Maintaining Safety Standards While Building an Urban Alternate Care Facility in a Global Pandemic

Neena Kashyap, BS,^{1,*} Jessica Rupp, BS,^{1,*} Jeffrey K. Hom, MD, MPH,² and Sandy Gomberg, MSN^{3,4}

Abstract

The Philadelphia region responded to the shortage of health care resources imposed by the 2020 COVID-19 pandemic through the creation of the COVID-19 Surge Facility at Temple University's basketball arena. The facility was designed as an acute care medical unit capable of supporting COVID-19 patients who were stable enough to be released from the intensive care unit but not ready for discharge home. Safety was optimized through the application of recommendations from the Joint Commission and Centers for Disease Control and Prevention (CDC). The safety goals include those established by the Joint Commission with regard to patient identification, security, identification of patient safety threats, communication, fire safety, laboratory services, and pharmacologic services. COVID-19-specific goals outlined by the CDC also are addressed and include recommendations for facility layout, managing staff respite and personal protective equipment, patient care areas, supply storage, airflow, and patient hygiene. Although the goal was to meet all of these recommendations, some were not possible due to the austere environment of the arena. However, these shortcomings were met with innovative solutions that provided the next best options. By sharing these experiences, the authors hope to guide future alternate care facilities in their efforts to optimize safety.

Keywords: patient safety, alternative care facility, COVID-19, pandemic, Joint Commission, Centers for Disease Control and Prevention

Introduction

ALTERNATE CARE FACILITIES have long been the precedent in disaster situations because of their capacity to quickly accommodate surges in health care needs amid changing conditions. For example, in the aftermath of Hurricane Katrina in 2005, several alternate care facilities were created in venues ranging from retail stores to sports stadiums, each with varying degrees of success.¹ Because alternate care facilities are considered essential components of emergency response planning, the Joint Commission and the Centers for Disease Control and Prevention (CDC), among other federal organizations, have published recommendations for their design and safety.^{1,2} One type of facility described by the Joint Commission is the “facility of opportunity,” which uses nonmedical venues such as stadiums to extend the surge capacity of a hospital or region.¹ A second type of facility is known as a “shuttered facility,” whereby a closed hospital ward or facility is used during a public health disaster.¹ A

challenge in building a “facility of opportunity”¹ or a “shuttered facility”¹ is the necessity of balancing an expectation of safety comparable to that of established institutions with the resource and time limitations faced by a temporary surge facility.

The COVID-19 global pandemic prompted a severe shortage of health care resources across the United States. Models predicted that the number of patients requiring hospitalizations could exceed the number of hospital beds in Philadelphia, Pennsylvania, raising demand for alternate care facilities.³ Based on the surge of patients with COVID-19 seen in neighboring New York and New Jersey, the City of Philadelphia recognized the need to prepare for a sudden increase in numbers of patients seeking medical care.³ The City subsequently developed an alternate care facility that would reduce the burden experienced by the region's hospitals. Between March 29, 2020 and April 18, 2020 Temple University's basketball arena, the Liacouras Center, was converted to the Philadelphia COVID-19 Surge Facility at the Liacouras Center (CSF-L). This facility represented a

¹Lewis Katz School of Medicine at Temple University, Philadelphia, Pennsylvania, USA.

²Philadelphia Department of Public Health, Philadelphia, Pennsylvania, USA.

³COVID Surge Facility-Liacouras Center, City of Philadelphia, Pennsylvania, USA.

⁴Louise Fitzpatrick College of Nursing, Villanova University, Villanova, Pennsylvania, USA.

*These authors contributed equally to this work.

hybrid of the “facility of opportunity”¹ and “shuttered hospital”¹ concepts by using a nonmedical venue to establish a closed-hospital ward. This transition occurred over the course of only 10 days. The facility was designed effectively as a hospital care-level facility, as defined by the CDC,² serving as an acute care medical unit capable of supporting COVID-19 patients. The CSF-L accepted patients who had improved clinically and were no longer in need of intensive care unit-level care, but not yet ready to be discharged home. Patient care and safety were emphasized throughout the planning process. As the facility was built, expectations of patient safety centered on implementing the recommendations of the Joint Commission and CDC.^{1,2,4-8}

