

APPENDIX A: Feasibility Study

MUSTER Alternate Care Site Feasibility Study

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Project Scope: In collaboration with U.S. departments and agencies MUSTER will manufacture a cost-effective and reusable COVID-19 Alternate Care Site (USACE, 2020), mobile field hospital solution, which will save taxpayers hundreds of millions of dollars, which is currently spent on converting conventions and arenas into temporary pandemic treatment centers (Rose, 2020).

Equally important, MUSTER will serve as a support multiplier in support VA/DOD Health Services Sharing and Emergency Operations, national security, Global Health Security Agenda (Drieste, 2020), and economic development during and post-battle against COVID-19.

The Current Analysis: Contrasted with a single event caused by a natural disaster or terrorist attack, the COVID-19 pandemic is an evolving crisis that poses long-term challenges for professionals engaged in emergency preparedness and response (World Health Organization).

Accounting for the World Health Organization's pandemic risk plans, national and international health care systems, national security, the global economy, and the overall well-being of global health safety and security, is at high risk of becoming compromised due to the COVID-19 pandemic (World Economic Forum, 2020).

The expected lack of hospital beds within the civilian, military, and Veterans Affairs health care systems resulting from a sudden increase in patients requiring medical care has been a problem for years (The Joint Commission, 2006).

As an illustration, the Department of Veterans Affairs (VA) acts as the primary medical service to the Department of Defense (DOD) health care system during and immediately after a war outbreak or national emergency as codified in the VA /DOD Health Services Sharing and Emergency Operations Act (Pub. L. 97-174), passed on 4 May 1982 (Military Health System, 2020).

As part of the Department of Veterans Affairs (VA) "Fourth Mission," it directs the Veterans Health Administration (VHA) to act as a safety net for the nation's private health care system, providing extra capacity and resources should community hospitals become overwhelmed.

Under the National Response Framework, an interagency plan coordinating the federal response to emergencies, the VA has been tasked with two essential support functions in response to fighting COVID-19: sharing health care resources with the community and/or providing care to non-enrolled veterans or non-veterans. Under the national response framework, federal, state, or local officials can request that Health and Human Services (HHS) operationalize the VHA to provide these community and non-veteran services. Typical requests include a lack of needed supplies of personal protective equipment (PPE), hospital beds, or medications. Importantly, VA patients still take priority and the VA can only provide these

support services if it can first handle the strain from veterans with COVID-19 and ensure the continuity of care for uninfected patients.

The civilian and military health care system relies on the VHA as a mechanism for expanding capacity in states and localities underlined by the recent upsurge in COVID-19 cases, as demonstrated by the existing VHA funding of some affected areas.

However, as a part of the VA / DOD Health Care Sharing and Emergency Operations Act, the VHA can face restrictions that would impede their ability to adequately fulfill its role and provide resources and assistance across various populations.

The VHA could be a resource to expand capacity in states and localities strained by the recent resurgence in COVID-19 cases, as shown by the VHA's current support of some affected areas. In reality, the VHA can face limitations that would threaten their ability to support its "Fourth Mission" effectively and provide capability and support across civilian and military health care systems (Steinhauer, 2020).

Like other hospitals during the pandemic, VHA facilities could experience shortages of their staff and services resulting from the COVID-19 medical bed surge (Kheel, 2020). To further complicate matters, VA Medical Centers are primarily located mainly in metropolitan areas of the country with community-based outpatient clinics (CBOCs) located throughout rural America, which lack the resources to care for veterans and military patients, National Guard, or Reservists who become ill because of COVID-19 (VA Office of the Inspector General, 2020).

The number of COVID-19 cases and deaths in rural communities have grown more quickly than in urban communities since April 2020. Rural hospitals have less capacity and fewer alternatives to adapt if they become overwhelmed (Thebault, R., & Hauslohner, 2020).

Given these points, MUSTER aims to provide a solution to meeting the forthcoming demand for an alternative to converting convention and arenas into Alternate Care Sites as alluded to as part of HHS/ASPR 2019 Crimson Contagion (Sanger, Lipton, Sullivan, & Crowley, 2020) key exercise findings report (New York Times, 2020).



MUSTER Cost-Benefit Justification

As the demand for mobile healthcare facility markets exponentially grows in the upcoming years, MUSTER will continue to collaborate with its partners to create economic development initiatives (McKinsey & Company, 2020).

Equally important, MUSTER will establish career and upward mobility programs for military veterans and formerly incarcerated members of society, i.e. returning citizens (USGS Human Capital Office, 2020).

