



# Preparedness Assessment Tool V1.0

This preparedness assessment tool contains information synthesized from non-crisis situations (design principles, available supporting evidence, or translation of applicable standards) in combination with federal documents issued during the COVID-19 crisis. The content was prepared with joint professional input from trained and experienced health care architects, designers, engineers, scientists, life-safety consultants, healthcare professionals, and hospital facility operations.

All US states and territories should be prepared for the arrival of patients with COVID-19. All hospitals and public health agencies need to ensure that ACS, both on a health care campus and in community settings, are capable of handling patient care during a pandemic public health response to:

- Mitigate the risk of spreading of pathogens, including SARS-CoV-2 within the facility;
- Maximize preservation of life;
- Promptly identify patients requiring investigation and isolation and transition patient(s) to the correct facility based on health care organization or public health authority having jurisdiction (AHJ) determinations;
- Care for a larger number of patients with varying conditions in the context of an escalating outbreak/epidemic/pandemic; and
- Ensure monitoring and management of ongoing safety for 24/7 operations.

**Disclaimer:** This document is modeled after the Centers for Disease Control and Prevention [Comprehensive Hospital Preparedness Checklist for Coronavirus Disease 2019](#) with adaptation for evaluation of alternative care sites (ACS). Additionally, this document was prepared during a seven-day rapid response period during the "Alert Phase" of a pandemic response (as defined by the WHO Pandemic Influenza Risk Management Global Influenza Programme). This assessment tool represents the work of the AIA COVID-19 Task Force to educate and inform architects, health care practitioners, public health professionals, and authorities having federal, state, and/or local jurisdiction within the emerging pandemic response. This material is not intended to replace existing applicable laws, regulations, or professional standards.

The checklist does not describe mandatory requirements; it does highlight important areas for evaluation by hospital and public health agencies in selecting ACS for the care and treatment of COVID-19 or surge-capacity patients. The goal is to identify appropriate rapid-adaptive reuse of existing built environments such as convention centers, sports arenas, community centers, hotels, dormitories, or other space for occupancy during the pandemic.

		Yes	No
<p><b>Go/no go building selection</b></p> <p>If the building lacks any of these basic building components, then the current facility is unlikely to be appropriate for patient care operations during a pandemic since it cannot be rapidly altered.</p>	<p><b>Age:</b> The proposed site is a newer building (less than 20 years old), built under contemporary codes.</p> <p><b>Life-Safety:</b> The proposed site is not a multi-story wood-frame or residential wood-frame structure. These are not appropriate for temporary health care operations that entail patient care.</p> <p><b>Adequate Floor Area:</b> There is enough space to accommodate all required patient care functions. (Evaluate using the considerations below.)</p> <p><b>Municipal Water Supply:</b> Water quality and pressure will support safe clinical operations. (Evaluate using the considerations below.)</p> <p><b>Power Outlets:</b> There are a sufficient number of grounded outlets for the safety of patients and staff. (Evaluate using the considerations below.)</p>		

I.0 General conditions of tool use

I.1 Baseline parameters	Completed/Agreed
<p><b>I.1.1 Operating authority</b></p> <ul style="list-style-type: none"> <li>• Verify which authorities have jurisdiction (e.g., local hospitals/health systems; hospital systems with inter-operating agreements; federal, state, or local departments of health/public health; US DOD, FEMA, National Guard, and state militias; or other combinations).</li> <li>• Evaluate whether authority may change over the course of implementation.</li> </ul> <p><b>I.1.2 Key health administrative roles</b></p> <ul style="list-style-type: none"> <li>• Establish an on-site health care operations leadership structure to govern and coordinate medical affairs and patient care operations, and properly support those operations.</li> <li>• Identify remote support required.</li> </ul> <p><b>I.1.3 Facility-specific administration</b></p> <ul style="list-style-type: none"> <li>• Establish the facility-based administrative structure to monitor, maintain, or manage: <ul style="list-style-type: none"> <li>- fire-hazard potential</li> <li>- operations of permanent and portable HVAC equipment</li> <li>- medical gas (surgical air and oxygen) supplies</li> <li>- infection prevention protocols</li> <li>- bio-hazardous waste</li> </ul> </li> </ul>	

- Develop procedures and manage evacuation/movement of patients and staff in emergency conditions
- Train occupants in facility-specific life-safety procedures

#### **1.1.4 Risk management**

- Establish authority of the local operator to act in the best interest of patients under its care, assess patient risk, prioritize treatments, allocate/assign all local assets, and adjust course as needed.
- Conduct and keep up-to-date a facility-based Safety Risk Assessment (inclusive of infection control, security, medication safety, infection prevention, patient handling, and the possibility of injury associated with behavioral/mental health).
- Comply with federal, state, and local laws (e.g., Americans with Disabilities Act [ADA], Health Insurance Portability and Accountability Act [HIPAA], Occupational Safety and Health Administration [OSHA]) while ensuring patient life-safety. (Conditions may differ from strategies employed in non-pandemic care.)

