

Category:

General Site Analysis: Lighting

Timeline **IM** Immediate, less than 2 weeks
T Temporary (less than 3 months)
ITM Intermediate (3 to 6 months)
LTP Long-term or permanent (greater than 6 months)

Goal Ensure appropriate lighting for patient care tasks, safety, and ability to clean the room.



Solutions for Recommendation

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Provide an examination light (portable or fixed).	IM – LTP	\$	<ol style="list-style-type: none"> 1. Refer to FGI 2.1-8.3.4.3 (3). 2. For inpatient care, light source shall be covered by diffuser or lens. 3. If it is a flexible light arm, it must be mechanically controlled to prevent the lamp from contacting the bed linen. 	<ol style="list-style-type: none"> 1. Fixtures that easily collect dust by design should be avoided in patient care areas.
2	Provide general lighting for routine patient care activities including the provision of nursing care and room cleaning.	IM – LTP	\$ - \$\$		<ol style="list-style-type: none"> 1. Fixtures that easily collect dust by design should be avoided in patient care areas. 2. Lighting that can allow for care while minimizing sleep interruptions should be considered.

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
3	When providing care in an alternate care site such as a large facility or temporary structure, provide sufficient site lighting to illuminate pathways to enter and exit safely. Provide general lighting within the facility or enclosure. Exit signs should be appropriately located and illuminated.	IM – LTP	\$	1. Refer to FGI 1.3-3.2 – Site Features – Lighting.	1. Fixtures that easily collect dust by design should be avoided in patient care areas.

Category:

General Site Analysis:

Timeline **IM** Immediate, less than 2 weeks
T Temporary (less than 3 months)
ITM Intermediate (3 to 6 months)
LTP Long-term or permanent (greater than 6 months)

Goal Ensure adequate capacity for storage and access to clean supplies, patient medications, and personal protective equipment so that a caregiver can minimize trips in/out of the room.



Solutions for Recommendation: General Storage

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Add enclosed/lockable carts to room.	T-LTP	\$	1. This should not inhibit clear floor space, because it is a movable item.	1. Evaluate PAR levels of supplies maintained in patient (s) in order to limit discarding of excess supplies. 2. Locate clean supplies at distance from waste stream.
2	Convert patient wardrobe to serve as clean supply storage.	ITM	\$	1. Items should not be stacked on top of cabinets.	1. Find alternate spaces for patient belongings. 2. Best if latched/locked to reduce risk of cross contamination of clean supplies.
3	Prepare pre-made "patient packs" for typical supplies needed.	ITM-LTP	\$		1. Creation of packs can cut down on waste but requires personnel time & effort to effectively implement.
4	For clean supplies, and meds, use enclosed/ locked carts for clean supplies in the room (meds, PPE).	T	\$\$		1. Med carts must be locked. 2. Minimize clean supply stocking in rooms to reduce potential contamination.

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
5	Install additional cabinet in the room, up-off floor so it does not reduce clear floor space.	LTP	\$\$	1. Be aware of required clearances; floor mount where space permits or above the floor if clear floor space cannot be reduced.	1. Be aware of required clearances so that staff movement/clinical operations are not impacted. Ensure that mounted cabinets do not reduce required space for care devices such as that for in-room dialysis, ECMO, etc.
6	Separate clean storage from waste stream	IM, T, ITM, LTP	\$		1. Relates to what is being put into waste stream 2. I think that this relates to where temporary and moveable cabinets are located relative to waste containers, the wall mounted sharps container, and the in-room toilet to avoid inadvertent cross-contamination

Category:

General Site Analysis: Diagnostic Support

Timeline	IM Immediate, less than 2 weeks
	T Temporary (less than 3 months)
	ITM Intermediate (3 to 6 months)
	LTP Long-term or permanent (greater than 6 months)

Goal Ensure adequate space if laboratory testing will be performed outside of the facility laboratory including point of care testing.



Solutions for Recommendation

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Sufficient space must be provided for the storage, donning and doffing of personal protective equipment used in the laboratory.	IM, LTP	\$\$-\$\$\$	<ol style="list-style-type: none"> 1. Per FGI Section 2.1 – 4.1 Laboratory Services: <ol style="list-style-type: none"> a. provide adequate space, power, data and plumbing to accommodate the required equipment. b. Provide a handwashing station. 2. Check for specific air flow requirements depending on type of testing that is planned. 	<ol style="list-style-type: none"> 1. Provide space for storage of PPE at entry to the room; if using carts, they should not impede the movement in the aisles. 2. Provide trash receptacle at room exit for doffing of PPE. Ideally, provide an open space at the entry/exit with a diameter of 5'-6" to allow for donning and doffing.

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
2	Ensure equipment is installed appropriately.	IM, LTP	\$ - \$\$	<ol style="list-style-type: none"> 1. All equipment requiring anchoring, whether installed by a contractor shall be anchored, supported, and braced to the building structure in accordance with 24 CCR Part 2, Table 16A-O 2. Consult manufacturers' instructions for use for specific direction on how to install equipment, including temperature and humidity parameters for operation. 	
3	Spaces between benches, cabinets, and equipment must be accessible for cleaning and allow for servicing of equipment.	IM, T, ITM	\$\$\$	<ol style="list-style-type: none"> 1. The floor should be non-absorbent, monolithic, and with an integral covered wall base. 2. Floors in storage areas for corrosive liquids shall be liquid tight construction. 3. A pathway clearance of 36 inches must be maintained at the face of the access/exist door. 4. Walls should be finished with material that is easy to clean and maintain. 5. Fire code may require certain doors, frames, and walls to be fire-rated. 	<ol style="list-style-type: none"> 1. If possible, separate the laboratory area from other areas. 2. Ensure appropriate storage of any reagents or other hazardous chemicals. 3. Ensure appropriate removal of generated waste.

Category:

General Site Analysis:

Timeline **IM** Immediate, less than 2 weeks
T Temporary (less than 3 months)
ITM Intermediate (3 to 6 months)
LTP Long-term or permanent (greater than 6 months)

Goal Ensure appropriate receptacles for holding soiled materials or waste. The need for increased capacity is secondary to anticipated increased use of PPE



Solutions for Recommendation

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Schedule more frequent pick-up of soiled items (e.g linen) of waste from patient room.	IM - LTP	\$		1. Increased frequency of collection should be coupled with increased waste storage and waste disposal from the unit as well as the room.
2	Add additional receptacles (e.g rolling baskets) to patient room	IM - LTP	\$	1. Governed by the enforced edition of NFPA 101: Life Safety Code 2. Containers up to 32 gallons may be used without being considered hazardous. Containers over 32 gallons must be located in a hazardous room. NFPA 101-2012: 18/19.7.5.7.1;18/19.7.5.7.2	1. Locate soiled items separately from clean supplies.