MUSTER's future clients are U.S. civilian and military hospitals (New York Times, 2014) and the 31 countries identified by the Centers for Disease and Prevention Control who are part of the Global Health Security Agenda.

Factoid #1: The Global Health Security Agenda in partnership with U.S. government sister agencies, other nations, international organizations, and public and private stakeholders, CDC seeks to accelerate progress toward a world safe and secure from infectious disease threats and to promote global health security as an international security priority, to

- Prevent and reduce the likelihood of outbreaks – natural, accidental, or intentional;
- Detect threats early to save lives;
- Respond rapidly and effectively using multi-sectoral, international coordination, and communication.

The U.S. will work with partner countries on nine specific objectives to prevent, detect, and effectively respond to infectious disease threats (CDC, 2020).

Factoid #2: What does the Department do if civilian, VA, or military health care systems are overrun during the COVID-19 pandemic or national emergency? See the snapshot of one Army Military Treatment Center and one Air Force:

Fort Riley – U.S. Army

24 staff beds (New York Times, 2020)

Population 48,000, which includes Soldiers, family members, retirees, and Department of the Army civilians (Military One Source, 2020)

Wright Patterson Medical Center – Air Force

62 Staff beds (New York Times, 2014)

Population 29,300 people, which includes airmen, family members, retirees, and the Department of Air Force civilians (Military One Source, 2020).

Factoid #3 According to a published report by Axios, America only has 2.8 hospital beds per 1,000 citizens (Altman, 2020).

Factoid #4 America's health care system is not prepared for the COVID-19 patient surge.

"Few if any, hospitals in America today can handle 100 patients suddenly demanding care. There is no metropolitan area, no geographically contiguous area, that could handle 1,000 people area, that could handle 1,000 people suddenly needing advanced medical care in this country right now."

Source: U.S. Congress Senate Committee on Government Affairs, FEMA's Role in Managing Bioterrorist Attacks, and the Impact of Public Health Concerns on Bioterrorism Preparedness. 107th Cong., 1st Sess. July 23, 2001, Testimony of Tara J. O'Toole, M.D., M.P.H. John Hopkins for Civilian Biodefense Studies.

Market saturation: As of August 30, 2020, there is no saturation in the Alternate Care Site manufacturing market. In reality, the demand for mobile Alternate Care Sites is expected to grow exponentially in the next five years potentially generating billions of dollars. (Herschman, Lutes, Thompson, Snyder, & Nussbaum, 2020).

Price Comparison:

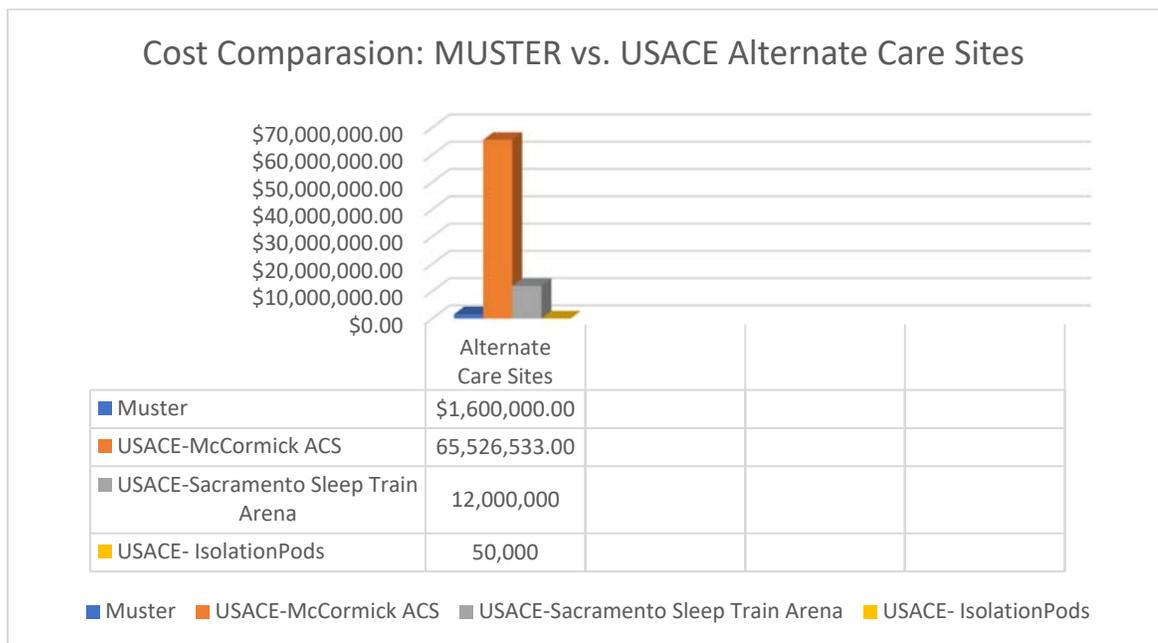
- **The MUSTER reusable Alternate Care Site 4-unit layout costs \$1.6 million**
- **Alternate Care Sites (ACS built by the U.S. Army Corps of Engineers (USACE))**

