The novel coronavirus disease, SARS-CoV-2 (COVID-19), outbreak rapidly generated an unprecedented global, national, and state public health crisis with the need to rapidly develop alternate care sites (ACS) to care for COVID-19 patients within an overburdened health care system. A hospital care model ACS to increase the health care capacity, provide care for mild to moderately symptomatic patients, and offer local self-sustainment for a surge of patients was developed in Memphis, Tennessee located in Shelby County. We completed a temporary conversion of a large unused newspaper publication building to a health care facility for COVID-19 patients. Developing an ACS from ground zero was met with many challenges, and throughout the process important lessons were learned. With the goal to complete the building conversion within a 28-day timeframe, collaboration among the numerous governmental, health care, and private agencies was critical and nursing leadership was key to this process. The purpose of this paper is to describe the development of a COVID-19 ACS in Memphis, TN, which has a large at-risk population with limited access to health care. Specifically, we will discuss the strong leadership role of nursing faculty, key challenges, and lessons learned, as well as provide checklists and models for others in similar circumstances.

**Keywords**
alternate care site, COVID-19, leadership, nursing, pandemic, public health

According to the Centers for Disease Control and Prevention (2019), the influenza outbreak of 1918 caused by the H1N1 virus was the most severe pandemic in recent history, and now, over a century later we are faced with the COVID-19 global pandemic that is not only threatening the public but overpowering our health care, public health, and economic systems. U.S. hospitals are being challenged to accommodate the unprecedented number of patients needing...
medical care, thus the need to implement ways to increase patient care capacity is vital. One way to increase vital capacity is by creating additional spaces or ACS for patients.

According to the Federal Health care Resilience Taskforce (FHRT, 2020), an ACS is a building or structure that is temporarily transformed for health care use during a public health emergency to provide additional health capacity and capability outside the walls of a traditional health care institution. There are three ACS models defined based on the level of care provided. The non-acute care model provides low-level care for mildly symptomatic patients, the hospital or hybrid care model provides care for moderately symptomatic patients who require oxygen and nursing care, and the acute care model provides care for patients that require ventilator support (FHRT, 2020). The ACS also helps to contain the spread of COVID-19 by providing care for COVID-19 patients only, therefore, patient to patient transmission is not an issue as it is in hospitals. The ACS provides moderately ill patients with COVID-19 a transitional phase in the care continuum and allows additional time before the patient returns home, thus helping contain the spread of COVID-19 in the community.

As the United States entered a state of emergency, the state and local governments in Tennessee followed suit. On March 8, 2020 the first COVID-19 case was confirmed in Shelby County, TN, and as of July 21, 2020, Tennessee had 81,222 confirmed cases of COVID-19 and 840 deaths, and Shelby County had 16,904 confirmed cases with 252 deaths (Tennessee Department of Health, 2020). A hospital care model ACS to increase health care capacity, provide care for moderately symptomatic patients, and offer local self-sustainment for a surge of patients was needed for Shelby County. Memphis, located in Shelby County, which has multiple medical facilities and is the hub for health care education across the state, was chosen as the location for one ACS. According to the 2010 U.S. Census, Shelby County has a diverse population with 52.1% African American, 40.6% Caucasian, 5.6% Hispanic or Latino, and 2.3% Asian, and 5% other races (Shelby County Tennessee, 2010). Compared to the United States and Tennessee morbidity statistics, Shelby County has a higher prevalence of comorbidities which place patients with COVID-19 at a higher risk, including obesity, diabetes and pre-diabetes, breast, cervical, colon, and prostate cancer (Shelby County Health Department, 2015).

The purpose of this paper is to describe the rapid development of a hospital care model ACS to care for mild to moderately symptomatic COVID-19 patients in Memphis, Tennessee. Specifically, we will discuss the strong leadership role of nursing faculty, key challenges, and lessons learned, as well as provide a checklist for use by others facing similar circumstances.

1 | ACS DEVELOPMENT

In April 2020, construction began on a 402-bed ACS, one of 37 ACS’s commissioned across the United States by the federal government. The site selected was previously a newspaper production facility in close proximity to the city’s medical center. The transformation from newspaper production facility to ACS was led by the U.S. Army Corps of Engineers and at this time represents the only conversion of a former commercial facility into an ACS, therefore, creating unique challenges for all involved. A faculty member from the College of Nursing with extensive experience in executive nursing leadership and practice in acute care settings was selected as the chief nursing officer (CNO). Although there were several ACS toolkits available as a reference, none offered specific “how to” recommendations or addressed the challenges of developing an ACS in a multi-level repurposed commercial building, therefore, requiring the development of original processes and guidelines. Because of the myriad of complex tasks required for developing the ACS, as a first step the CNO created a comprehensive checklist to use as a guide throughout the process (Appendix 1). The CNO created a nursing operation plan which involved the development of a nursing and respiratory therapy staffing plan, determining nursing responsibilities according to position, and creating infection control processes, as well as staff education and orientation programs. The CNO also developed a plan for patient care which addressed supply and equipment needs, a patient call system and interpreter phone system, a medication reconciliation and medication administration process in collaboration with pharmacy, a process for nursing documentation, and patient flow across units. In addition, she provided direction for development of nursing stations, medication rooms, clean and dirty supply rooms, nutrition and handwashing areas, and eyewash stations. A unique need was for the development of a patient documentation system and a decision for electronic charting versus paper charting. An electronic charting system requires technical support and staff training, increasing staff onboarding time. With an ACS, a timely opening necessitates a succinct onboarding process, consequently a paper charting system was selected thus requiring the development of all the necessary ACS nursing documentation.

