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PLANNING A NEW ENDOSCOPY DEPARTMENT IN 2020

5 YEARS ANNIVERSARY

Planning a new endoscopy department in 2020

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If you are thinking about expanding, relocating or renovating your endoscopy center or department, there are several key space planning concepts, regulatory requirements, trends, options and features that should be considered before anyone puts pen to paper or sets a project budget.

Given the impact that the current pandemic has had on the ability for many endoscopists to see patients and the use of some endoscopy centers for surge capacity, pandemic resiliency should also be factored into the planning.

All images provided by Margulies Perruzzi

Design regulations

Your new endoscopy department is likely going to take up more space, even before you add or increase your program. Existing rooms and spaces may be code-compliant based on when they were built, but once you substantially renovate or build a new center it will need to be compliant with the latest codes. Regulatory requirements that dictate the required spacing, sizing and configurations for endoscopy departments vary by state, most follow a version of the Facilities Guidelines Institute (FGI) Guidelines for Design and Construction of Hospitals/Outpatient Facilities. The FGI provides guidance on health and residential care facility planning, design and construction in the United States using consensus-based, research-informed guidelines to protect public health, safety and welfare. The considerations below reference the most recent 2018 edition. You can find your state's implementation at www.bit.ly/fgiguidelines.

A state department of public health (DPH) or department of health (DOH) plan approval is often required, and they may have requirements in addition to the FGI guidelines. If you are adding procedure rooms or exceeding certain capital expenditures, a Certificate of Need (CoN) or Determination of Need (DoN) may also be required. The CoN/DoN process, which can be lengthy and expensive, should be addressed at the onset of your project planning. Healthcare architects and facility personnel with experience in licensing requirements should be consulted to help determine which regulations apply and how they may affect your program and schedule.

Pandemic resiliency factors: The Facility Guidelines Institute is currently developing a set of regulations that will provide guidance to healthcare organizations to vary from the normally required regulations during future emergency conditions. This will include human-made emergency conditions in addition to a variety of natural and viral outbreaks. It's expected to be issued in the fall of 2020, and your designer should review how these guidelines may affect your planning in addition to the pandemic resiliency factors noted here.

Project schedule

If you have ever been involved with a hospital construction or even a home remodeling project, you probably already know how they can take much longer and become more complex than originally conceived. Even though the project completion date may be many months or even years away, it cannot be overstated how important it is to make key programmatic and equipment decisions as early in the process as possible. The later decisions are prolonged or changed during the design process, the greater the impact to the schedule and budget of the project. When those decisions extend into the construction phase, the implications can expand exponentially.

Circulation and organizing principles

When planning a new department, it is beneficial to imagine a blank slate and organize the program into five zones:

1. Entry and waiting zone.
2. Preprocedural and recovery zone.
3. Procedure zone.
4. Scope processing zone
5. Staff support zone.

Each has several subcomponents and there may be some overlap but conceptualizing by zones helps to develop an overall strategy.

Each zone typically has a different level of restrictions based on public, patient and staff access or restricted security access for staff to medications and scopes. Also, consider the flow of patients, staff and materials throughout the department to create the most efficient process and the best patient experience. To the greatest extent possible, it's best to have one-way flow, meaning the patients flow from waiting to prep bays to the procedure room and onto recovery, exiting without having to go back through any of the previous zones.

It can be difficult to imagine something completely different from your current processes. Lean Process Improvement workshops can help break out of the "this is the way we've always done it" mentality. Lean simply defined is a method for creating a more effective business by eliminating wasteful practices and improving efficiency, but the concept can be applied in many ways depending on the industry. In healthcare planning, it is most often applied by first creating an ideal future state workflow of your clinical operations and then designing toward that process — instead of designing to the way things have always been done. Those current state processes may have been created as work arounds to the current environment limitations or outdated concepts.

Pandemic resiliency factors: In addition to creating an efficient and patient centric environment, one-way flow can also reduce the risks of infectious disease by limiting interactions and proximity due to cross traffic.

Procedure room considerations

Most endoscopy projects start with a desire to increase or substantially change the procedure rooms. From a planning perspective procedure rooms can be classified into three categories:

1. Standard procedure rooms.
2. Anesthesia procedure rooms (those that will support administering anesthesia day one or in the future).
3. Imaging procedure rooms (those with fixed or mobile imaging equipment).