McCormick Place – Chicago, Illinois Convention Center
 \$65,526,533 spent, 37 patients seen (Rose, 2020)

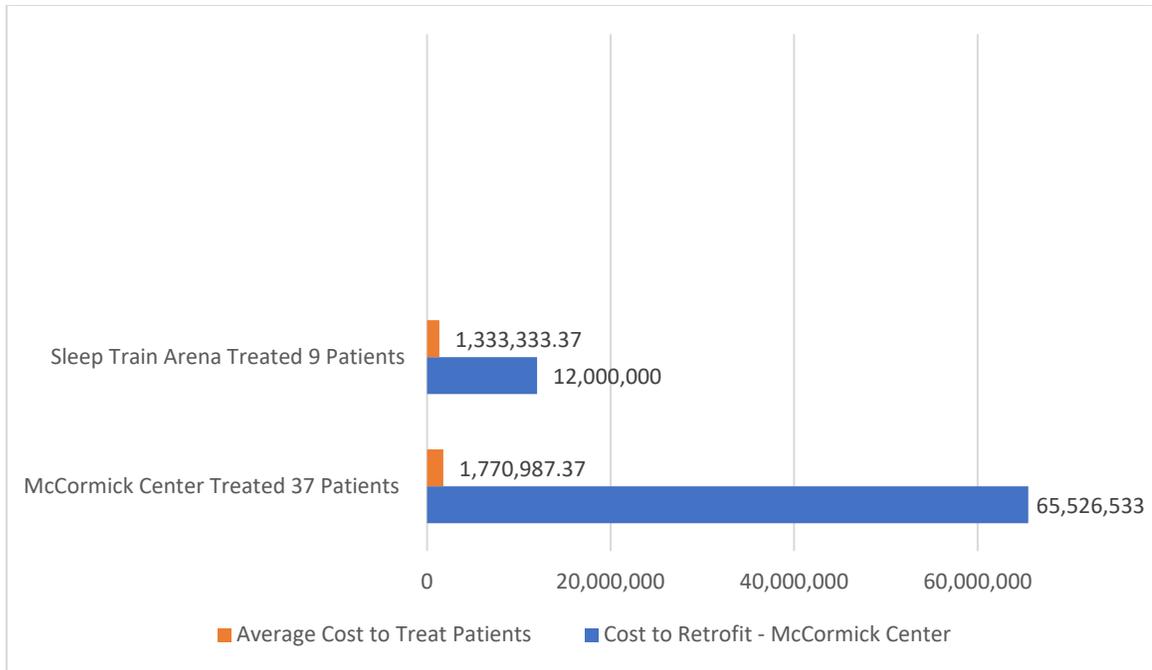
Sacramento’s Sleep Train Arena – California
 \$12 million, 9 patients seen (AP, 2020)

Patriot Pods developed in cooperation with the USACE
 \$55,000 per isolation pod (PR Newswire).

See the infographics below.



Sources: (Rose, 2020) and (AP, 2020)



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**Greater Columbus Convention Center - Alternate Care Site Costs
was \$ 2,379, 569 = (\$1,991 per bed)
Source: Journal of Emergency Medical Services**

Component	Cost
Room and Partition Buildout	\$1,287,200
Back-up Power and Power Distribution Equipment and Labor	\$402,841
Convention Center 30-Day Rental, Water/Sinks, Overhead, Management Staffing and Miscellaneous Setup Costs	\$289,054
Coordinator and Legal Fees	\$87,474
Cots (Ohio EMA/National Guard Support)	\$313,000

Note: This doesn't include WIFI and nurse call costs.

Website Source:

www.jems.com/2020/08/20/deployment-of-a-shared-alternative-care-site-during-the-covid-19-pandemic/

***Zero patients are seen at the GCCC – ACS (Kovach, 2020).**

Conclusion:

MUSTER will serve as a viable option to overcome the challenges associated with medical bed surges during a pandemic or national emergency where health care systems can leverage a government-authorized Alternate Care Site (California Department of Public Health, 2017).



MUSTER Alternate Care Site costs \$1.6 million per baseline unit, which can accommodate up to 480 patients. Units can be combined to create additional medical surge facilities. Units are deployable anywhere in the world, reusable, and easily stored.

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