Category:

Infection Prevention and Control:

Timeline **IM** Immediate, less than 2 weeks
T Temporary (less than 3 months)
ITM Intermediate (3 to 6 months)
LTP Long-term or permanent (greater than 6 months)

Goal Enhance infection and prevention control measures by increasing access to high touch surfaces for cleaning and disinfection through removal of items that are not essential for patient care.



Solutions for Recommendation

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Decrease clutter from items brought in by patient or family members.	IM, T, ITM, LTP	\$		<ol style="list-style-type: none"> 1. Advise visitors and family not to bring in additional/unnecessary items. 2. Provide a list of examples of what is acceptable to bring in. 3. Consider providing family member accessible daily storage lockers in the waiting area to secure items that are not to be brought into the patient room.
2	Remove unused furniture, equipment and supplies not needed for the care of the current patient.	IM, T, ITM, LTP	\$		<ol style="list-style-type: none"> 1. Ensure there are designated areas for storage of supplies, equipment, and furniture. 2. Ensure adequate space for storage of used PPE awaiting removal. 3. Account for items to be disposed of laundered, or reprocessed.

Category:

General Site Analysis: IT and Communications

Timeline **IM** Immediate, less than 2 weeks
T Temporary (less than 3 months)
ITM Intermediate (3 to 6 months)
LTP Long-term or permanent (greater than 6 months)

Goal Ensure adequate communication between patient and clinical team.



Solutions for Recommendation

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Consider the utilization of alternative methods of communication between care team members and patients to minimize room entries. Locate a tablet with video communication capabilities in a stand at the patient bedside and another device to be accessed by staff outside of the patient room.	IM - Temp	\$\$	<ol style="list-style-type: none"> Maintain required clearances in the corridor if tablet is on a stand. Electrical equipment within 6 feet of the patient bed shall comply with NFPA 99-2012: Health Care Facilities Code, Chapter 10 requirements, which includes grounding plugs, adapters, extension cords, testing of various electrical equipment, appliance management, service and maintenance, and direction for administering oxygen therapy. Maintain HIPAA requirements by restricting screen view from other people in corridor. 	<ol style="list-style-type: none"> All devices including new devices need established protocols for cleaning and disinfection. Follow manufacturer's recommendations and healthcare facility policy for cleaning and disinfection of non-critical equipment. Set protocols for what requires staff to enter a patient room versus what can be responded to remotely. Interdisciplinary teams should be engaged in shared decision-making. If using text capabilities, ensure font sizes have been set to be sufficiently large to facilitate easy reading. Ensure that data is erased at the end of each use.

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
2	Where possible utilize existing smart TV for patient communication to staff handheld device.	IM	\$\$	1. Maintain HIPAA requirements by restricting screen view from other people in corridor.	<ol style="list-style-type: none"> 1. Follow manufacturer's recommendations and healthcare facility policy for cleaning and disinfection of non-critical equipment. 2. This may require changes to workflows, and education for staff and patients/families.
3	Utilize existing nurse call system with 2-way communication/intercom.	IM	\$\$	1. Maintain HIPAA requirements by restricting screen view from other people in corridor.	<ol style="list-style-type: none"> 1. If possible, direct patient calls to nurse device.

Category:

General Site Analysis: IT and Communication

Timeline **IM** Immediate, less than 2 weeks
T Temporary (less than 3 months)
ITM Intermediate (3 to 6 months)
LTP Long-term or permanent (greater than 6 months)

Goal Ensure adequate patient-family communication



Solutions for Recommendation

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Locate tablet at patient bed.	IM	\$	1. Electrical equipment within 6 feet of the patient bed shall comply with NFPA 99-2012: Health Care Facilities Code, Chapter 10 requirements, which includes grounding plugs, adapters, extension cords, testing of various electrical equipment, appliance management, service and maintenance.	<ol style="list-style-type: none"> 1. Locate tablet away from fluids. 2. Provide holder for tablet. 3. Consider how to maintain tablet including the ability to charge for continued patient use. Prevent cords from entangling with clinical equipment or creating a tripping risk. 4. Consider necessary patient and staff education for using communication devices. Simplify access to video calls for patients. 5. This may be impractical for those patients requiring sedation or mechanical ventilation both invasive and non-invasive; one way (family to patient) communication, on the other hand, may be beneficial. 6. Follow manufacturer's recommendations and healthcare facility policy for cleaning and disinfection for non-critical equipment.

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
2	Utilize existing smart TV for patient and family communication.	IM	\$\$		<ol style="list-style-type: none">1. Consider whether smart TV can receive calls from family members. Limit call notifications during quiet hours.2. Consider necessary patient education for using communication devices. Simplify access to video calls for patients.

Category:

Infrastructure System: General Site Analysis

Timeline **IM** Immediate, less than 2 weeks
T Temporary (less than 3 months)
ITM Intermediate (3 to 6 months)
LTP Long-term or permanent (greater than 6 months)

Goal Ensure clear identification of entry requirements to facility, units, and rooms including signage indicating appropriate transmission-based precautions for patient rooms.



Solutions for Recommendation

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Restrict the number of entry points so that all people can be properly screened before entering. Ideally this happens at the facility level, but if not, at the unit level.	IM - LTP	\$	If number of entrances are restricted, maintain entrances that meet ADA compliance. 1. Maintain all exits and pathways to exits required for life safety compliance.	1. Consider a methodology that supports quick and easy updates as information may change rapidly. 2. Consistently and completely remove all outdated signage.
2	Provide appropriate information at the appropriate locations.	IM, T, ITM, LTP	\$		1. Use simple images and language to ensure understanding; provide in diverse languages should be easily assimilated quickly, keep it minimal.

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
3	Signage can be mounted on mobile stands or easels; or if available, use digital signs that are permanently mounted or mounted on mobile stands.	IM	\$\$	<ol style="list-style-type: none"> 1. By careful placement, avoid tripping hazards of electrical cords to temporary digital signs. 2. Extension cords are not to be used as a substitute for fixed wiring in a building. Those used as a temporary source of power should be removed immediately upon completion of the intended purpose. Ref: NFPA 99-2012: Health Care Facilities Code, Chapters 6 and 9. Tentative Interim Amendments 12-2 and 12-3. NFPA 101-2012: Life Safety Code. 	<ol style="list-style-type: none"> 1. Use simple images and language to ensure understanding; provide in diverse languages should be easily assimilated quickly, keep it minimal. 2. Consider which of these types of information is appropriate at each signage location: <ol style="list-style-type: none"> a. Who may/not enter (e.g., staff, patients, and limitations on visitors (if any)) b. Requirements for entry (e.g., appropriate PPE) 3. Avoid, if possible, taping paper signs to walls. 4. Select a font and text size, and color scheme that is legible for people with wide variation of sight capabilities.