#### **1.1.5 Professional support for ACS selection & development**

- Engage trained and experienced health care architects and engineers as well as those design professionals familiar with the alternative care building type under consideration.

### **1.2 Temporary assets**

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- Evaluate whether the operator may also be required to provide temporary medical staff, an electrical generator, toilet and shower facilities, staff housing, food, and supplies.

### **1.3 Evolving recommendations**

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- These recommendations support a rapid-response facility solution, evolving as conditions and precedents warrant.

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## 2.0 Functional requirements

### **2.1 Concept for operations**

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**Yes/Agreed**

- Patient level of care is identified as:
  - ambulatory (capable of self-preservation)
  - acute (incapable of self-preservation)
  - critical (requiring life support/mechanical ventilation)
- Patient diagnosis for treatment has been identified:
  - COVID-19 positive (COVID)
  - COVID-19 negative (non-COVID)

- A plan for bedside diagnosis and treatment has been developed.

## 2.2 On-site patient care

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### 2.2.1 Site selection/location

- Site is in close proximity to first responders.
- Site is convenient to a hospital.

### 2.2.2 Isolate COVID-19 operations

- COVID-related operations can be separated from other activities in the facility.

### 2.2.3 Patient spaces are sized to accommodate:

- A projected number of \_\_\_\_\_ occupants, with:
  - direct or remote patient monitoring
  - patient privacy
  - daylight allowed in patient space (windows in patient rooms preferred)
  - patient toileting
  - handwashing sink for staff
  - space/connections for ventilators, IV poles, monitors, biohazard disposal, etc.

### 2.2.4 Nurse station spaces need to accommodate:

- A physician and nursing documentation area
- An area for nurse team communication
- A cardiopulmonary resuscitation cart
- Handwashing sink for staff

### 2.2.5 Nursing support needs to include:

- Secured medication dispensing and preparation counter or a self-contained dispensing unit
- Nourishment area(s) with sink, prep counter, refrigerator, ice machine, and handwash station
- Clean supply room(s)
- Soiled materials holding room with a flushable sink and cleanable work counter
- Clean linen storage room
- Equipment and supply storage room

- Environmental services room
- Secured storage for staff items
- Staff toilet and shower
- Area for staff PPE storage
- Space for donning and doffing of staff PPE-related attire at patient care areas.
- Ventilator decontamination and repair
- Break room or respite area
- A POC (point of care) alcove in care areas (e.g., glucometer machines, i-STAT)
- Storage for behavioral PPE and restraint devices (in event of patient with behavioral/mental health comorbidity)

#### **2.2.6 Intake & discharge (see also Section 4.0: Other)**

- Establish space needed for security protocols.
- Provide a covered ambulance drop-off.

#### **2.2.7 End of life**

- Accommodate virtual family access (adequate Wi-Fi)
- Provide area for end-of-life visitation (based on allowed policies and protocols)
- Provide exterior window (if conscious, if available)

### **2.3 General support**

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#### **2.3.1 On-site support needs to include:**

- Site security
- Separate designated staff entry
- Receiving and logistics
- Satellite pharmacy and related security
- A STAT-lab (See also POC in 2.2.5 Nursing Support)
- Mobile morgue
- Normal and biohazard waste management
- Decontamination and clean workroom for ventilators
- Food delivery and staging

### **2.3.2 Off-site support**

- Consider inter-organizational operating agreements for:
  - sterile processing
  - linen processing
  - general equipment and supply storage and logistics, general lab
  - general pharmacy
  - food service

### **2.3.3 Administration**

- Areas to support site leadership

### **2.3.4 Caregiver support for area self-isolation/quarantine conditions**

- Confirm location(s) for on-site temporary housing (medical, nursing, and support staff)
- Investigate ability to contract with local hotels or others providing sleeping quarters in close proximity

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## 3.0 Facility modifications required under design/build

### **3.1 Architectural**

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#### **3.1.1 Construction type**

- Avoid combustible construction.
- Preferred: Type II or greater level of fire and life-safety occupant protection.

#### **3.1.2 Passive life-safety**

- Evaluate if stairs allow for evacuation of patients on a med-sled.
- Evaluate egress paths for appropriate enclosure rating.
- Review fire and smoke compartmentation based on patient density (especially if no or limited smoke dampers exist).
- Confirm general storage rooms >100 SF and oxygen storage rooms are rated, including positive latching.
- Confirm at least one horizontal exit.
- Provide at least two means of egress per floor where patients are located.

#### **3.1.3 Defend in place**

- Where patients are incapable of self-preservation, evaluate life-safety plans to defend in place.

### **3.1.4 Building geometry**

- Evaluate layout (walls, doors, corridors, etc.) for the ability of staff to easily move patient stretchers and medical equipment.
- Evaluate visibility for staff to maintain sightlines in patient care areas to actively monitor patients as well as mitigate risk of behavioral incidents (e.g., elopement, aggression—in the event of behavioral/mental health comorbidity).