The Joint Commission is the largest accreditation body in the United States. It sets standards for the delivery of safe and high-quality care and is responsible for accrediting and certifying more than 22,000 health care organizations across the country.⁹ The recommendations established for acute hospitals are very specific and served as a key foundation for the design of CSF-L. These established standards for hospital safety included guidance regarding patient identification, security, identification of patient safety threats, communication, fire safety, laboratory services, and pharmacologic services (Table 1).⁴⁻⁸ However, the Joint Commission’s recommendations for alternate care facilities are intended for field hospitals built following a natural disaster, rather than for the management of a deadly communicable disease. The CDC provides guidance for COVID-19-specific alternate care facilities.² This includes recommendations for establishing a layout to minimize disease transmission, managing staff respite and personal protective equipment (PPE), patient care areas, supply storage, airflow, and patient hygiene (Table 2).^{2,6} This article describes how the Philadelphia CFS-L used recommendations from the Joint Commission and CDC to ensure safe, high-quality care in a unique nonhospital setting during an unprecedented public health challenge.

TABLE 1. JOINT COMMISSION NATIONAL PATIENT SAFETY GOALS AND STANDARDS IMPLEMENTED AT THE LIACOURAS CENTER

<i>Goal</i>	<i>Standards implemented</i>
Identify Patients Correctly	Hospital MRN assigned at triage Patient wrist bands
Improve Staff Communication	Central command center Centralized phone lists Radio communication
Use Medicines Safely	Five rights of medication administration Pharmacist verification 24/7 Safe storage of home medications
Use Alarms Safely	Orange flag at bedside
Prevent Infection	Red/green zone Staff PPE Air filtration system
Identify Patient Safety Risks	Exclusion criteria for patients with active mental health issues Suicide assessment

MRN, medical record number; PPE, personal protective equipment.

Facility Operations

Layout

A great deal of creative planning was required to optimize the available space at the CSF-L in compliance with CDC guidelines for COVID-19 isolation.² The facility was divided into multiple “zones” based on potential infection risk with “red” indicating highest risk followed by “yellow,” and then “green.” Colored tape was used to demarcate all zones and transition areas (Figure 1). The red zone encompassed the patient care area located on the basketball court, which was accessible from the ambulance loading zone via an isolated corridor termed the “decontamination hallway” (Figures 2 and 3). This transport pathway was clearly separated with floor-to-ceiling plastic draping. All staff working in red zones wore appropriate PPE. Any uncontaminated area, such as some hallways surrounding the basketball floor that housed the staff locker rooms, were designated green zones. Any entry/exit from the red zone to the green zone had an intermediate yellow zone area that facilitated the transfer of materials and a donning and doffing area to prevent cross contamination.

Supply storage

The CDC recommends medical supply areas be clearly delineated for clean and soiled supplies.² Each pod was equipped with a basic supply area with storage walls formed by folded bleachers. A main supply area was located on the second floor of the arena above the bleachers and protected by floor-to-ceiling plastic barriers. This second level storeroom area was designated as a yellow zone and staffed by personnel responsible for passing supplies down to the patient care area. Personnel were notified of supply needs via a flag system. Needed supplies were then brought to the yellow zone on the arena floor for transport into the red zone by properly donned staff. This design allowed for quick access to supplies while maintaining separation between zones. A soiled supply area was designated in the gymnasium where full biohazard waste and soiled linen bags were temporarily stored. This area was considered the “double red zone.” Biohazard waste removal and reprocessing of dirty linen did not occur on site and was conducted by an external vendor.

Airflow

The open layout of the basketball arena posed several challenges related to airborne infection control. The CSF-L air exchange system was based on recommendations from environmental health and safety experts who were consulted to optimize airflow and minimize risk in the facility. Air was drawn from the floor up to vents on the roof of the arena, creating a proxy for a negative pressure environment as all of the air was pulled from the red zone out of the building. The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) has published recommendations specific for commercial facility operations during the COVID-19 pandemic.¹⁰ ASHRAE describes “particle transmission” of the virus whereby viral particles behave in a gaseous manner to diffuse over large distances.¹⁰ Transmission is mitigated primarily by air filtration and modifications to a facility’s existing heating, ventilation,

TABLE 2. CENTERS FOR DISEASE CONTROL AND PREVENTION GUIDELINES FOR ALTERNATE CARE FACILITIES FOR COVID-19 AND STANDARDS IMPLEMENTED AT THE LIACOURAS CENTER