Category:

General Site Analysis:

Timeline **IM** Immediate, less than 2 weeks
T Temporary (less than 3 months)
ITM Intermediate (3 to 6 months)
LTP Long-term or permanent (greater than 6 months)

Goal Provide appropriate access control for staff, patient, and visitors

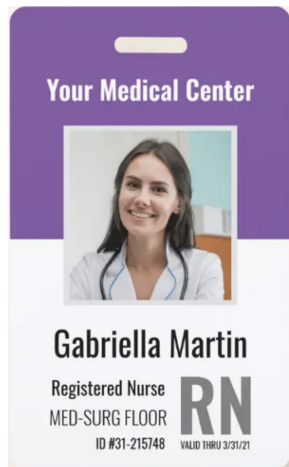


Solutions for Recommendation

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Place security personnel at facility access points	IM, T	\$\$\$		<ol style="list-style-type: none"> 1. May need to outsource security due to staff shortages in relation to increasing demands. 2. When additional staff are unavailable, entry access may need to be truncated to enable security at the number of coverable access points. 3. Unit level security should be supported by swipe or proximity reader access control. 4. Novel care spaces may require security personnel if there is no electronic way to control access. 5. Additionally, security personnel for novel care spaces may be ideal if there is no panic button or similar for staff in the event of an emergency.

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
2	Access control badges	LTP	\$\$\$	N/A	1. As staff may be reassigned to help during surges, access control limits may need to be updated to allow access, and then deauthorized when the surge has ended.

Photo Examples



Source:
<https://www.nametagwizard.com/custom-hospital-photo-id-badge>

Caption: Hospital badge, used to identify personnel.



Source:
<https://www.identisys.com/solutions/physical-security/access-control-system>

Caption: Access control badges, used to monitor and control access.

Category:

General Site Analysis: Public and Administrative

Timeline **IM** Immediate, less than 2 weeks
T Temporary (less than 3 months)
ITM Intermediate (3 to 6 months)
LTP Long-term or permanent (greater than 6 months)

Goal Minimize risk of staff-to-staff transmission opportunities in respite locations.



Solutions for Recommendation

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Provide additional physically distanced break space for staff.	IM- ITM	\$	1. Alcohol-based hand rubs (ABHR) must be less than 95% alcohol and are located in accordance with NFPA. ABHRs may not be within 1 inch of an ignition source, no less than four feet from another dispenser, and must be protected from inappropriate access. Ref: NFPA 101-2012: 18/19.3.2.6, 8.7.3.1.	<ol style="list-style-type: none"> 1. Post signage for masking and reminders for physical distancing. 2. Provide ABHR. 3. Potential spaces that may be reassigned for staff respite include: conference rooms, unused visitor waiting rooms, cafeteria, and retail space.
2	Use outdoor spaces where climate permits.	IM-LTP	\$\$	1. See above for ABHR	<ol style="list-style-type: none"> 1. Post signage for masking and reminders for social distancing; provide ABHR. 2. Ensure any temporary structure erected e.g tents comply with all relevant fire and safety codes.
3	Ensure furniture is configured to allow for physically distanced break spaces.	IM- ITM	\$		<ol style="list-style-type: none"> 1. Remove excess furniture. 2. Use furniture that is easily cleaned and disinfected.

Category:

General Site Analysis: Patient Support

Timeline **IM** Immediate, less than 2 weeks
T Temporary (less than 3 months)
ITM Intermediate (3 to 6 months)
LTP Long-term or permanent (greater than 6 months)

Goal Ensure adequate capacity for storage and access to clean supplies, and personal protective equipment.



Solutions for Recommendation

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Convert use of office, consult or multipurpose room for storage of additional clean supplies. This can also include family waiting space when visitation is restricted.	IM, T, ITM		<ol style="list-style-type: none"> 1. May need a variance/waiver from a code official if room is greater than 100 SF and is not fire-rated. 2. Ref: NFPA 101-2012: 18/19.3.2.1 	<ol style="list-style-type: none"> 1. If possible, restrict access to the appropriate personnel by changing lock or other access control measures (such as electronic “card key” access). 2. Use mobile, wire shelving or enclosed carts to limit dust/dirt accumulation; ensure storage is easily cleanable.
2	Consider increasing the size of clean supply rooms permanently (or in new construction) based on assessment of PAR level needs of clinical and PPE supplies.	LTP	\$\$		<ol style="list-style-type: none"> 1. Consider consolidating duplicative spaces to a single larger central storage.

Category:

General Site Analysis:

Timeline **IM** Immediate, less than 2 weeks
T Temporary (less than 3 months)
ITM Intermediate (3 to 6 months)
LTP Long-term or permanent (greater than 6 months)

Goal Ensure adequate capacity for storage and access to clean supplies, patient medications, and personal protective equipment so that a caregiver can minimize trips in/out of the room.



Solutions for Recommendation: Personal Protective Equipment (PPE)

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Add mobile carts in corridor outside patient room (s)	Temp	\$	1. Need to maintain required clear corridor widths. Avoid tripping hazards. ADA	1. The best practice is to don PPE before entering the room. Cart should be inclusive of PPE and ABHR. 2. Is best to include a shelf for PAPRs (or to have a separate cart for PAPRs for each pod of the ICU). 3. Need to have a place for people to discard items during doffing. 4. Waste needs to be separated from clean.

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
2	Add built-in storage in corridor outside patient room (s)	LTP	\$\$\$	<ol style="list-style-type: none"> 1. Limit the amount of storage permissible in a non-rated space. (Adding up all of the storage cabinets in one corridor – Look into this.) 2. Opening cabinets cannot impede the 8' corridor clearance. 	<ol style="list-style-type: none"> 1. The best practice is to don PPE before entering the room. Cart should be inclusive of PPE and ABHR gloves, masks, gowns, alcohol rub, booties (if needed). 2. It is best to include a shelf for the PAPRs while donning. 3. Need to have a place for people to discard items during doffing. 4. Waste needs to be separated from clean. 5. Donning space must be considered with regard to daily work flow with radiology devices, patient ambulation, etc so that built in cabinets are built into the wall and not projecting into the corridor.
3	Built in storage in room	LTP	\$\$\$		<ol style="list-style-type: none"> 1. Consider ease of access to supplies such as gloves. Do not locate directly over a sink. Consider PAR levels. 2. Consider more than one built in storage cabinet. 3. Consider whether the cabinet should function as a pass through between the outside hall and the inside room to minimize the need for room exit and reentry. This conserves PPE as well as decreases the opportunity for staff inadvertent exposure. Cabinet doors must be able to support negative pressure when the room is functioning in that fashion.

Solutions for Recommendation: Medications

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Locate a locked box within patient room for patient medications from home.	Temporary	\$	1. Consult with pharmacy regulations about locating medications.	<ol style="list-style-type: none"> 1. Medication stored in the patient room should be minimized, but may include multi-dose items such as inhalers. 2. Patient medications that are to be used by the patient need specific orders, and are generally avoided due to lack of control by the care staff.

Photo Examples



Source:
https://susquehannadesign.com/?attachment_id=1980

Caption: Convert supply closet to repurposed patient storage

Category:

General Site Analysis: Diagnostic Support

Item	Room or Unit
Timeline	<p>IM Immediate, less than 2 weeks</p> <p>T Temporary (less than 3 months)</p> <p>ITM Intermediate (3 to 6 months)</p> <p>LTP Long-term or permanent (greater than 6 months)</p>
Goal	If on-site/in situ laboratory testing or point of care testing will take place, ensure adequate space.



