COVID-19
RESPONSE UNIT
CONTACT

If you need assistance reviewing these standards, planning the implementation of your COVID-19 Response Unit, or have any questions on the information presented in this packet please contact the following collaborators:

Robert Freni
AIA | LEED AP BD+C | Architect
CEO & Co Founder, Adaptiv Architecture & Planning
rwfreni@adaptiv.org
www.adaptiv.org

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Timothy Hickory
Director of Operations, Construction For Change

tim@constructionforchange.org
www.constructionforchange.org

Construction for Change partners with nonprofit organizations to build spaces where people can become healthier, better educated, and increase economic mobility.

Jason-Emery Groen
OAA | OAQ | AIBC | MAA | NSAA | AANB | RAIC
Vice-President, Design Director, HDR
jason.emery.groen@hdrinc.com
www.hdrinc.com

HDR specializes in architecture, engineering, environmental and construction services. Our multidisciplinary teams span more than 200 locations worldwide and include scientists, economists, builders and analysts opening the doors to what’s possible each day. Through our Design 4 Others initiative, HDR employees provide architecture, engineering and planning services to communities in need around the world.
PROTOTYPE LIFECYCLE

ENGINEERS

IMPLEMENTORS

ARCHITECTS & PLANNERS

HEALTHCARE SPECIALISTS

SUSTAINABILITY CONSULTANTS

COLLECTIVE PLATFORM

PROTOTYPE DEVELOPMENT

LOCALLY IMPLEMENTED PROJECT

LOCALLY IMPLEMENTED PROJECT

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The COVID-19 Response UNIT showed below is a visual representation of the complete unit with a separate Symptomatic Ward, Positive Patient Ward, and Staff Entrance Exit. The components of the space and the flow will be described further in the following pages.
The flows noted in the diagrams below are the critical flows that should be considered in all COVID-19 Response Units. While the organization of the components will vary depending on the Response Unit type, the critical flow and components should remain consistent and health care providers should ensure that the fundamental principles inherent in the demonstrated flows are clear to all staff.
There are critical components of an effective COVID-19 response system that will need to be coordinated by each health care provider to support their COVID-19 Response Units. The following includes some but not all of these components:

**Testing**
It is critical to test potentially infectious patients to gain insight and track regional disease trends to be able to control the rapid spread of the virus. With Community Health workers being a critical component to most healthcare systems, they should be mobilized to go to the community health posts to identify and triage the highest risk patients.

**Laboratory**
Relationship with a Laboratory or Laboratories that can receive and process the tests quickly and accurately is critical. Ensure there is the ability to provide lab technicians samples without having them enter the unit.

**Screening**
The healthcare facility should have a screening area to set up the front of the facility to quickly triage patients and send COVID-19 patients to the Response Unit or non-COVID-19 patients to the main facilities.

**Waste Management Systems**
Prepare to store and dispose of vast amounts of waste generated including but not limited to PPE, laboratory waste, medical waste, etc. Appropriate medical waste removal must be considered.

**Supply Chain and Storage Capacity**
Consider the supply of medical equipment, PPE, reagents, and other supplies as well as the on site storage of those supplies in close proximity and with easy access for the COVID-19 Response Unit.

Ensure there is secured storage for medications and cold storage capacity as needed.

**Ambulance Services**
Ensure there are dedicated vehicles available to retrieve COVID-19 patients in the community.

**Laundry**
Ensure access to laundry to effectively clean all linens and reusables. Provide separate laundry from the general hospital, that is adjacent to the unit and accessible from the patient wards to facilitate infection control measures laundry where possible.

**Access to Food**
Ensure access to food for the patient and staff populations while providing or receiving care.

**Morgue**
Healthcare providers should develop the process of disposing of the bodies of deceased patients taking into account potential surge requirements.

**Family Members as Part of Healthcare Delivery**
Many healthcare providers rely on patient family members as a critical component to providing quality care to their patients. The healthcare provider needs to develop a strategy to effectively manage patient family members so as to reduce the spread of the virus and keep the family members and staff safe. Patient family members should not be allowed to enter the unit.

**Staff**
It is critical to understand the sacrifices the staff will make during this pandemic and provide adequate spaces for them to take breaks, rest, and properly remove all of their PPE.