<i>Guideline</i>	<i>Standards implemented</i>
Layout	Dedicated patient triage area Staff respite area separate from patient care area Transition zone for donning/doffing Designated patient care area clearly labeled Clean supply area Medication storage/preparation area Dirty utility area
Air Conditioning/Heating	Functional HVAC system Filtration system for vents Air turnover 5 times per hour
Spacing Between Patients	6 feet between patient beds Privacy barriers in between beds
Storage Areas	Dedicated space for clean storage Dedicated space for dirty storage
Floors and Surfaces	Nonporous floors and surfaces throughout the patient care area
Visitor Access	Visitors prohibited from facility
Food Services	Space for staff to eat without wearing PPE Diets catered to patient needs
Environmental Services	Staff trained to wear appropriate PPE EPA-registered disinfectants utilized EVS personnel always available for medical waste Daily cleaning of bathrooms
Sanitation	Sanitation and waste services available for medical waste
Laundry Facilities	Off-site laundry services for reusable gowns
Pharmacy Access	Medications properly labeled and stored Area for medication preparation separate from patient care area Staff trained to appropriately and safely administer medications
Diagnostics	Point-of-care testing meters disinfected between uses
Staffing	Sick policy for staff Infection prevention and control specialist involved in staff training and planning Occupational health services available for staff
Infection Prevention and Control	Necessary supplies stocked with reserve on-site
Personal Protective Equipment	Necessary PPE stocked with reserve on-site All staff required to wear N95 masks, face shields, gloves, and isolation gowns in patient care area Staff required to remove PPE and perform hand hygiene upon leaving patient care area
Hygiene	Separate restrooms for staff Adequate ratio of bathrooms for patients

EPA, Environmental Protection Agency; EVS, Environmental Services; HVAC, heating, ventilation and, air-conditioning; PPE, personal protective equipment.

and air-conditioning (HVAC) systems.¹⁰ The modifications suggested include an increase in outdoor air ventilation, allowing HVAC systems to run 24 hours daily, and the addition of MERV-13 filters. The HVAC system at CSF-L met all these recommendations, including operating at 100% outdoor air exchange.

The CDC has published its own guidelines regarding air supply and recommends including air return at opposite ends of open air space to diminish the risk of viral transmission.² This was not feasible with the arena layout, so airborne risks were reduced by separating different zones by distance. Although the airflow exchange rate for the facility of 3 to 4 exchanges per hour did not meet the CDC recommendation of 6 air exchanges per hour for patient treatment rooms, the CSF-L patient care area was a much

larger, open-air arena compared to a hospital patient room and achieved 100% dilution. The CDC further recommends Airborne Infection Isolation Rooms with a negative pressure environment for patients undergoing aerosol-generating procedures.² Although no rooms met this requirement at CSF-L, any patient at risk for emergent intubation was to be taken off the floor to a dedicated resuscitation room with neutral airflow and immediate cleaning protocols. There were 2 resuscitation rooms, each featuring floor-to-ceiling plastic barriers with overlapping plastic serving as an entrance way. Only designated staff were with the patient in the resuscitation area, and all medications and equipment were handed into the area through overlapping barriers. An advanced life support ambulance was on site 24 hours a day to quickly move patients to an emergency room 2 miles away.

FIG. 1. Layout: The Red zone extended from the Patient drop-off area, through triage, onto the main patient care area, and through the decontamination hallway for waste. Full PPE was required in the Red zone. There was a dedicated Yellow transition zone in the decontamination hallway and the PPE entrance. All other surrounding hallways were part of the Green zone, including the staff hallway and lounge. Face masks and social distancing were required in the Green zone. PPE, personal protective equipment.

Oxygen management

The National Institutes of Health provides guidelines regarding ventilatory support of COVID-19 patients.¹¹ These guidelines require alternate care facilities to have the capability of providing supplemental oxygen to all COVID-19 patients.¹¹ This was achieved by creating a unique system of copper piping to deliver oxygen from an external liquid oxygen truck parked adjacent to the facility. The copper piping network was built around the perimeter of the second level of the arena and brought to the headwall of each bed. The headwalls were created using industrial packing boxes, each of which had a fixed oxygen outlet and flowmeter that could provide oxygen up to 12 liters per minute for each patient. A master oxygen shutoff panel was placed in the middle of the arena and area shutoff valves were placed at the end of each 36-bed pod. Portable oxygen tanks were

available to facilitate patient mobility in the facility and for use in the event of a system failure.

