

GUIDELINE *ESSENTIALS*

QUICK VIEW

Design & Maintenance



OVERSIGHT

- Organize an interdisciplinary team consisting of key stakeholders to provide oversight during construction and renovation related to scope development, budgeting, planning, design, construction, commissioning, and plans for maintenance of the space in the perioperative area.
- Provide input during all phases of the construction or renovation process and communicate progress to the perioperative team.
- Follow local, state, and federal regulation requirements along with applicable guidelines.
- Consider future needs for space.
- Review the most up-to-date evidence during the design process.
- Develop an emergency preparedness plan.
- Perform an environmental impact assessment.
- Create an education plan to orient perioperative personnel to the new or remodeled space.

★ *An interdisciplinary team consists of key stakeholders (eg, engineers, legal team members, maintenance) who can provide valuable input during construction and renovation phases.*



FUNCTIONAL PROGRAM

- The functional program should include:
 - new construction or renovation, occupancy, and buildings involved
 - type and location of anesthesia and operative procedures to be provided
 - patient care area locations
 - anticipated patient population and volume
 - patient care stations for preoperative and postoperative care staff
 - utility requirements
 - environmental requirements
 - security requirements
 - documentation requirements
 - storage requirements
 - technological requirements
 - indirect support functions
 - sterile processing and supply movement requirements
 - location of support areas
 - operational requirement, departmental operational relationship, and required adjacencies

★ *The functional program serves as the foundation for the construction or renovation project and should be completed by the interdisciplinary team.*



DESIGN CONCEPTS

- Create activity-based zones and utility and heating, ventilation, and air conditioning (HVAC) requirements based on allocated space recommendations, location, and the anticipated number of patients.
- Review workflows of the new design by using the current perioperative suite or a simulated room/suite.
- Maintain an initial and ongoing safety risk assessment and determine the zones of protection.
- Divide the surgical suite into unrestricted, semi-restricted, and restricted zones.
- Determine the security zones in the surgical suite and define these in the facility security plan.
- Incorporate ergonomic design.
- Use an HVAC system and parameters that meet the needs of the space.
- Establish a schedule for monitoring HVAC system efficiency, including cleaning and disinfection.
- Limit obstructions in the pathway of HVAC system airflow.
- Include space for documentation in patient care areas.

★ *The surgical suite design should facilitate a safe and ergonomic workflow and be based on allocated space requirements, the location of the facility, and the anticipated number of patients.*



PREOPERATIVE AND POSTOPERATIVE AREAS

- Include the following in the preoperative and postoperative care area:
 - patient care areas

- a medication safety zone
- hand washing stations
- storage for patients' belongings
- bathrooms for patients and personnel
- When the postoperative area is separate from the preoperative area, ensure the postoperative area also includes:
 - a nourishment area (for phase II patients)
 - ice-making equipment
 - additional support areas
- Include at least one Phase I patient care station per OR or Class 3 imaging room and at least one Phase II patient care station per procedure room, OR, or Class 2 or 3 imaging room.

★ *When designing the preoperative and postoperative areas, keep staff workflow and the patient's preference and healing needs in mind.*



INTRAOPERATIVE AREA

- Design the operating room so its size can accommodate the number of anticipated personnel and pieces of equipment.
- Orient the documentation area so the RN circulator is facing the patient.
- Place a scrub station outside each OR adjacent to the door from the semi-restricted corridor.
- Do not place sinks or drains in the OR.
- Design the OR to have a positive pressure air gradient.
- Perform a risk/benefit/cost analysis when making decisions about field lighting by assessing the
 - ceiling support system
 - amount of interference with other equipment on the ceiling
 - ability to focus and control the light
 - amount of heat produced
 - time and effort required to replace the lamp
 - color and temperature of the light

- shadow that is produced
- ease of cleaning
- durability
- type of lighting
- potential interference with airflow
- amount of energy required for movement and focusing
- ability to control the settings at the sterile field
- Install a waste anesthesia gas disposal system.

★ *Operating rooms should be designed to accommodate workflow and the needs of the surgical team and patient and should be safe in respect to eliminating anesthesia gases.*



HYBRID OR

- Perform a risk/benefits/cost analysis to determine if a hybrid OR will be included in the surgical suite design.
- Include an imaging system control area, procedure area, and imaging system.
- Provide lighting that facilitates a safe work environment.
- Design the hybrid OR to:
 - comply with non-hybrid OR requirements
 - accommodate equipment
 - include hazardous protection and access
 - include signage to indicate types of precaution
 - be readily accessible to both surgery and radiology suites
- Designate magnetic resonance (MR) safety imaging zones and use safe practices when and where MR imaging is used.
- Take safety measures when using cryogenic liquids inside the MR facility, including:
 - storing cryogenic liquids outside of the MR facility
 - preventing pressure entrapment and asphyxiation when transfilling cryogen in zone IV

- verifying personnel are trained before they perform or are present during cryogen transfills
- providing an emergency exhaust pathway and an additional form of passive pressure relief/pressure equalization
- inspecting the cryogen vent systems annually
- Perform a risk/benefit/cost analysis.