The minimum size for a standard procedure room is a clear floor area of 180 square feet, plus sinks, storage cabinets, documentation stations and fixed equipment. This typically equates to a total of 200-220 square feet per room. For rooms that have anesthesia capabilities, additional space for an anesthesia zone in the back of the room to accommodate anesthesia carts, floor-standing medicine dispensing units and anesthesia access to the patient is recommended. For these rooms, 230-260 square feet is more common.

Rooms with fixed fluoroscopy equipment can almost double in size to 420-440 square feet. Rooms setup for a mobile C-arm can be around 300 square feet, but the storage of C-arms when not in use also needs to be considered. In addition to workflow and storage needs, booms (equipment/gases, lighting and monitors) should also be considered early in the process given the additional cost implications.

An advanced endoscopy procedure room can be more complex than an operating room. For surgery, the patient is always on the operating table, but in an endoscopy room there are at least four patient positioning variables:

- Upper endoscopy procedures on the fluoroscopy table.
- Lower endoscopy procedures on the fluoroscopy table.
- Upper endoscopy procedures on a stretcher.
- Lower endoscopy procedures on a stretcher.

It is critical to understand the positioning of staff, booms, anesthesia equipment and medical gases in each scenario. The use of mockups and virtual reality environments in designing the space can be extremely beneficial in understanding how these interactions occur and the spatial relationships for each scenario, long before the space is built out.

Pandemic resiliency factors: Many endoscopy rooms were converted to temporary COVID-19 inpatient rooms during the early months of the pandemic. Unlike operating rooms, which are required to be positive pressure to keep surgical sites clean, endoscopy procedure rooms have neither a negative nor a positive pressure requirement. Having the ability to switch the room to negative pressure during an infectious disease outbreak or even for an infectious patient being seen for endoscopy can provide greater flexibility and safety to patients and staff. Alcoves outside of the procedure rooms can also add flexibility by serving as personal protective equipment (PPE) donning/doffing locations during an infectious disease outbreak or as equipment or documentation space under normal circumstances.

Pre- and post-procedure care stations

Procedure rooms can only be used at full capacity if there are enough prep and recovery bays to hold the patients. Theses bays are now referred to by FGI as patient care stations, guidelines require at least two stations total per procedure room. However, the industry standard rule of thumb has been three stations per procedure room. A deeper analysis of patient

Your facility's approach to storage and restocking supplies in each procedure room can also affect the sizing. Some facilities prefer to minimize the amount of supplies in each room and restock from the department's clean supply room daily, which can save space and cost to the project.

You may also want to consider comfort flooring in procedure rooms. Leg fatigue due to standing in fixed positions for prolonged periods of time in these rooms is a common complaint. Sheet vinyl with a comfort backing is available that is suitable for the cleaning and stretcher load requirements while helping to reduce leg fatigue.

time in prep, procedure and recovery times can help right-size the quantities based on procedure types, workflow and operations. If Lean Process Improvement is going to be a part of redefining the future state workflow, a focus on these metrics can help right-size the ratio while maximizing throughput with the space available.

There are a few key organizational concepts to consider in laying out the prep and recovery bays. For a hospital-based facility, separating outpatients and arranging the flow so that they do not walk past inpatients on the way in provides more privacy for the inpatients, who are often sicker. The practice can also help alleviate stress for outpatients who might believe they will be in a similar condition after a routine procedure. Providing some bays

that can flex between either prep or recovery depending on the volumes at different times of day can help maximize utilization.

Where patients change and the types of bays provided is also instrumental to planning the department. The trend has been for patients to change in the bays with their belongings stored either in a bag that stays with them under the stretcher. This eliminates the need for changing rooms and having the patients walk around the department in their nursing gown. Some jurisdictions may require you to provide lockers. The other trend that helps with changing in the bays is adding hard walls on both sides of the bay and the curtain only at the foot. This provides better privacy while changing, as well as acoustical privacy during patient discussions with healthcare providers. In the latest FGI release, the distance between hard walls and stretchers was reduced from four feet to three feet. The distance required at the foot of the stretcher to a curtain has also been reduced from two and a half feet to two feet. This has made the size increase much less of a constraint in installing hard walls. The minimum size for a patient bay (curtains on the sides) is 72 square feet and for a cubicle (with hard walls on the sides) is 85 square feet.