The inherent volatility of oxygen posed a significant safety challenge in the development of a temporary delivery system. Engineers built the system in conjunction with environmental health and safety experts. An oxygen technician was on site 24/7 to respond immediately to leaks or failure. The oxygen system was checked by on-site environmental health safety experts twice per day. Additionally, the Philadelphia Fire Department created a temporary fire station at the facility to assure immediate response in the event of an emergency. Further complicating oxygen management was the need for other volatile products on the floor, such as alcohol-based hand sanitizer. The environmental health and safety experts worked with infection prevention and control specialists to optimize the layout, amount, and storage of hand sanitizer to minimize the risk of flammability.

FIG. 2. A picture of the layout of the CSF-L. CSF-L, COVID-19 Surge Facility at the Liacouras Center.

Fire safety and evacuation

As the Liacouras Center is an open-air facility, implementation of all components of the Joint Commission's "Unit Concept" of fire safety was not feasible.⁷ This concept describes fire safety as a series of contained "units" including (1) patient rooms equipped with sprinklers, (2) isolated corridors/hospital wings, serving as "smoke compartments," as well as (3) a broader "building unit" including smoke

detection and control as well as evacuation plan.⁷ Although the patient care area could not be subdivided into physically contained rooms or wings, the CSF-L as a "building unit,"⁷ was prioritized and met existing Joint Commission recommendations. Fire safety measures in the facility included wet-type sprinklers, a fire pump system with designated fire hose racks, and widely dispersed fire extinguishers. The building also was equipped with an automatic smoke control system that provided exhaust for the gymnasium as

FIG. 3. A picture of one row of patient beds. Beds were spaced at a minimum of 6 feet apart and had individual oxygen and electric outlets.

well as concourse areas. Additionally, the Philadelphia Fire Department maintained a temporary fire station at CSF-L. Evacuation plans for the patient care area involved patient extrication to the ambulance bay followed by exit via ramp. Wheelchairs and portable oxygen were available for all patients in the ambulance bay to facilitate a mass evacuation. All staff attended fire safety education during orientation, and the on-site firefighters and environmental health and safety experts conducted routine emergency drills throughout the time the facility was open.

Security

1. Non Patient Care Zones. The Joint Commission recommends that hospitals take steps to minimize or eliminate safety and security risks of the physical environment.⁵ CSF-L safety plans regarding fire evacuation and patient safety incidents are discussed in the Fire Safety and Security sections, respectively. In non patient care zones, attention was focused on maintaining a secure perimeter. Ensuring an adequate perimeter was especially important given the widespread publicity of CSF-L. Most employees entered the facility via an overhead walkway from the parking structure. The lobby was staffed at all times by facility security guards who were responsible for signing personnel in and out and identifying employees by badge or photo ID. The second point of entry was the loading dock that served as restricted access for ambulances as well as delivery and removal of supplies and linen. The ramp was guarded by a security booth and police cruiser. Additional perimeter security included police cruisers blocking traffic immediately adjacent to the facility as well as patrolling the surrounding blocks. Security within the facility included security guards rounding the green zones as well as a tactile special weapons and tactics team available at all times.

2. Patient Care Zones. The Joint Commission requires hospitals to develop written procedures to be followed in the event of security incidents.⁴ Beyond environmental risks, which have been addressed previously, the primary patient and staff safety risks related to escalations in patient behavior. Kumar and Nayar outline the World Health Organization's (WHO) report on the socioeconomic and psychological impact of COVID-19 on communities.¹² The report examines how self-isolation and quarantine may have precipitated anxiety, depression, insomnia, substance use disorder, self-harm behavior, and feelings of isolation.¹² The WHO additionally noted increased rates of domestic violence globally during this pandemic.¹³ The environment of CSF-L itself had the potential to exacerbate many psychological stressors because the facility did not allow for patient visitation by friends and family, and could not provide the same privacy and comforts of a traditional hospital. CSF-L also could not offer many of the mental health resources (eg, psychiatrists, 1:1 sitters, patient restraints) used by traditional hospitals. Thus, the risk of safety incidents related to patient behavior was minimized preemptively by declining to accept patients felt to be at high risk by the transferring physician. If any of the aforementioned resources for behavioral health were felt to be necessary, CSF-L policy dictated that the patient would be transported to a nearby hospital emergency room. Thakur and Jain discuss the psychosocial impact of COVID-19 by presenting a case series of suicides among COVID-19 positive

patients.¹⁴ The article identifies guilt and fear of transmitting the virus as potential triggers.¹⁴ A suicide assessment screening protocol was in place in the event of self-harm behavior. This protocol would prompt transport to a nearby emergency room in accordance with the degree of safety risk.