★ *When designing the hybrid OR space, it is important to consider evidence-based practice recommendations and the safety of the patient and personnel working in or around that environment.*



SUPPORT AREAS

- Support areas should include:
 - locker rooms
 - a nurse's station
 - clean equipment storage areas
 - an environmental service room
 - a supply breakout area/room
 - a sterile processing area
 - administrative areas
 - provisions for anesthesia workrooms
 - a breakroom
 - a soiled workroom area
 - a soiled linen area
- Situate locker rooms in close proximity to the surgical suite.
- Situate hand washing stations in close proximity to the nurse's station.
- Design patient waiting room areas to support physical and mental comfort.

★ *There are several different kinds of support spaces within the perioperative setting. These spaces should be designed to provide functional support to the perioperative team and provide safe places for patients and their support persons/family members.*



STERILE PROCESSING AREA

- Determine the following when designing the sterile processing area:
 - anticipated volume of work
 - type of distribution system
 - space requirements for equipment
 - HVAC and other utility requirements
 - storage requirements
 - space and equipment requirements for the management of infectious waste, hazardous waste, and recyclable materials
 - security systems
 - support areas
 - a receiving area for loaned instruments, supplies, and devices
 - provisions for off-site transportation logistics
 - traffic patterns
- Design the space using a two-room configuration (to include a decontamination room and a clean workroom) except when sterilization equipment is located on a table-top or similar-sized sterilizer.
- In a two-room workspace, separate decontamination and clean workrooms with
 - a pass-through window
 - a built-in washer-disinfector with a pass-through door or window
 - a washer-disinfector with a door on the decontamination side and a door on the clean side
- Make storage space available for instruments, supplies, and case carts either in the clean workroom or in a separate storage room.
- In a single-room workspace, separate the decontamination and clean work area 4 ft from the edge of the sink or separating wall or screen.
- Include security measures for materials management and sterile processing areas.

★ *The building design for the sterile processing area should support the decontamination and clean workroom needs.*



CONSTRUCTION AND RENOVATION

- Maintain internal air quality during construction or renovation.
- Evaluate the current HVAC system to determine if it is adequate to use during construction.
- Conduct an infection prevention risk assessment during construction.
- Determine if the newly renovated area is safe before reoccupying the space.
- Prevent environmental contamination with new construction or renovation by:
 - air sampling
 - using a dust collection system
 - creating and maintaining barriers
 - creating specialized pathways for construction
 - using negative pressure and HEPA filters on the construction side of the barrier

★ *Safety and infection control measures should be implemented during construction and renovation projects to ensure compliance and the safety of patients and team members.*

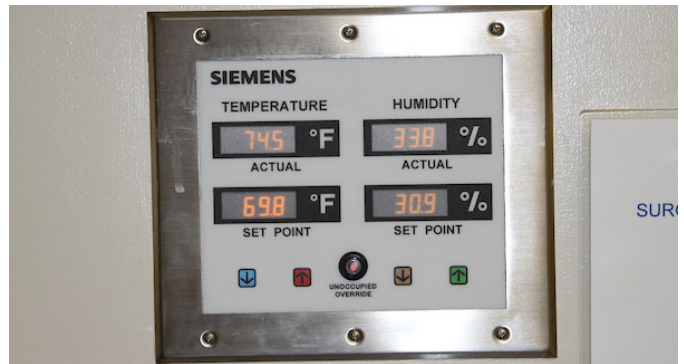


UTILITY AND HVAC DISRUPTIONS

- Include protocols to address the following in the event of a utility failure:
 - electrical power
 - emergency backup power

- battery packs
 - the gas delivery system
 - boilers/steam systems
 - the water system
 - the plumbing system
 - the sewage system
 - the medical gas delivery system
 - the vacuum system
 - the communication system
 - the HVAC system
- Perform a damage/risk assessment of the surgical suite after a utility failure and include:
 - the level of contamination and the agent
 - environmental cleanliness
 - the integrity of clean and sterile supplies
 - the functionality of the power supply
 - water availability
 - HVAC functionality
 - fixed and mobile equipment functionality
 - Develop a power failure plan that includes:
 - working flashlights in every OR
 - manual monitoring equipment
 - long extension cords
 - battery-operated communication devices
 - ways to access electronic medication-dispensing equipment
 - hand washing stations and scrub sinks connected to emergency power supply
 - downtime forms
 - Develop a communication failure plan that includes:
 - a perioperative team contact list
 - meeting points and evacuation destinations
 - alternative methods for communication
 - Take steps to restore the HVAC system during a failure.

★ *There is always a risk for utility and HVAC disruptions within the health care setting. The Centers for Disease Control and Prevention (CDC) recommends being prepared for such risks by creating a utility failure remediation plan.*



OR MAINTENANCE

- Monitor and maintain infrastructure, equipment, and updates in the surgical suite.
- Create a process to resolve unintentional variances in the surgical suite that includes:
 - initial steps when a disruption is noticed
 - the process for escalation
 - the team that will perform a risk assessment and determine next steps
 - ongoing communication with plant operation personnel
 - ways to prevent future disruptions
 - review of policies and procedures on a regular basis
- Determine whether to adjust the HVAC temperature outside of set parameters based on patient needs and the comfort of occupants.
- Determine whether to use portable HEPA filters during construction, renovation, and repairs.
- Determine frequency of HVAC filter changes.
- Do not use free-standing fans, portable humidifiers, air conditioners, and dehumidifiers.

★ *When maintaining the surgical suite, patient care, staff workflow, and any barriers to a safe, healthy work environment should be considered. Follow CDC recommendations when coordinating the maintenance and monitoring of the HVAC system, and collaborate with infection preventionists to mitigate the risks of infection for immunocompromised patients.*