### **3.1.5 Building components**

- Consider patient entries/doors that:
  - Include vision panels for out-of-room observation
  - Contain aerosolized spores
  - Allow clearances for equipment and stretcher ingress and egress
- Provide scrubbable and easily cleaned finishes in patient areas (evaluate removal of existing finishes such wall coverings, window treatments, and carpet).
- Provide hard-surface, slip-resistant flooring.

### **3.1.6 Equipment & furnishings**

- Use patient beds and chairs that can withstand disinfection.
- Evaluate space for necessary medical equipment.
- Remove equipment or furniture not directly supporting patient care.

### **3.1.7 Conveyance**

- Elevators should allow staff to move a patient on a stretcher or, if ambulatory, in a wheelchair.

## **3.2 Structural**

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- Confirm the existing structural system can support the revised structural (live) load for increased occupants, medical equipment, and any additional rooftop equipment.

## **3.3 Mechanical**

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### **3.3.1 Isolation & negative pressure**

- If clinically required, make provisions to maintain a negative pressure (e.g., evaluate and employ hotel bathroom exhaust).
- If possible and clinically required, use/create airborne infection isolation rooms (AIIR).
- Where possible, locate exhaust near the patient's head.
- Ensure adjacent spaces are protected from cross-contamination.

### **3.3.2 Air-changes & filtration**

- Where possible, the preference is 10 air-changes per hour (ACH), plus 2 ACH of outside air.
- Where possible, the preference is MERV 7 filters at patient areas and MERV 14 final filters.
- Consider HEPA-filtered recirculation units in patient rooms.

### **3.3.3 Testing & balancing**

- Perform post-construction/renovation testing and balancing of the HVAC system.

### **3.3.4 Potential existing system limitations**

- Evaluate through-wall units and bathroom exhaust for existing exhaust capacity, filtration, and air change rates. (These may be affected by ductwork sizing.)
- Consider packaged rooftop units with electric heating to provide additional ventilation.
- Consider upgrading building exhaust systems (e.g., higher-volume fans) to maintain negative pressure.

### **3.3.5 Smoke control**

- Evaluate facility for a smoke-control system, as this is preferred. If not possible, the patient population may be limited.

## **3.4 Electrical**

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### **3.4.1 Power**

- Provide power circuits based on equipment demands at all patient and staff locations.

### **3.4.2 Branch power availability**

- Confirm that branch circuits are available to support patient care operations.

### **3.4.3 Emergency power**

- Based on the needs of the patients (i.e., ambulatory or critical care), provide uninterrupted critical and life-safety power circuits to support patient care areas for at least 24 hours for essential services, including:
  - life-sustaining medical equipment
  - nurse call system
  - IT (patient-related and infrastructure)
  - egress lighting



- fire alarm system, elevators, IT infrastructure, etc.
- elevators
- automatic transfer switch

#### **3.4.4 Lighting**

- Provide lighting (sealed fixtures) and portable exam lights to support the clinical operation.
- Verify emergency egress lighting.

### **3.5 Plumbing/medical gas**

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#### **3.5.1 Medical gas**

- Provide accommodations for oxygen, medical air, and vacuum to support intubation and ventilator operations.
- Ensure availability of a rated storage container or room for bottled oxygen.
- Confirm availability of storage for empty oxygen tanks.

#### **3.5.2 Water**

- Provide potable water to support the clinical operation. (This may include disinfection of the water main and the water distribution system and analytical testing of the building to confirm the water system is safe for patient care operations.)
- If required, plan for processing water for decontamination or on-site sterilization.
- Plan for ongoing management of the water system to include flushing, temperature monitoring, and residual disinfectant levels.

### **3.6 Fire protection/life safety**

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- Confirm presence of fire alarm system and functionality to support the patient care setting. If no fire alarm system, reevaluate appropriateness of building for pandemic response, or install a fire alarm system.
- Preference: Full automatic fire-suppression system.

### **3.7 Communication**

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#### **3.7.1 Information technology**

- Confirm or install a secure information technology infrastructure appropriate to support patient care, including HIPAA compliance.

### **3.7.2 EMS communications**

- Confirm or install an EMS communication system appropriate to support patient care, including HIPAA compliant security.

### **3.7.3 Nurse call/communication**

- Confirm or install a secure nurse call system appropriate to support patient care or similar method of communication from patient to nurse.
- Establish method for clinician communication (e.g., mobile, wireless).

### **3.7.4 Fire alarm**

- Confirm or install a fire alarm system connected to local emergency responders.
  - Verify availability of fire alarm pull stations.
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## 4.0 Other

### **4.1 Intake & discharge if used for walk-ins**

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- Separate walk-in patient registration
- Enclosed triage area (e.g., for swabbing, and evaluation)
- Separate patient exit, remote from the patient entry