Patient Care

Laboratory

The Joint Commission recommends that hospitals develop written protocols establishing the definition of critical lab values as well as timely communication of critical values.⁴ Additionally, it is recommended that alternate care facilities operate in conjunction with an existing hospital system in order to use laboratory resources.¹ Despite the absence of a laboratory within the facility, CSF-L was able to meet these standards by contracting with a local hospital 2 miles from the facility. Specimens were sent via a courier system to the hospital at set times, twice daily. The ordering physician was contacted via telephone by the laboratory technician in the event of any critical lab values. These values were defined based on the hospital laboratory's standing critical value criteria. Attending physicians would read back the critical values to the laboratory personnel. All lab values were posted in the CSF-L electronic medical record (EMR) system as results became available in a manner identical to that of a standard hospital. One limitation of this resource-constrained system was the ability to send stat labs with immediate turnaround times. Labs received outside of the normal delivery times would be processed within 2 hours. Patients requiring labs with results sooner than a 2-hour turnaround time were transported to a nearby emergency department in order to optimize patient safety.

Medication administration

One of the most important aspects of patient safety for any facility is medication administration and reconciliation. Yang et al authored a case series of 153 COVID-19 patients and noted that these patients tend to have multiple comorbidities including hypertension, diabetes, and cardiovascular disease, and often require multiple medications.¹⁵ The complexity of COVID-19 patients in addition to the technological limitations of providing care in an alternate care facility posed significant challenges for medication safety. For patient safety and to ensure that the CSF-L pharmacy had time to obtain patient-specific medications, patients were admitted with a 5-day supply of medications from the transferring facility. This supply of medication was verified by an on-site pharmacist at the triage station upon arrival at the CSF-L and labeled clearly with information corresponding to the patient's wristband. A pharmacist was at CSF-L from 8 AM to 11 PM to assure on-site medication reconciliation for patients arriving later in the day.

CSF-L operated with an EMR system featuring physician order entry equivalent to that of a traditional inpatient unit. Each bed at the facility had a dedicated drawer in a locked medication cart adjacent to the nursing station that was labeled with the bed number for medication storage. Resource limitations prevented CSF-L from using the technology traditionally employed by hospitals to facilitate medication storage and administration, such as Pyxis dispensers. Thus,

the nursing staff were oriented to use the 5 rights of medication administration and 2-nurse verification for high-risk drugs in order to administer medications safely without technologic verification.⁸ The chief medical officer and clinical medical directors approved a CSF-L formulary for on-site medications based on the admission criteria and anticipated medical needs of the patient population. The on-site pharmacy had stock drugs aligned with the approved formulary. For medications ordered overnight by physicians or advanced practitioners, remote pharmacists were available 24/7 for verification.

Patient comfort

1. Privacy. Maintaining patient privacy was a challenge given the open-air environment of CSF-L. Per CDC recommendations, patient beds were arranged 6 feet apart with movable cloth privacy curtains serving as the dividers.² Patients were situated in beds not directly adjacent to one another as patient volume permitted. The floor of the basketball arena was visible to the surrounding bleachers as well as private suites. To prevent breaches in patient privacy, staff were not allowed in the bleacher sections and suite windows were covered by paper barriers. All patient care documentation was facilitated by an EMR system that imparted privacy and security compliant with Health Insurance Portability and Accountability Act guidelines. Patient visitation was not allowed, and the building was secured by measures outlined in the Security section. Additionally, only staff directly involved in patient care were allowed in the patient care areas.