Solutions for Recommendation

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Sufficient space or facilities must be provided for the storage, donning and doffing of personal protective equipment used in the laboratory.	IM, LTP		<ol style="list-style-type: none"> Per FGI Section 2.1 – 4.1 Laboratory Services Provide adequate space, power, data and plumbing to accommodate the required equipment. Provide a handwashing station. Check for specific air flow requirements depending on type of testing that is planned. 	<ol style="list-style-type: none"> Provide space for storage of PPE at entry to the room; if using carts, they should not impede the movement in the aisles. Provide trash receptacle at room exit for doffing of PPE. Ideally, provide an open space at the entry/exit with a diameter of 5'-6" to allow for donning and doffing without touching an adjacent surface.

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
2	Ensure equipment is installed appropriately.	IM, LTP	\$\$\$	<ol style="list-style-type: none"> 1. All equipment requiring anchoring, whether installed by a contractor shall be anchored, supported, and braced to the building structure in accordance with 24 CCR Part 2, Table 16A-O 2. Consult manufacturer s' instructions for use for specific direction on how to install equipment, including temperature and humidity parameters for operation. 	
3	Spaces between benches, cabinets, and equipment must be accessible for cleaning and allow for servicing of equipment.	IM, T, ITM	\$\$-\$\$\$	<ol style="list-style-type: none"> 1. The floor should be non-absorbent, monolithic, and with integral coved wall base. 2. Floors in storage areas for corrosive liquids shall be liquid tight construction. 3. A pathway clearance of 36 must be maintained at the face of the access/exist door. 4. Walls should be finished with material that is easy to clean and maintain. 5. Fire code may require certain doors, frames, and walls to be fire-rated. 	<ol style="list-style-type: none"> 1. If possible, separate the laboratory area from other areas. 2. Ensure appropriate storage of any reagents or other hazardous chemicals. 3. Ensure appropriate removal of generated waste.

Category:

Infrastructure System: Diagnostic Support

Timeline **IM** Immediate, less than 2 weeks
T Temporary (less than 3 months)
ITM Intermediate (3 to 6 months)
LTP Long-term or permanent (greater than 6 months)

Goal Provide additional space for soiled utility. This may be required when there is an increase in the total number of patients and/or anticipated PPE use leading to increased waste or items requiring storage prior to cleaning and disinfection.



Solutions for Recommendation

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Convert an office, consult, or multipurpose room to provide additional soiled utility space.	T		<ol style="list-style-type: none"> 1. May need a variance/waiver from a code official if room is greater than 100 sf and is not fire-rated. 2. Ref: NFPA 101-2012: 18/19.3.2.1 3. May need a variance/waiver if room does not have a handwash sink. 	<ol style="list-style-type: none"> 1. Select room for temporary use that has easily cleanable surfaces (e.g., hard flooring or implement mitigation strategies). 2. The selected room should sufficient space for large mobile containers for trash, linen, biohazardous waste.
2	Place additional waste containers in dispersed locations around the unit for easy access from the patient rooms. If possible, use existing alcoves to minimize containers in the corridors.	T	\$	<ol style="list-style-type: none"> 1. Must maintain corridor clearances for safe transport of patients. 2. Ref: NFPA 101-2012: 18/19.2.5.1; 7.1.10.1; 7.5.1.1 	<ol style="list-style-type: none"> 1. Containers with closed tops are preferred. 2. Provide hand hygiene capabilities adjacent to containers.

Category:

Infrastructure System: Plumbing Systems

Timeline **IM** Immediate, less than 2 weeks
T Temporary (less than 3 months)
ITM Intermediate (3 to 6 months)
LTP Long-term or permanent (greater than 6 months)

Goal Ensure integrity of wastewater systems are maintained and properly operated.



Solutions for Recommendation

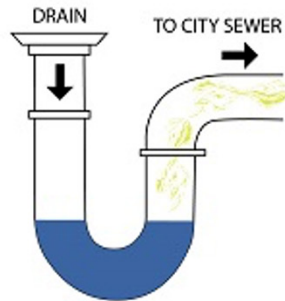
#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	In cooperation with the Water Management Team (WMT) review drawings, diagrams, and existing documents to ensure wastewater systems are operating properly and as designed.	IM	\$		1. Consideration should be given regarding maintaining a proper water seal in the p-trap.
2	Survey the wastewater system to verify that all water appliances in bathrooms and kitchens are fitted with a functioning U-bend.	IM	\$		1. Special attention should be given to any areas reporting sewer smells to assure that all drain traps are functioning properly. Wastewater systems that are underutilized can dry out and be prone to cracking.

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
3	Based on a risk assessment to prevent the loss of the water trap seal within a U-bend, open a tap on all water appliances on an agreed upon frequency paying special attention to floor drains in bathrooms and wet rooms.	IM	\$	1. In general terms the recommended industry practice is that these traps be flushed and filled at least monthly.	1. Risk assessment should consider the facility locale, occupancy rate and fixture usage rate to determine how often the flushing of the drain line should be performed.

Photo Examples



*Dry or leaking drain/p-trap:
Sewer gases are NOT contained*



*Working drain/p-trap:
Sewer gases are contained*

Source:
<https://www.bendoregon.gov/government/departments/utilities/cured-in-place-pipe-cipp>

Category:

Infrastructure System: Plumbing Systems

Timeline **IM** Immediate, less than 2 weeks
T Temporary (less than 3 months)
ITM Intermediate (3 to 6 months)
LTP Long-term or permanent (greater than 6 months)

Goal Ensure altered water demand does not lead to conditions that promote the growth and spread of waterborne pathogens



Solutions for Recommendation

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	In cooperation with the organizations designated water management team (WMT) evaluate plumbing system diagrams and water management plans to ensure potable water systems are operating properly and as designed. Confirm that the water management plan (WMP) validation process is being managed.	IM	\$	1. The organization should consult local state and regional regulations and guidelines.	<ol style="list-style-type: none"> https://www.ashe.org/watermanagement Water usage in emergent times can be complex. Natural events can cause significant organic materials to enter the water system and breakage and damage to water delivery systems can cause contamination or decreased delivery capacity increasing water age. Coordination by the water management team with local utility purveyors will be essential to assure proper water quality and management strategies.
2	Based on a risk assessment, flush all underutilized water appliances, showers, faucets, etc. to assure appropriate residual chemical within the water system.	IM	\$		<ol style="list-style-type: none"> Risk assessment considerations should include fixture usage compared to normal usage, water quality and water age along with verification of WMP established control points.

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
3	Until proven safe to drink, water from unoccupied areas should not be consumed and bottled water substituted.	IM	\$\$		
4	Document all temporary or permanent changes to the potable water system.	IM	\$	1. Documentation for temporary system changes should provide adequate detail to assure safety of the potable water system and to provide ample guidance for discontinuance once emergency has abated.	

