patients, and changing bed linens.[2]

In small towns, local nurses and aides provided care and were supplemented by Red Cross nurses from nearby towns as well as by nuns, families, friends, and neighbors. In Morehead City, the town's only 25-bed hospital was filled, the nurses were overwhelmed, and several nursing students were sick. MKB described the town's collaboration: "A mass meeting was held in the Red Cross rooms where we organized for work … the town was divided into districts, each having a committee to make house to house calls. A soup kitchen was set up, and several hundred people were served three times daily. From the beginning, the physicians, the volunteer nurses and I wore face masks, made and furnished by the Red Cross."[18]

Following guidance from the Red Cross, nurses wore gauze face masks to protect themselves as they cared for patients.[18] Volunteers were essential to producing and dispensing the masks, and local Red Cross societies distributed masks to healthcare professionals and the public across the country. This was part of an "emergent" response, a century later described by sociologists Thomas E. Drabek and David A. McEntire as "the appearance of interorganizational networks after disaster which attempt to fulfill important societal functions made evident by an extreme event."[20]

Several factors shaped the response to the 1918 influenza pandemic, including the virulence of the novel

strain, the lack of treatments or a vaccine to address it, shortages of healthcare professionals, and government denial of the pandemic during the war. Each state and community had to rely on its own resources. Nurses and local volunteers and organizations were essential. Nurses worked with physicians and public health officials on the front lines, while local organizations and Red Cross groups made masks, helped with transportation, and set up makeshift hospitals and soup kitchens.

Nursing during COVID-19

During the COVID-19 pandemic today, many of the same factors are at play. The impact of the 1918 outbreak was severe for individuals living in crowded ghettos where they had few resources due to racial prejudice. The impact was also severe for individuals living in rural settings with limited access to care. Similarly, during the COVID-19 pandemic, Black and Hispanic individuals represent vulnerable populations who are at an increased risk. For example, in Michigan, where 14.1% of the population is Black, Black patients made up 33% of COVID-19 cases during 1 month in 2020.[21] Nationwide, that trend continues as Native American, Hispanic, and Black populations experience higher rates of incidence and death. Similarly, incidence and mortality is higher among those who live in crowded, multigenerational dwellings, as well as those who are unable to work from home.[22] Just as in 1918, the social determinants of health also play a role in mortality.

In March 2020, while New York hospitals were overwhelmed, the federal government denied the extent of the problem and failed to provide a unified national response. State and local governments were left on their own to respond to the crisis and to provide personal protective equipment (PPE) and testing supplies. In *The New England Journal of Medicine,* Ranney and colleagues highlighted this problem and recommended a multipronged strategy, writing, "No matter which estimate we use, there are not enough ventilators for patients with COVID-19 in the upcoming months. Equally worrisome is the lack of adequate PPE for frontline healthcare workers, including respirators, gloves, face shields, gowns, and hand sanitizer." They recommended enacting the Defense Production Act, which allows the Federal government to expedite and expand the supply of materials produced during emergencies.[23,24]

Meanwhile, nurses rationed PPE and often had to reuse face masks for several days. As one nurse noted in *The New York Times*, "We live in the richest country in the world and yet we don't have the tools to perform our job safely."[25] Just as the Red Cross pleaded for volunteers in 1918 newspapers, some nurses turned to social media to ask the public for help, using hashtags such as #GetMePPE.[23]

As in 1918, nurses have had to step up to the challenges of the COVID-19 pandemic, despite understaffing due to budget cuts, particularly in public health. As the authors of one 2016 study wrote, "Despite widespread rhetorical endorsement of prevention, public health programs have received … far less funding than personal medical services."[26] Nurses have been stretched thin, administering COVID-19 tests, conducting contact tracing, and fielding phone calls from families desperate for advice and help acquiring vaccinations. As one public health nurse supervisor in New York wrote, "We are needed at every area of the response. Today, I met with the staff who worked the weekend. Most of them are nurses who are dealing with residents who have been quarantined. They had to call over 24 cases each day, encountered problems of lack of medication, food, and support systems. The most chronically ill have been affected the most."[27]

Advances in nursing, medicine, and technology have informed knowledge related to the treatment of and response to infectious diseases. For example, today's healthcare professionals in EDs and ICUs have access to noninvasive oxygen ventilation, endotracheal intubation, and mechanical ventilators to help patients in respiratory distress. In 1918, nurses often could only watch as patients struggled to breathe.[11] Similarly, instead of relying on manual pulse readings, using glass thermometers to assess temperature, and checking oxygenation by observing the rate and depth of respirations, today's nurses have access to cardiac monitors, infrared thermometers, and pulse oximeters to monitor patient changes. Nurses today can also administer I.V. fluids, a more effective way of hydrating and feeding patients than by spooning fluids into a patient's mouth as they did in 1918.

Additionally, treatments for influenza in 1918 consisted of aspirin, morphine, cough syrup, and digitalis. Today, patients with COVID-19 receive not only supportive care, but also treatment with monoclonal antibodies, antiviral drugs such as remdesivir, and anti-inflammatory medications such as dexamethasone.

Some realities of nursing have not changed, however. Skilled nursing care remains essential to patient comfort and outcomes. Bathing and turning patients, especially proning to improve oxygenation, is one example of the durability of basic nursing care. Communicating with patients and families, whether in person, by telephone, or on a tablet, is another crucial skill. As in 1918, today's nurses often work extra shifts in overcrowded EDs and ICUs or lead teams in the community setting, and they require support from their government and community.

Lessons learned

Once again, nurses are on the front lines of a pandemic. They staff large city hospitals and small rural clinics and see patients in outpatient clinics, prisons, public health departments, and schools across the country.[28] Lessons from the past remain relevant today. Moving forward, there are valuable lessons to be learned by documenting and preserving nurse experiences during the COVID-19 pandemic. Advanced preparation, a strong public health infrastructure, and immediate and effective response at the local, state, and federal level is necessary. Global preparation, response, and cooperation will also be critical in future pandemics. ■

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