2. Patient Hygiene. For patient comfort, significant care was taken to create the best system for patient hygiene per recommendations and the resources available.² Alcohol-based hand sanitizer was available at each patient's bed for staff and patient use. Patients had access to 2 restroom facilities off the main patient care area. Each facility had 4 individual stalls, creating a 1:20 ratio if the facility operated at full capacity. These restrooms were monitored continuously by environmental services staff to maintain cleanliness. Bedside commodes and privacy barriers were available for patients who had difficulty ambulating. Upon arrival, each patient was provided a toiletries bag with basic hygiene products. Although there were no showers available for patients, the facility mitigated this discomfort by providing patients a "bath in a bag" body wipe product also used in traditional hospital settings for patients with limited mobility

Staffing

Staff respite and PPE

The CDC provides guidance for the layout of facilities regarding areas for staff respite and PPE.² Staff lounges were situated in the gymnasium locker rooms and included bathrooms, showers, and lockers for storage of personal belongings. In the areas designated for breaks and eating, a minimum of 6 feet was maintained between chairs to enforce best physical distancing practices. All staff amenities were located in a green zone down a corridor from the red zone patient care area. A designated yellow zone transitioned between these 2 areas. This area provided a station for staff to don and doff PPE under the supervision of infection control specialists prior

to entering and exiting the patient care area. Per CDC recommendations for the care of patients with COVID-19, all staff wore face shields, N95 masks, gloves, and isolation gowns in the patient care areas.² Clinical staff were given a lounge area in the green zone to allow them to take breaks in a safe manner, per recommendations.²

Communication

The Joint Commission identifies communication barriers as a major challenge for providers in alternate care facilities.¹ The Joint Commission recommends that surge facilities use telephone communication in conjunction with a 2-way radio system.¹ CSF-L achieved this recommendation by adapting a secure radio system consisting of multiple bands for fire, security police, and oxygen personnel. The radios had the capacity to send universal alarms for emergency situations, including rapid responses. All radio communication was monitored by a centralized command center capable of deploying on-site and off-site safety resources. Additionally, the command center was able to broadcast safety instructions over in-house radios as well as the gymnasium public address system as necessary. Landlines were established to facilitate effective communication across zones, with transferring facilities, and with on-call, specialty consult services. A centralized phone list was created and posted at all facility phones.

Discussion

In the face of public health disasters, cities such as Philadelphia must respond rapidly to meet the most urgent health care needs of the community. Although speed of response is critical, it also is imperative that these facilities maintain certain standards of safety to reduce the risks inherent to providing care in nontraditional spaces. CSF-L used a combination of Joint Commission guidelines and CDC recommendations tailored to the COVID-19 pandemic in order to uphold the highest safety standards feasible. This included achieving the expectations set forth for hospitals with respect to sufficient PPE, laboratory evaluation, pharmacy services, and security. Although the goal was to meet all of these recommendations, some were not possible because of the austere environment and layout of the basketball arena. This included air exchange rates, negative pressure environments, physical barriers between patient care areas, and hygiene standards. Each of these shortcomings was met with innovative solutions that provided the next best option available and were validated by infection control specialists on-site. The experience at CSF-L shows that alternate care facilities do not need to sacrifice quality or safety for expediency.

Because of the inherent unpredictability of health care disasters as well as the wide variety of available venues and resources, it is difficult to create uniform guidelines for the development of alternate care facilities. The current recommendations are based on alternate care facilities that were developed following Hurricane Katrina in 2005.¹ CSF-L was able to adapt these recommendations and uphold safety standards despite the challenges of time and resources posed by the COVID-19 pandemic. The design of CSF-L and development of protocols were centered around the specific needs of COVID-19 patients. Fortunately, the pressures placed on the Philadelphia region by the COVID-19 pandemic were less than predicted, and CSF-L was needed for only 13 days,

during which it cared for 14 patients. This was 6.5% of the facility's total capacity. Nonetheless, the authors hope that the experiences at CSF-L may serve as a foundation for the establishment of safety standards and design of future "facilities of opportunity." There are few reports in the literature that detail specific obstacles faced by alternate care facilities. By contributing to the body of research detailing these challenges and solutions, the authors hope to minimize the need for each new facility to "reinvent the wheel" and expedite the creation of these truly life-sustaining resources.

Conclusion

In response to the evolving COVID-19 pandemic, the City of Philadelphia's CSF-L was swiftly converted to a hospital-level alternate care facility that achieved standards of safety comparable to that of a traditional hospital. Although each alternate care facility is unique and must adjust to the needs of its environment within the context of local resources and partnerships, the experience in Philadelphia can be used to inform planning for future "facilities of opportunity." Ultimately, it was only through the ingenuity, creativity, and tireless effort of a team of volunteers that a basketball court was transformed into a hospital capable of providing a climate of safety and healing for patients suffering from a deadly communicable disease.