Category:

Infrastructure System: Safe and adequate medical gases

- Timeline
- IM** Immediate, less than 2 weeks
 - T** Temporary (less than 3 months)
 - ITM** Intermediate (3 to 6 months)
 - LTP** Long-term or permanent (greater than 6 months)

Goal Ensure capacities and quality of medical air systems are adequate and safe.

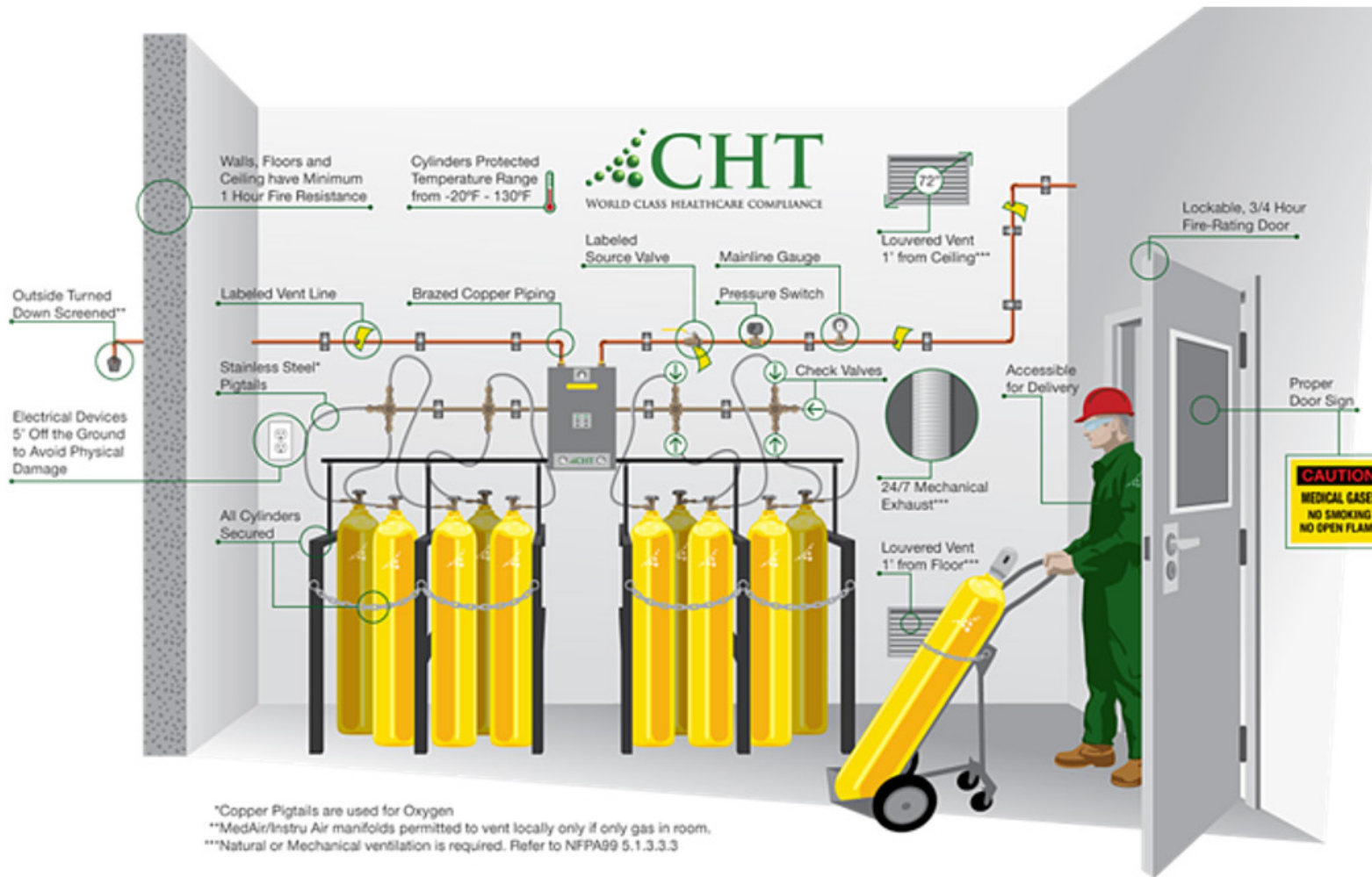


Solutions for Recommendation

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Review existing condition drawings and documentation including complete inventory of existing outlets and medical air pumps including capacities for the medical air infrastructure.	IM	\$	<ol style="list-style-type: none"> 1. Consider compliance with NFPA 99 installation requirements for a category 1 medical air systems in addition to any requirements of local or regional authorities having jurisdiction. 2. Consider compliance with NFPA 99 testing, system commissioning requirements and documentation requirements for a category 1 medical air system in addition to any requirements of local or regional authorities having jurisdiction. 	<ol style="list-style-type: none"> 1. Development of an organizational process to project medical gas usage based on the organization’s medical air capacity will be necessary to avoid exceeding the system capacity and to properly develop additional medical air capacity. 2. Medical Air and Oxygen Capacity Assessment Tool ASHE
2	Evaluate existing medical air systems to verify they are operating properly and as designed and determine baseline usage of the systems.	IM	\$		<ol style="list-style-type: none"> 1. Establish baseline system performance to be able to compare to surge response need.

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
3	Verify that medical air outlets are functioning properly and not leaking.	IM	\$		1. Evaluation for and correction of any leakage within the existing system will be necessary to provide proper baseline system performance.
4	Evaluate and project potential increased usage in medical air.	IM	\$		1. Coordination between clinical and facility staff will be vital to be able to project the medical air usage due to a surge response.
5	Consult and/or engage, as needed, licensed mechanical engineering professionals to evaluate existing conditions and propose required infrastructure modifications and engineering controls to achieve required expansion to medical air systems.	IM	\$\$		
6	Consider temporary portable tank manifold systems. Temporary or permanent modifications to medical air systems shall comply with the requirements of the authority having jurisdiction.	ITM	\$\$		<ol style="list-style-type: none"> 1. Advance coordination with the authority having jurisdiction will be vital to response timeliness and to assure appropriate approvals are obtainable prior to deployment and in a timely manner. 2. Locate and secure medical gas tanks and manifold systems.

Photo Examples



Source: Certified Healthcare Compliance | CHT (chthealthcare.com)

Caption: An example of a central medical air manifold supply system

Category:

Infrastructure System: Medical Gases

Timeline **IM** Immediate, less than 2 weeks
T Temporary (less than 3 months)
ITM Intermediate (3 to 6 months)
LTP Long-term or permanent (greater than 6 months)

Goal Ensure capacities and quality of medical grade oxygen systems are adequate and safe.