Ensure healthcare staff members are safe within the communities they live in as well, as stigmatizations may develop around them being carriers of the virus.
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The following checklist considers the critical components of the COVID-19 Response Units including minimum size recommendations per space and the critical flow between spaces. These components and flows are the critical components that should be included in all COVID-19 Response Units. As noted on previous pages, while the organization of the components will vary depending on the Response Unit type, the critical flow and components should remain consistent and health care providers should ensure that the fundamental principles inherent in the demonstrated flows are clear to all staff.

Types of COVID-19 Response Units:

- Conversion of existing facilities into COVID-19 Response Units.
- Construction of a new COVID-19 Response Unit utilizing tents.
- Construction of a new COVID-19 Response Unit utilizing locally available materials.

Considerations to Determine Type of COVID-19 Response Unit to Implement

The graph below has been developed by reviewing typical costs and time lines to implement the COVID-19 Response Unit in various settings. Each health care provider will have different factors to consider depending on supply chain, time frame, and available funds.

Considerations to Determine Location of COVID-19 Response Unit

Proximity to Existing Facilities

Many COVID-19 Response Units will be operating near an existing healthcare facility to efficiently utilize the existing access to the following:

- Healthcare Staff
- Electrical Capacity
- Medical Gases
- Mechanical Systems
- Potable Water Systems
- Sanitation Systems

Ensure that if the COVID-19 Response Unit is located on an existing healthcare campus, that it is located to enable the existing healthcare facility to continue operations while not putting non-COVID-19 patients and staff at risk.

If the COVID-19 Response Unit is on existing hospital grounds, proper triage should be done at the entrance of the hospital to direct COVID-19 patients directly to the facility and mitigate the spread of the virus on the campus.

Where COVID-19 Response Units are not in proximity to existing healthcare facilities, ensure there is access to the infrastructure systems noted above.

Access

- Ensure the location of the COVID-19 Response Unit is accessible to patients, staff, ambulances, and supply chain while ensuring minimal cross over of contaminated flows.
- It is critical to have efficient access for patients, staff and supply chain to ensure the success of the facility.

Cost

<table>
<thead>
<tr>
<th>Type</th>
<th>Construction Cost ($/SF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tent Clinic</td>
<td>20</td>
</tr>
<tr>
<td>Retrofit Existing</td>
<td>30</td>
</tr>
<tr>
<td>New Construction</td>
<td>40</td>
</tr>
</tbody>
</table>

*Figures shown are representative of scale to represent average construction cost and time-line considerations for each unit type. Actual $/SF and weeks to build will vary based on region and scope.*
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Capacity and Use
- Review the scale of the facility to ensure the projected bed capacities can fit into the existing facilities.
- If utilizing an existing building, review the past uses of the facility to ensure there are no hazardous components of the facility that would negatively affect staff and patients.

Flexibility and Expandability
- Review the scale of the site and the facility and determine where growth may occur in the case that the projected bed estimates were lower than the actual needs. In many cases, the amount of healthcare staff, supplies available, and funds to implement will determine the scale of the facilities. Where a more permanent solution is developed and implemented, develop a strategy for future use of the facility to build in flexibility.

Security
- Ensure patients and staff can access the site safely and are not in danger once they are providing and receiving care on site.
- Ensure the area around the unit can be enclosed to separate the unit from adjacent facilities.

COVID-19 Response Unit Components

Access to the Response Unit

Staff Donning
- Minimum size recommendation: 90 SF (8.5 M2) per donning space
- Dedicated Staff entrance for staff into a locker room to change out of street clothes and into scrubs. From the Locker Room enter into Donning to don PPE then enter the unit through an Ante Room.

Staff Doffing
- Minimum size recommendation: 90 SF (8.5 M2)
- Dedicated Staff exit from the unit into an Ante Room. Enter into Doffing and remove PPE and shower. Enter into the locker room to change back into street clothes.
- One access point should be directly to the outside and the other access point is to the unit.
- Accommodation for bins for PPE disposal
- Shower for staff to shower down as needed before leaving the facility.
- Handwashing facility (see below)
### What is Next?

<table>
<thead>
<tr>
<th>Time</th>
<th>Development at the specific countries rate. Actions to prepare for future disasters.</th>
<th>Actions to save lives. i.e. search and rescue, first aid, transportation, evacuation.</th>
<th>People begin returning from work, repair of damaged infrastructure, repair damaged buildings, return of community to normal. Emotional recovery period, activities to produce jobs, constructive facilities.</th>
<th>Re-ordering of community and the physical environment. Reconstruction of housing, roads, and community facilities. Long term process.</th>
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</thead>
<tbody>
<tr>
<td>Pre-disaster</td>
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<tr>
<td>Re-construction</td>
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