Some jurisdictions also require that the patient's head in the fully reclined position is visible from a seated location at the nurse station. This can have a big influence on the quantity and sizing of nursing stations. Although many practices prefer to have a single care team station in prep and recovery, larger departments may have to consider separating the prep and recovery nurse stations to meet the requirement and fit the program. Hard walls make the visibility of the patients' head in all bays trickier but there are several strategies that can help. Stopping the walls at the foot of the stretcher or making the last two feet glass allows for a better viewing angle. Stations can also be tucked in next to or behind the nurse station with glass windows for viewing.

Also, depending on your facility's patient handling and movement needs assessment, you may need to include larger bays and toilets for patients of size. Larger isolation rooms with dedicated toilets may also be needed in the prep and recovery areas for patients with infectious diseases.

Pandemic resiliency factors: In addition to better acoustical and visual privacy, hard walls between the patient care stations also reduces the risk of air exchange in an infectious disease outbreak and may further push this trend forward. Creating at least one isolation room in prep and recovery may assist in safely maintaining operations, and the creation of alcoves for equipment that could be used for PPE donning/doffing may assist in using the endoscopy department for surge capacity.

Scope processing

An endoscopy department can only perform to the throughput capacity of its sterilization capacity. Regulatory changes with an increased emphasis on reducing infections related to scope processing and drying have made this one of the most common renovation and retrofit areas.

Key design requirements include provisions for Joint Commission-compliant drying cabinets where applicable and proper pressurization of rooms with monitoring. The "ball in the wall" is a simple mechanical device that indicates pressurization and still meets regulatory requirements. However, many facilities are now installing digital pressure monitoring that can sound an alarm or send an alert via email/text when pressurization is out of predefined parameters. It can also provide a historical log of pressurization. Locating scope processing central to the procedures, ideally equidistant from each, minimizes the transport of scopes and congestion in corridors.

The use of both pass-through scope washers and drying cabinets is a relatively new concept that can greatly impact space planning. In this concept the decontamination and clean (post-washing) areas are completely separated as opposed to the traditional model where cleaned scopes are removed from the washers in the same room as dirty scopes. This can virtually eliminate the risk of cross-contamination of scopes since the clean scopes cannot be removed from the dirty side. In the decontamination room, space should be provided for the staging of dirty scopes, sinks for decontamination and elongated rooms so that all the pass-through washers can be placed between the two rooms. In the clean room, scopes are removed from the washers and then can be blown off with compressed air to reduce drying times or placed directly in the drying cabinets. If pass-through drying cabinets are also used, a long wall between the clean room and corridor is needed. This can eliminate the traffic and risk of contamination of scopes in the clean room and allow for more efficient distribution of scopes to the procedure rooms.

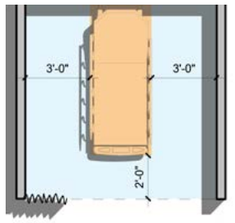
Decisions on the quantity and types of washing and drying cabinets early in the process will help to keep the project on budget and schedule as the equipment cannot only a significant cost to the overall project budget but can also have a significant impact on the space planning.

Entry and waiting rooms

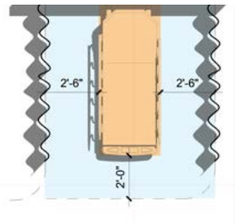
Endoscopy and surgical waiting rooms have some unique aspects to consider. Many facilities require patients to have a driver present prior to discharge. This requires additional seating capacity but might also create a backup in the recovery area if the driver is not present, and the facility is not comfortable having patients return to the waiting room and potentially walk off. One way to resolve this challenge is to create a post-recovery waiting area for patients where they can still be monitored by PACU staff but are seated in a chair and ready to go, relieving capacity on the bays. Patient status boards in the waiting rooms can also help relieve waiting room congestion by letting visitors better determine when they need to be present for patient pickup.

Pandemic resiliency factors: The waiting room creates one of the greatest challenges during an infectious disease outbreak due to the high quantities of people in one space for extended periods of time. There are several strategic and tactical concepts that should be considered in planning for potential future outbreaks:

- Complete all registration, insurance and payment information digitally prior to the appointment to minimize interactions with staff and congestion in waiting rooms.
- Reduce the amount of time patients are asked to arrive prior to their appointment to minimize congestion in the waiting rooms.
- Consider creating a negative pressure screening/triage room at the entry that allows patients to be screened or examined prior to entering the waiting room. This room can be utilized as an exam or multipurpose space when not needed due to infectious disease concerns.
- Utilize one-way flow at the entry points by creating a separate entrance and discharge from the recovery area
- Create a negative pressure waiting room as is required for imaging departments that might patients with tuberculosis or other infectious diseases. This may become the new normal for all waiting rooms.
- Consider how seating can be arranged to maintain social distancing and limit air exchange between patients and visitors.