Solutions for Recommendation

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Review existing condition drawings and documentation including complete inventory of existing outlets, annual supply, and capacity reports for on-site oxygen systems.	IM	\$	<ol style="list-style-type: none"> 1. Consider compliance with NFPA 99 installation requirements for a category 1 medical oxygen systems in addition to any requirements of local or regional authorities having jurisdiction. 2. Consider compliance with NFPA 99 testing, system commissioning requirements and documentation requirements for a category 1 medical oxygen system in addition to any requirements of local or regional authorities having jurisdiction. 	<ol style="list-style-type: none"> 1. Develop an organizational process to project medical oxygen usage based on the organization’s medical oxygen capacity. This will be necessary to avoid exceeding the system capacity and to properly develop additional medical oxygen capacity.

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
2	Evaluate existing oxygen systems are operating properly and as designed and determine baseline usage of the systems.	IM	\$		1. Establish baseline system performance to be able to compare to surge response need.
3	Verify that oxygen outlets are functioning properly and not leaking.	IM	\$		1. Evaluation for and correction of any leakage within the existing system will be necessary to provide proper baseline system performance.
4	Evaluate and project potential increased usage in oxygen.	IM	\$		1. Coordination between clinical and facility staff will be vital to be able to project the medical oxygen usage due to a surge response.
5	Consult and/or engage, as needed, licensed mechanical engineering professionals to evaluate existing conditions and propose required infrastructure modifications and engineering controls to achieve required expansion to oxygen systems.	IM	\$\$		
6	Evaluate deployment of portable, individual oxygen concentrators at the bedside where clinically indicated.	ITM	\$\$		1. Staff may require training on new devices and changes to clinical protocols.
7	Consider temporary portable tank manifold systems. Temporary or permanent modifications to oxygen systems shall comply with the requirements of the authority having jurisdiction.	ITM	\$\$		1. Advance coordination with the authority having jurisdiction will be vital to response timeliness and to assure appropriate approvals are obtainable prior to deployment and in a timely manner.

Category:

Infrastructure System: Egress

Timeline **IM** Immediate, less than 2 weeks
T Temporary (less than 3 months)
ITM Intermediate (3 to 6 months)
LTP Long-term or permanent (greater than 6 months)

Goal Review life safety drawings and existing condition drawings to ensure the safety of egress routes are uncompromised.



Solutions for Recommendation

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	In consultation with organization's safety officer and local authorities having jurisdiction document any changes to the fire egress routes created by temporary physical changes and document via an interim life safety measure (ILSM).	IM	\$	1. Where the safety of egress routes has been diminished implement one or more of the interim life safety measures (ILSM) as indicated by the organization's ILSM policy. Consult NFPA 101-2012 18/19.2.5.4 & 2.3.4 & 2.3.5 or later versions of this code as approved by the local authority having jurisdiction.	1. Development of ILSM mitigation strategies should follow the organizational ILSM Policy and Procedures with allowance to the policy and procedures based on situational responses to the emergent response.
2	Create appropriate egress pathways (A- marking and identification; B- unobstructed egress paths).	IM	\$	1. Consult NFPA 101-2012 18/19.2.5.4 & 2.3.4 & 2.3.5 or later versions of this code as approved by the local authority having jurisdiction.	1. Consideration of egress needs to include daily operational response to the emergent situation. Providing additional staff response training may be necessary to compensate for impacted egress.

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
3	Provide an emergency planning document based on temporary physical changes for staff response to emergencies.	IM	\$	1. Consult NFPA 101-2012 18/19.2.5.4 & 2.3.4 & 2.3.5 or later versions of this code as approved by the local authority having jurisdiction.	1. Emergency planning document should address specific staff response for each impacted area.
4	Provide training to ensure staff are familiar with their roles during an emergency.	IM	\$	1. Consult NFPA 101-2012 18/19.2.5.4 & 2.3.4 & 2.3.5 or later versions of this code as approved by the local authority having jurisdiction.	1. Orientation to unit should include orientation to unit, egress route and to other life safety measures.
5	Document all temporary or permanent changes to the physical environment and any staff training and appropriate ILSM mitigations.	IM	\$	1. Consult NFPA 101-2012 18/19.2.5.4 & 2.3.4 & 2.3.5 or later versions of this code as approved by the local authority having jurisdiction.	

Photo Examples



Source: IStock Photo

Caption: Signage should conform to accepted standards, be appropriately located for visibility, and clearly indicate current egress routes, if used for such purposes.



Source: <https://evacdisplays.com/hospital-evacuation-maps.html>

Caption: Signage should conform to accepted standards, be appropriately located for visibility, and clearly indicate current egress routes, if used for such purposes

Category:

Infection Prevention and Control:

Timeline **IM** Immediate, less than 2 weeks
T Temporary (less than 3 months)
ITM Intermediate (3 to 6 months)
LTP Long-term or permanent (greater than 6 months)

Goal Ensure adequate hand hygiene capabilities when patient census increases.



Solutions for Recommendation

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Increase alcohol-based hand rub availability.	IM-LTP	\$	1. Alcohol-based hand rubs (ABHR) must be less than 95% alcohol and are located in accordance with NFPA. ABHRs may not be within 1 inch of an ignition source, no less than four feet from another dispenser, and must be protected from inappropriate access. Ref: NFPA 101-2012: 18/19.3.2.6, 8.7.3.1.	<ol style="list-style-type: none"> Place dispenser near room entry in all patient care rooms: Place stand-alone on counters. Mount on wall provide individual-sized product to users, or locate on temporary ABHR stand. Place ABHR near elevators.
2	Where converting a non-clinical area to serve as a patient room, provide handwashing capabilities (e.g. portable sinks) in addition to providing ABHR.	T	\$\$		<ol style="list-style-type: none"> Ensure that portable sinks are maintained per manufacturer's instructions and in a way to reduce risk of transmission due to biofilm formation and cross contamination.

Additional Resources:

ipobservationtools.org/observation-tools-library

[cdc.gov/infectioncontrol/pdf/guidelines/environmental-guidelines-p.pdf](https://www.cdc.gov/infectioncontrol/pdf/guidelines/environmental-guidelines-p.pdf)

Category:

Infrastructure System: Infection Prevention and Control

Item	Room or Unit
Timeline	<p>IM Immediate, less than 2 weeks</p> <p>T Temporary (less than 3 months)</p> <p>ITM Intermediate (3 to 6 months)</p> <p>LTP Long-term or permanent (greater than 6 months)</p>
Goal	Modify fixtures and spaces to facilitate cleaning and disinfection



Solutions for Recommendation

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Remove unnecessary items from horizontal surfaces.	IM			<ol style="list-style-type: none"> 1. Consider storing necessary desktop items and papers in mobile carts or other enclosed areas. 2. Consider revision of nonpatient care work spaces to eliminate tabletop or desktop supplies (wall storage, drawer or pedestal based) 3. Consider electronic or non-electronic communication boards as part of wayfinding to remove taped signs, or plexiglass pedestal signs from countertops. (directories, etc.)