In May of 2020, upon completion of the facility’s construction and development of the basic operational infrastructure, the Tennessee Emergency Management Association (TEMA) and the Tennessee Department of Health (TDH) led a two-phase exercise to assess the operational processes and the decision-making skills of the health care team. The first phase included a tabletop exercise to facilitate group discussion on leadership, management, staff orientation, staff protection, patient management, and external service coordination. The second phase was a daylong functional exercise to validate and evaluate operations of the ACS, including patient care processes from admission to discharge and to identify process gaps. Patient scenarios developed by TEMA were used for the drill and were interjected during patient care to test the team’s response and ability to seek the appropriate resources. Areas evaluated included leadership and management, staff orientation, staff protection and safety, patient management, and external service coordination. Participants included nursing faculty who served as nursing staff, medical residents who served as the patients and attending physicians, administrative medical team, observers from TEMA and TDH and service vendors. Following the drill, a debriefing session was held to determine
what went well and what did not. We found there was excellent collaboration between nursing and medical staff, the admission process went smoothly, the patient room design allowed for appropriate patient care, and the documentation system flowed well. There were several areas that needed improvement. Specific needs included a “real time” electronic patient tracking system, minor changes to the medical record system, a place on the patient units to store the medical record, and sinks in pharmacy and triage area. To address patient tracking needs the state provided a tracking system created by Global Emergency Response. The system delivered the ability to track patients throughout the facility from admissions to discharge and if needed, transfer to a higher level of care. Reorganization of the medical record was done to provide a more systematic documentation by discipline. To meet the need for chart storage and easy access, chart holders were installed on the wall of each patient room. Space in the basement was designated for long-term chart storage. Additional sinks were placed in triage, pharmacy, negative pressure nursing break areas, and other strategic areas.

As of July 2020, the ACS is in warm-site status, defined as operationally ready to respond to a surge of COVID-19 patients. In Shelby County, the number of COVID-19 patients is predicted to peak in late October 2020, with approximately 1,500 hospitalizations and 376 ICU admissions (Shelby County Health Department, 2020). Activation of the ACS will be initiated by the governor of Tennessee, and several factors will be considered in the decision including the number of acute care and intensive care hospital beds occupied by COVID-19 patients, the ability of local hospitals to handle the volume of COVID-19 patients after implementation of individual surge plans, and the number of hospital beds utilized for elective hospital admissions.

2 | CHALLENGES AND LESSONS LEARNED

Developing an ACS from ground zero was met with many challenges, and throughout the process important lessons were learned. Communication and collaboration were challenging because the process involved working with numerous agencies, including the Tennessee Governor’s office, Tennessee Department of Health, Shelby County Health Department, Army Corps of Engineers, Memphis and Shelby County Governments, Federal Emergency Management Agency, TEMA, media representatives, and the construction company contracted for the redesign. Key leaders had not previously worked together; therefore, developing a cohesive team was a challenge, and due to the urgent situation, the ACS teams and relationships needed to be established quickly. Many of the team members had no background in hospital administration thus requiring the need for more detailed communication to explain administrative decisions. The goal of transforming the newspaper production facility to an ACS within a 5-week time frame was an additional challenge that often resulted in stressful working conditions.

Many lessons were learned throughout the process. For example, the U.S. Army Corps of Engineers and the U.S. Department of Health and Human Services developed materials to guide states and municipalities in creating an ACS to support their medical requirements during the COVID-19 pandemic. However, implementation of an ACS is a state-led process. We needed to take the national guidelines and tailor all materials based upon our state and local requirements, which was very time-consuming. Guidelines and terms changed along the process and continue to change. For example, the name for this hospital model ACS is now termed hybrid model ACS to clarify the conflicting term “hospital care” away from the concept of a traditional hospital (FHRT, 2020). In addition, the potential risk of key leaders becoming infected and requiring quarantine is significant. Therefore, a succession plan for leaders needed to be created early in the planning process. Persons designated as backup for leaders needed to receive orientation to their role and have an opportunity to work with the leaders prior to the need to assume the role. We found this process also helped with communication among the teams.