PATIENT CARE CUBICLE
85 SQUARE FEET MIN.



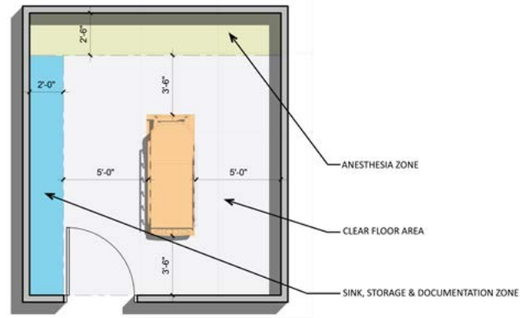
PATIENT CARE BAY
72 SQUARE FEET MIN.

Staff workspace

One of the operational variables we commonly see that will impact your planning efforts is where and how physicians document after each case. A documentation station within the procedure room adds to the room size and congestion but also allows for immediate documentation after the case. Documentation alcoves right outside the room, although potentially in high-traffic areas, may utilize the least space overall while still providing for immediate documentation. Collaborative work rooms require more space and are less immediately accessible right after the procedure, but also provide for dedicated workspace and group discussions.

For healthcare administrative space in general, the trend over the past few years has been an emphasis on reducing underused administrative space to allocate toward clinical and research space, particularly where that real estate comes at a premium cost in expensive downtown hospitals and academic medical centers. One tactic has been reducing office sizes down to 60-80 square feet from the previously typical 100-120 square feet. The other has been creating collaborative work areas that in addition to utilizing less space create opportunities for greater communication in a medical home model-inspired, team-based approach.

Pandemic resiliency factors: While it is too early to say what the long-term impact to collaborative workspace will be, there is certainly going to be a continued revaluation of the infectious disease risks and strategies to maintain social distancing in collaborative and open workspaces in all industries.



STANDARD PROCEDURE ROOM
200 - 220 SQUARE FEET

ANESTHESIA PROCEDURE ROOM
230 - 260 SQUARE FEET

Staff support space

In addition to workspace for clinical administration and business staff, a staff break room, staff changing areas, a multi-purpose/conference room and a patient interview room are typically needed— and may be required by your state's regulations located in the department or in close proximity. Where space constraints do not allow all of these spaces to be directly within the department, some of these rooms can be located nearby, shared with other departments, or serve dual purposes. Another space to consider adding to the program is a patient

consult and respite room. This can allow for more private discussions with patients and their loved ones when a serious medical condition is suspected, diagnosed or confirmed. Some facilities create a direct exit from the consult room to bypass the waiting room for their privacy when leaving.

Pandemic resiliency factors: In addition to more space for PPE donning/doffing, the other frequent request from staff during the first COVID-19 surge was more space to take a break, remove their mask and have something to eat while still maintaining precautions for their safety. Providing multiple smaller break rooms and meeting rooms that staff could utilize individually may be considered instead of single larger spaces. Flexible rooms that could be allocated as rest and recovery rooms for staff would also be helpful. For example, the consult and respite room could be allocated for staff rest during a pandemic. Staff changing areas have also been in higher demand as care teams are not as comfortable going home in the clothes they wore throughout the day as they once were.

Additional support spaces

Additional clinical support areas that should be considered in programming and planning your department include:

- Patient and staff toilets.
- Clean supply storage.
- A workroom for soiled supplies.
- Equipment storage rooms and alcoves.
- Dedicated environmental services closet for the department.
- Medication safety zones.
- Emergency equipment alcoves in both the recovery and procedural zones.
- Lead-garbing area for advanced procedure rooms.

And don't forget there are behind the scenes building infrastructure spaces that will need to be accommodated and often require more space than anticipated. These include electrical and IT (telephone/data) rooms, space for mechanical/HVAC equipment that cannot be placed outdoors, and sometimes water service purification for scope washing or backup power supply rooms for fluoroscopy equipment.

Project team

Build a project team that includes people who are open-minded to new ideas, who have a variety of perspectives and who will be fun to work with on your project. You are going to be making a lot of difficult decisions with substantial financial repercussions to create a new environment that benefits your coworkers and the patients they care for on a daily basis. It is a challenging responsibility, but there's no reason you can't have fun along the way, too.

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