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
2	Deploy temporary movable barriers to maintain distance between people per guidelines.	IM	\$\$	<ol style="list-style-type: none"> 1. Avoid flammable materials such as Plexiglass or other acrylic barriers. 2. Ensure barriers comply with life safety measures and do not block fire exits and entry points and don't impede sprinkler spray pattern. 	<ol style="list-style-type: none"> 1. Temporary barriers should be easily cleanable. 2. As barriers are installed make sure wayfinding is provided.
3	Modify or replace surfaces to be easily cleanable and to be able to withstand cleaning chemicals. Example polycarbonate polyester blends, granite, etc.	Temp	\$\$		<ol style="list-style-type: none"> 1. Do not use plywood because it is highly porous and absorbs moisture, harbors pathogens, combustible, and not easy to disinfect. 2. Avoid plexiglass because it is flammable. 3. Avoid cloth-based moveable barriers.
4	Modify or replace flooring with cleanable/washable products.	Temp-LTP	\$		<ol style="list-style-type: none"> 1. Utilize a flooring solution that will be secured in place with edge transitions that remove tripping hazards.

Category:

Infrastructure System: Electrical Systems

Timeline **IM** Immediate, less than 2 weeks
T Temporary (less than 3 months)
ITM Intermediate (3 to 6 months)
LTP Long-term or permanent (greater than 6 months)

Goal Ensure adequate electrical power is supplied throughout the patient care unit.



Solutions for Recommendation

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Conduct a risk assessment to ensure all required patient care equipment is provided with power from the type 1 essential electrical system.	IM	\$		1. Multidisciplinary team should develop a list of specific patient care equipment that require power from the type 1 essential electrical system.
2	Temporary or permanent modifications to electrical systems shall comply with the requirements of Authority Having Jurisdiction.	IM	\$		1. Due to emergent situation allowances less than minimum code requirements may be considered for temporary modification and should be coordinated with the Authority Having Jurisdiction.

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
3	Ensure cords and electrical components for temporary equipment are properly cared for and are located in a safe and trip-free manner.	IM	\$	1. Only properly certified relocatable power taps (RPT's) may be used. In the patient care vicinity, UL 1363A and 60601-1 power strips are permitted within the patient care vicinity. UL1363 power strips are permitted inside the patient room but outside of the patient vicinity (6 ft. zone). In other locations, power strips with a UL rating are permitted. All staff should undergo training, and inspections of medical equipment should also be used to verify that the acceptable RPTs are being used. Ref. NFPA 70-2011, National Electrical Code, Sections 400-8 and 590.3(D) Article 517.	<ol style="list-style-type: none"> 1. Due to emergent situation allowances less than minimum code requirements may be considered, such as the use of extension cords. These considerations should be risk assessed with a multidisciplinary team that includes patient and staff safety perspectives. 2. If the decision is made to use extension cords, care must be taken to mitigate trip hazards.
4	Document all temporary or permanent changes to the electrical system.	IM	\$	1. Documentation of temporary system changes should provide adequate detail to assure safety of the electrical system and to provide ample guidance for discontinuance once the emergency has abated.	
5	Consult and/or engage licensed mechanical and electrical engineering professionals to evaluate existing conditions and propose required infrastructure modifications and engineering controls to achieve required expansion to essential electrical system as needed.	IM	\$\$	1. Consider compliance with NFPA 99 and NFPA 110 installation requirements for the essential electrical system in addition to any requirements of local or regional authorities having jurisdiction.	1. Considerations should be based on risk assessment developed in solution 1 above.

Photo Examples



Source:

<https://www.leviton.com/en/products/commercial/surge-protection-power-strips/medical-grade-power-strips>

Caption: Only RPTs listed to UL 1363A can be used within the patient care vicinity.

Category:

Infrastructure System: HVAC

Timeline **IM** Immediate, less than 2 weeks
T Temporary (less than 3 months)
ITM Intermediate (3 to 6 months)
LTP Long-term or permanent (greater than 6 months)

Goal Ensure adequate ventilation is maintained throughout the unit.



Solutions for Recommendation

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Review existing condition drawings, facility HVAC policy and procedures, building automation systems, and documentation of ventilation systems.	IM	\$		
2	Evaluate existing HVAC systems and ensure they are operating properly and as designed.	IM	\$	1. Existing HVAC systems should be evaluated to determine appropriate modifications to improve ventilation strategies for specific service areas. Ref ASHRAE Std. 170, Table 7.1	
3	Ensure fresh air changes are maximized.	IM	\$	1. Outdoor air intake should be evaluated to determine appropriate amounts of outside air is supplied. Ref ASHRAE/ASHE Std. 170, Table 7.1, 8.1, 8.2 or 9.1.	1. Consideration needs to include concerns of outside temperatures and humidity since this could increase the energy required to properly condition the additional amounts of outdoor air. 2. Considerations regarding cold outside temperatures should include the ability for the air handling system to avoid freezing the cooling coil.

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
4	Ensure exhaust systems are operating properly and as designed.	IM	\$	1. Existing exhaust systems should be evaluated to determine appropriate modifications to improve ventilation strategies for specific service areas. Ref ASHRAE Std. 170, Table 7.1	1. Consideration to where exhaust air will be discharged from the room must be taken. Exhausting directly to the outside is ideal but if not possible impact to surrounding areas and the duct work along with system fans must be evaluated.
5	Ensure filtration is operating properly and as designed.	IM	\$	1. Existing filtration should be evaluated to determine appropriate modifications to improve ventilation strategies for specific service areas. 2. Ref ASHRAE 170, Table 7.1	1. Consideration to increasing filtration to a MERV 13 filter should be evaluated. Increasing filter ratings will have an impact on the pressure drop across the filter which must be considered in regards to the impact to pressure relationships and ability of the system to deliver appropriate air supply.
6	Engage and consult with heating ventilation and air conditioning professional or engineering consultant as needed.	IM-T	\$\$		
7	Ensure rooms or spaces that are functioning as an airborne infection isolation room (AIIR) have proper seals.	IM	\$	1. Ref FGI 2018 Hospital Guidelines 2.1-2.4.2.4	
8	Ensure monitoring devices for critical pressures are displayed locally and monitored remotely.	IM			

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
9	Entry doors to rooms or spaces that are functioning as an airborne infection isolation room (AIIR) shall have self-closers.	IM	\$\$	1. Ref FGI 2018 Hospital Guidelines 2.1-2.4.2.4	
10	Ensure portable or temporary ventilation units are operating as designed and intended and are placed in a safe and secure manner to avoid tripping hazards, etc.	IM-T		1. Development of an operations and management plan should be implemented for portable or temporary ventilation units being used to supplement existing HVAC ventilation strategies.	<ol style="list-style-type: none"> 1. Creating of negative pressure rooms to provide additional protection for staff could be considered with input from infection prevention experts. https://www.ashe.org/negative-pressure-rooms 2. Consideration must be given to the exhausting of temporary ventilation units since this could have impact on the functionality of the existing HVAC system.
11	Document all temporary or permanent changes to the ventilation system.	IM		1. Documentation for temporary system changes should provide adequate detail to assure safety of the ventilation system and to provide ample guidance for discontinuance once emergency has abated.	