The functional exercise is critical to evaluating and validating operations of the ACS, and for it to be most effective, employees from all patient care services need to be present to participate and work out process gaps collaboratively. Nursing faculty assumed staff nurse and advanced practice roles, during the functional exercise and were invaluable to validating and evaluating operations of the ACS. Importantly, the CNO role requires someone who has extensive leadership experience, content knowledge, and excellent communication skills to be successful. For our ACS, the CNO needed to have content knowledge regarding regulations, infection control policies, hospital design, and support services that are critical for the successful provision of quality patient care. In addition, an infection control expert should be involved early in the planning process to assist in the development of an infection control plan for the facility and development of safe patient transfer and discharge processes. Representatives from all health care disciplines must be present for the final walkthrough to ensure every facet of patient care is evaluated.

3 | CONCLUSIONS

The COVID-19 pandemic has created a critical need to expand health care capacity in the United States. We describe the development of an ACS as a local response to COVID-19. The resultant forced collaboration between multiple disciplines including public health, health care providers, government officials, military, and others each with their own cultures and language provided a unique learning experience for all involved. The COVID-19 response is not just about expanding capacity but easing public fears of accessing health care and containing the spread of the virus. As the potential for the creation of more ACS’s exists, nursing faculty and leaders can provide a major role in establishing an ACS capable of providing quality patient care. Despite the overwhelming public health crisis, nurses continue to lead and maintain the professional duty to care. The American Nurses Association (ANA, 2020) argues that amidst these challenging times, decision making must create a balance...
between doing the greatest good for the greatest number of people and protecting those who persist with social injustice and health care disparities. Nurses must maintain a state of readiness for adaptation, exhibit leadership qualities, and deliver crucial care in times of crisis, as this is a professional obligation. These attributes of the professional nurse allow for optimum management and coordination of an ACS. The CNO described the experience as being given a box, asked to empty it, and then, build a hospital within the empty box and do it quickly.

The World Health Organization designated 2020 the International Year of the Nurse and the Midwife to honor the 200th anniversary of Florence Nightingale’s birth and to advance the vital role of nurses in transforming health care around the world. Clearly no one could have predicted that this designation and anniversary would coincide with nurses at the forefront of a global pandemic. Florence Nightingale improved the care of patients on the battlefield and in hospitals and under her leadership, hospitals and English war camps were transformed. Her work resulted in public health advances throughout the British army and the world (Biography.com Editors, 2020). Florence Nightingale published her work and used statistics to show successful outcomes. This global pandemic gives nurses an excellent opportunity to demonstrate the same leadership by collecting data, critically analyzing our efforts, and documenting and disseminating our efforts to improve health care by designing spaces to meet patient needs and reduce the spread of COVID-19.

ORCID
Cory Wilbanks  https://orcid.org/0000-0003-0060-1431

REFERENCES
American Nurses Association. (2020). Crisis standard of care: COVID-19 pandemic. Retrieved from https://www.nursingworld.org/-/media/standards/coronglobalassets/practiceandpolicy/work-environment/health-safety/coronavirus/crisis-standards-of-care.pdf

Biography.com Editors. (2020, February 28). Florence Nightingale biography. Retrieved from https://www.biography.com/scientist/florence-nightingale

Centers for Disease Control and Prevention. (2019, March 20). 1918 pandemic (H1N1 virus). Retrieved from https://www.cdc.gov/flu/pandemic-resources/1918-pandemic-h1n1.html

Federal Healthcare Resilience Taskforce. (2020, June 30). Federal alternate care site toolkit. Retrieved from https://files.asprtracie.hhs.gov/documents/acs-toolkit-ed1-20200330-1022.pdf

Shelby County Health Department. (2015). Community health assessment report 2012-2014. Retrieved from http://www.sHELBYtnhealth.com/ArchiveCenter/ViewFile/Item/55

Shelby County Health Department. (2020). COVID-19 resource center. Retrieved from http://www.sHELBYtnhealth.com/

Shelby County Tennessee. (2010). Demographics. Retrieved from https://shelbycountytn.gov/211/Demographics

Tennessee Department of Health. (2020, July 21). Coronavirus disease (COVID-19), Novel Coronavirus. Retrieved from https://www.tn.gov/health/cedep/ncoV.html

World Health Organization. (2020a). Novel Coronavirus (2019-nCoV) (Situation Report 10). Retrieved from https://apps.who.int/iris/bitstream/handle/10665/330775/nCoVsitrep30Jan2020-eng.pdf?sequence=1&isAllowed=y

World Health Organization. (2020b). Coronavirus disease (COVID-19) (Situation report 183). Retrieved from https://www.who.int/docs/default-source/wha-70-and-phe/20200721-covid-19-sitre p-183.pdf?sfvrsn=b3869b3_2