Authors' Contributions

Conception or design of the work, data collection, data analysis and interpretation, critical revision of the article, final approval of the version to be published: Ms. Kashyap, Ms. Rupp, Dr. Hom, Ms. Gomberg. Drafting the article: Ms. Kashyap and Ms. Jessica Rupp.

Acknowledgments

The authors would like to acknowledge the City of Philadelphia and the Lewis Katz School of Medicine at Temple University for allowing us to participate in the construction of CSF-L. This work would not have been possible without the guidance from Philadelphia's Office of Emergency Management. Special thanks to Cody Yokubaitis for Figure 1.

Author Disclosure Statement

The authors declare that there are no conflicts of interest.

Funding Information

No funding was received for this article.

References

1. Joint Commission on Accreditation of Healthcare Organizations. Surge hospitals: providing safe care in emergencies. 2006. https://www.jointcommission.org/-/media/deprecated-unorganized/imported-assets/tjc/system-folders/topics-library/surge_hospitalpdf.pdf?db=web&hash=43EAC6444DE45A9528AEC0E346D32ACB Accessed April 12, 2020.
2. Center for Disease Control. Considerations for alternate care sites. 2020. <https://www.cdc.gov/coronavirus/2019-ncov/hcp/alternative-care-sites.html#patient-care> Accessed April 24, 2020.
3. Centers for Disease Control. Geographic differences in COVID-19 cases, deaths, and incidence, United States, February 12–April 7, 2020. 2020. <http://dx.doi.org/10.15585/mmwr.mm6915e4> Accessed April 10, 2020.
4. Joint Commission on Accreditation of Healthcare Organizations. Hospital National Patient Safety Goals. 2020. <https://www.jointcommission.org/-/media/tjc/documents/standards/national-patient-safety> Accessed April 6, 2020.
5. The Joint Commission and Healthcare Security. Knowns, known unknowns and unknown unknowns. 2013. <https://www.campusafety.com/hospital/the-joint-commission-and-healthcare-security-knowns-known-unknowns-and-unknowns/> Accessed April 15, 2020.
6. Center for Disease Control. Appendix B, air guidelines for environmental infection control in health-care facilities 2003. 2015. <https://www.cdc.gov/infectioncontrol/guidelines/environmental/appendix/air.html#tableb2> Accessed April 15, 2020.
7. Joint Commission on Accreditation of Healthcare Organizations: Fire protection, clinical impact. 2020. <https://www.jointcommission.org/resources/patient-safety-topics/the-physical-environment/fire-protection/clinical-impact/> Accessed April 20, 2020.
8. Joint Commission on Accreditation of Healthcare Organizations. Medication management. 2018. https://www.jointcommission.org/-/media/tjc/documents/resources/webinar-replays/medication_management_presentation.pdf?db=web&hash=6CEF8EBA0929FFC97F65075E71AAA11F Accessed May 20, 2020.
9. Joint Commission FAQs: What is the Joint Commission?. 2020. <https://www.jointcommission.org/en/about-us/facts-about-the-joint-commission/joint-commission-faqs/> Accessed May 10, 2020.
10. Schoen LJ. Guidance for building operations during the COVID-19 pandemic. *ASHRAE J* 2020;62:72–74.
11. National Institutes of Health. Covid-19 treatment guidelines. 2020. <https://www.covid19treatmentguidelines.nih.gov/introduction/> Accessed May 10, 2020.
12. Kumar A, Nayar KR. COVID 19 and its mental health consequences. *J Ment Health* 2020. DOI: 10.1080/09638237.2020.1757052
13. World Health Organization. Mental health and COVID-19, 2020. www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/novel-coronavirus-2019-ncov-technical-guidance/coronavirus-disease-covid-19-outbreak-technical-guidance-europe/mental-health-and-covid-19 Accessed May 2, 2020.
14. Thakur V, Jain A. COVID 2019-suicides: A global psychological pandemic. *Brain Behav Immun* 2020;88:952–953.
15. Yang J, Zheng Y, Gou X, et al. Prevalence of comorbidities in the novel Wuhan coronavirus (COVID-19) infection: a systematic review and meta-analysis. *Int J Inf Dis*. 2020;94: 91–95.

Address correspondence to:

Neena Kashyap, BS
Lewis Katz School of Medicine at Temple University
3500 North Broad Street
Philadelphia, PA 19140
USA

E-mail: neena.kashyap@temple.edu