Additional Resources:

pubmed.ncbi.nlm.nih.gov/17257148/

www.ashrae.org/file%20library/technical%20resources/covid-19/usace-acs-guidebook

<https://www.ashe.org/negative-pressure-rooms>

Category:

Infrastructure System: Medical Gases

Timeline **IM** Immediate, less than 2 weeks
T Temporary (less than 3 months)
ITM Intermediate (3 to 6 months)
LTP Long-term or permanent (greater than 6 months)

Goal Ensure capacities and quality of medical vacuum systems are adequate and safe.



Solutions for Recommendation

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Review existing condition drawings and documentation including complete inventory of existing vacuum system infrastructure, including annual capacity reports for medical vacuum system.	IM	\$	<ol style="list-style-type: none"> 1. Consider compliance with NFPA 99-2012 installation requirements for a category 1 medical vacuum systems in addition to any requirements of local or regional authorities having jurisdiction. 2. Consider compliance with NFPA 99-2012 testing, system commissioning requirements and documentation requirements for the medical vacuum system in addition to any requirements of local or regional authorities having jurisdiction. 	<ol style="list-style-type: none"> 1. Development of an organizational process to project medical vacuum usage based on the organization's medical vacuum capacity will be necessary to avoid exceeding the system capacity and to properly develop additional medical vacuum capacity.

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
2	Evaluate existing vacuum systems are operating properly and as designed.	IM	\$		1. Establish baseline system performance to be able to compare to surge response need.
3	Verify that vacuum inlets are functioning properly and not leaking.	IM	\$		1. Evaluation for and correction of any leakage within the existing system will be necessary to provide proper baseline system performance.
4	Evaluate and project potential increased usage in vacuum.	IM	\$		1. Coordination between clinical and facility staff will be vital to be able to project the medical vacuum usage due to a surge response.
5	Evaluate deployment of portable, individual vacuum pumps at the bedside where clinically indicated.	IM	\$\$		1. Staff may require training on new devices and changes to clinical protocols.
6	Consult and/or engage, as needed, licensed mechanical engineering professionals to evaluate existing conditions and propose required infrastructure modifications and engineering controls to achieve required expansion to medical vacuum systems.	ITM	\$\$		
7	Temporary or permanent modifications to medical vacuum systems shall comply with the requirements of authorities having jurisdiction.	ITM	\$\$		1. Advance coordination with the authority having jurisdiction will be vital to response timeliness and to assure appropriate approvals are obtainable prior to deployment and in a timely manner.

Category:

Infrastructure System: Medical Gases

Timeline	IM Immediate, less than 2 weeks T Temporary (less than 3 months) ITM Intermediate (3 to 6 months) LTP Long-term or permanent (greater than 6 months)
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Goal Ensure capacities and quality of surgical gases and associated systems are adequate and safe. This includes but is not limited to carbon dioxide, nitrogen, nitrous oxide, and waste anesthesia gas disposal.



Solutions for Recommendation

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Review existing condition drawings and documentation including complete inventory of existing outlets for surgical gas systems infrastructure, including annual supply and capacity reports.	IM	\$	<ol style="list-style-type: none"> 1. Comply with NFPA 99-2012 installation requirements for a category 1 surgical gases systems in addition to any requirements of local or regional authorities having jurisdiction. 2. Comply with NFPA 99-2012 testing, system commissioning requirements and documentation requirements for surgical gas systems in addition to any requirements of local or regional authorities having jurisdiction. 	<ol style="list-style-type: none"> 1. Development of an organizational process to project surgical gases usage based on the organization's surgical gases capacity will be necessary to avoid exceeding the system capacity and to properly develop additional surgical gases capacity.

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
2	Evaluate existing surgical gases systems are operating properly and as designed.	IM	\$		1. Establish baseline system performance to be able to compare to surge response need.
3	Evaluate and project potential increased usage in surgical gases.	IM	\$		1. Coordination between clinical and facility staff will be vital to be able to project the surgical gases usage due to a surgical surge response. 2. Ensure systems for managing anesthesia gas waste are sufficient to meet projected need.
4	Verify that surgical gas system outlets are functioning properly and not leaking.	IM	\$		1. Evaluation for and correction of any leakage within the existing system will be necessary to provide proper baseline system performance.
5	Consider temporary portable tank manifold systems. Temporary or permanent modifications to surgical gas systems shall comply with the requirements of authorities having jurisdiction.	IM	\$\$		1. Advance coordination with the authorities having jurisdiction will be vital to response timeliness and to assure appropriate approvals are obtainable prior to deployment and in a timely manner.
6	Consult and/or engage, as needed, licensed mechanical engineering professionals to evaluate existing conditions and propose required infrastructure modifications and engineering controls to achieve required expansion to the surgical gases system.	ITM	\$\$		

Category:

General Site Analysis:

Timeline **IM** Immediate, less than 2 weeks
T Temporary (less than 3 months)
ITM Intermediate (3 to 6 months)
LTP Long-term or permanent (greater than 6 months)

Goal Create appropriate wayfinding and workflow pathways to reduce infection transmission.



Solutions for Recommendation

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
1	Remove unnecessary equipment from corridor to maintain clear width for passage.	IM, T, ITM LTP	\$	<ol style="list-style-type: none"> 1. Equipment that could be considered to be placed in the corridor include: <ol style="list-style-type: none"> a. Equipment and carts in use (if they are in use why would they be in the hall) b. Medical emergency equipment not in use (these are already in the halls) c. Patient lift and transport equipment d. Procedure cart, difficult airway cart e. PAPR cart f. PPE storage and dispensing cart 2. NFPA-2012 18.2.3.4 	<ol style="list-style-type: none"> 1. Fire/Safety plan should specifically address the relocation of equipment within the corridor during an emergency (or crisis standards of care). 2. Re-appropriate corridor alcoves for most necessary equipment or supplemental clean supplies. 3. Cover any items that are stored in the corridor and alcoves to limit access and unnecessary handling.

#	Solutions	Timeline (IM, T, ITM, LTP)	Relative Cost	Code Consideration	Clinical/Operational Considerations
2	When placing necessary equipment within corridor do so in a manner that does not reduce the clear and unobstructed corridor width to less than 60 inches.	IM, T, ITM LTP	\$	1. NFPA-2012 18.2.3.4	1. Ensure that relocated equipment does not encroach upon nursing work stations that are relocated adjacent to rooms, or equipment such as IV pumps that are relocated outside of rooms.
3	Ensure that signage (paper/electronic) detailing emergency egress routes has been updated to identify any changes from typical pathway usage.	T	\$		<ol style="list-style-type: none"> 1. Ensure the existing Fire/Safety Plan be updated to address changes to the unit. 2. Ensure staff have access fire/safety plans and are familiar with them and the updates.