How to cite this article: Stewart T, Day SW, Russell J, et al. Development of a COVID-19 alternate care site from ground zero: A nursing perspective. Public Health Nurs. 2020;37:889–894. https://doi.org/10.1111/phn.12812
APPENDIX 1: Alternate care site check list: Initial considerations

**General**
- Number of beds and level of acuity
- Admission and transfer criteria
- Memorandum of understanding with hospitals
- Consent to treat
- Referral sources accepted by ACS
- Trigger criteria to open the facility

**Organizational chart**
- Required positions
- Job position sheets

**Discharge criteria**

**Morgue**
- Size of trailer
- Electrical requirement of trailer
- Trailer location on grounds
- Number of critical care & acute beds
- Negative pressure areas
- Oxygen capability throughout ACS
  - Acute care/general nursing units
  - Portable tank storage

**Plan for bed assignments**

**Staff break areas**

**Waste removal**

**Staffing**
- Disciplines needed to staff facility
- Staffing plan for all disciplines
- Credentialing

**Patient Tracking**
- Registration
- Room assignment
- Patient lists
- Healthcare Resource Tracking System (HRTS)

**Medical Records**
- Record order and contents
- Storage of medical records
- Process for sending records to hospital
- Decontamination of medical records

**Documentation: Physician/Nurse/Ancillary**
- Admission
- Daily documentation
- Vital sign flow sheet
- Discharge
- Return to higher level of care

**Patient Care**
- Admission/discharge plan
- Safety issues
  - Monitoring blood sugars of diabetics
  - Room set up
  - Security
  - Managing patient belongings
  - Toiling/hygiene
  - Infection control

**Linen**
- Delivery to units
- Storage of linen
- Frequency of linen change

**Lab**
- Type of lab tests facility able to perform
- i-STAT

**Medication/Pharmacy**
- Medication reconciliation process
- Medication administration
- Order flow to pharmacy
- Narcotic waste and reconciliation
- Type of IVs to administer (bolus only)
- Modified formulary for ACS
- Medication room access and security
- Medication carts, restocking by pharmacy

**Communication**
- Nurse/Patient call system
- Code notification
- Nurse to provider
- Nurse to ancillary services
- Nurse/Patient to family
- Staff to administration
- ACS to hospital
- Public relations
- Telephone services within ACS
- Interpreter services

**Supplies**
- Patient care
- i-STAT
- Monitoring/tracking/maintenance
- Equipment stored in clean storage versus main storage
- Process to distribute supplies to units/restocking

**Personal Protective Equipment (PPE)**
- Donning and doffing procedure and flow
- System for cleaning reusable PPE
- Availability of PPE for staff

**Nutrition**
- Meal delivery and pick up
- Type of meals (hot/cold)
- Special diets
- Procedure for getting meals to patients
- Procedure for returning food cart to basement
- Snacks on the unit

**Transportation**
- Access and storage of wheelchairs
- Procedure for patient discharge and family pick up

**Regulation Compliance**
- Emergency Medical Treatment and Labor Act
- Health Insurance Portability & Accountability Act
- Pharmacy
- Emergency Resuscitation
- Code carts & medications & Supplies
- Ventilation equipment
- Extra safety equipment for intubation
- Plan for restocking code carts

**Situational Awareness Daily Report to State**
- Patient census
- Admissions & discharges
- Transfers back to hospital
- Deaths
- Staffing
- PPE usage
- Supply needs
- Employee incidents

(Continues)
### APPENDIX 1 (Continued)

| Lab equipment | Patient incidents |
|---------------|-------------------|
| **Radiology** | Safety events |
| Radiology tests performed at facility | Unanticipated needs |
| **Security/Safety** | Logistics report |
| External (armed vs. unarmed) | • Linen supply |
| Internal | • Food |
| Access to the building | • Scrub supply |
| External lighting | • Oxygen utilization |
| Employee parking | • Waste issues |
| Access to PPE | • Pharmacy supplies |
| Blocking roads around facility | **Orientation/Education** |
| Badges | Overview of alternate care site |
| Method of badging in and out of facility | Care of COVID-19 patients |
| Fire drills | Safety Practices |
| Evacuation plan | • Donning/doffing PPE |
| **Environmental Services (EVS)** | • Infection control |
| Cleaning schedule | ACS site specific orientation |
| Discharge room notification/turnover | **Infection Control Plan** |
| Storage of cleaning supplies | Handwashing/Eye wash stations |
| EVS training | Cleaning and disinfecting |
| **Respiratory Therapy** | Handling hazardous/regular waste |
| Treatment plans | **ACS Process Drills** |
| Oxygen weaning plan | Table-top drills with emergency preparedness |
| Assessment/monitoring oxygen tanks | team & contracted wrap around services |
|                           | Functional exercise with patient/ancillary services |