

# Endoscopy Department

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Graphic Standards  
Programming and Schematic Design

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## ***Function***

Innovations in surgical technology have yielded techniques for a wide range of procedures that are minimally invasive to the human body.

These techniques have enabled surgeons to perform operations in places that could previously be reached only with large incisions. The techniques involve less physical and psychological trauma, limited (if any) anesthesia, and quicker recovery for the patient and are often less expensive for the patient, the provider, and the insurer.

These techniques are referred to by many names – less invasive surgery, video-assisted surgery, video-endoscopic surgery, telescopic surgery, endoscopic microsurgery, and minimal access surgery. Most commonly, these techniques are called “minimally invasive surgery” (MIS), or endoscopy.

Endoscopy is a broad classification for visual examination of the interior of the body by inserting an endoscope through a natural body opening or small incision.

The most common surgery performed through endoscopy is biopsy – the removal of tissue for microscopic study to detect a malignancy.

## **Endoscopes**

An endoscope is a medical probe of variable length, flexibility, and diameter for examining body cavities or joints and performing treatment.

Two key parts of the scope are the lighting component that illuminates the area (distal tube) and the viewing component that allows sight of the area (insertion tube).

A special port in the scope allows narrow probes, surgical tools, and specialized accessories to enter the scoped areas through the insertion tube to remove or repair tissue.

Endoscopic systems now often include a video system to transmit the image onto a monitor screen.

Scopes fall into two primary categories – rigid and flexible.

### ***Rigid Scopes***

Rigid scopes may be used for extensive surgery, usually involve an incision, and are often used in hospital operating rooms.

Common types of rigid scopes are the otoscope to view the ear, the arthroscope to view skeletal joints, and the laparoscope to view abdominal structures.

### ***Flexible Scopes***

Flexible endoscopes tend to be used for examinations and less complicated surgeries that are also less invasive.

Flexible endoscopes include the bronchoscope to view the lungs, gastroscope to view the upper gastrointestinal tract, cystoscope to view the bladder, and the colonoscope to view the colon.

Both upper and lower flexible endoscopy procedures are performed for diagnosis, biopsy, removal of polyps, control of bleeding, dilation of strictures, laser ablation, and removal of foreign bodies.

Gastrointestinal flexible endoscopes dominate the field, although they require the highest level of skill and involve the most sophisticated technology.

ERCP (endoscopic retrograde cholangiopancreatography) is a diagnostic procedure in which dye is injected into the bile and pancreatic ducts using a flexible, fiber optic endoscope. ERCP procedures involve x-rays and must be performed in an x-ray room with lead-lined walls, such as in a radiology department.

### **Outpatient Procedures in Acute Care Facilities**

Although some endoscopic procedures may require a hospital stay, the less-invasive nature of endoscopy lends itself to ambulatory units within conventional acute care hospitals in endoscopy departments or suites.

The typical endoscopy unit is an ambulatory clinic that will perform a number of diagnostic and surgical procedures using flexible scopes, as well as occasional esophageal dilations.

Flexible endoscopic procedures are also performed and supported in many different departments within the acute care hospital – radiology, pulmonary function labs, pediatrics, ICU, CCU, and the emergency department.

In the hospital setting, many support functions (such as admitting, medical records, pharmacy, lab, etc.) are centralized and the endoscopy unit will interface with these other departments in treating either inpatient or ambulatory cases.

### **Outpatient Procedures in Alternate Site Facilities**

Alternate site facilities, including ambulatory surgery centers and medical practices, are capable of providing a wide array of outpatient diagnostic services and minimally invasive procedures.

In an off-site facility, many of the supporting functions must be accommodated for to handle the entire process of receiving and delivering care to patients. For these supporting functional areas (such as satellite labs and pharmacies, prep and pack areas, and business/administrative areas), refer to the section entitled Ambulatory Surgery.

### **Specialties that Use Flexible Endoscopes**

Flexible endoscopes are used in a variety of medical specialties:

#### ***Gastrointestinal Endoscopy***

Gastrointestinal endoscopes are commonly used to examine the upper gastrointestinal (upper G.I.) and lower gastrointestinal (lower G.I.) portions of the body.

#### ***Urology and Endourology Endoscopy***

Endoscopy used for urology involves problems in the urethra, bladder, and prostate, while endourological procedures involve the ureters and kidneys.

#### ***ENT (Ear, Nose, and Throat)***

Bronchoscopes are used by ENTs to visualize the throat. They are mostly used for diagnosis, but are also used to remove foreign bodies.

### **Traffic Zones**

The endoscopy unit is divided into four functional areas:

#### ***Administrative/Public Areas***

In a hospital setting, administrative and public areas include the waiting and reception area, consulting rooms, charting/dictation area, and staff offices.

In an alternate site facility, administrative areas may also include a business office, staff lounge, and break area.

#### ***Patient Prep/Holding/Recovery Area***

This area contains similar equipment and furnishings to that of a typical inpatient surgical pre-op and recovery area with the addition of changing rooms and lockers for outpatients' personal belongings, seating for patient companions, and a small control station for nurses.

#### ***Procedure Rooms***

The procedure room often resembles a subacute OR suite. In most procedures, the physician and assistant are on opposite sides of the patient, and the room is naturally divided in half to form two zones, each containing the equipment and supplies for their respective needs.

#### ***Instrument Processing Rooms***

Dedicated processing rooms for cleaning and disinfecting instruments are ideally located between two procedure rooms. However, one processing room may serve multiple procedure rooms. The size of the processing room is dictated by the number of instruments to be processed and the available space and existing architecture.

### **Flow of Patients**

In a hospital setting, patients may be ambulatory or brought by stretcher or gurney and are checked into the unit at a reception area.

From there the patient will be “admitted” and prepared for the procedure.

The patient might then be kept in a patient prep/holding area on a stretcher until a procedure room is available.

The patient remains on the stretcher and is transferred to the procedure room where the examination/treatment is performed.

Following the procedure the patient is returned to the holding area for recovery, remaining there until ready to dress and be discharged.

### **Flow of Equipment/Instruments**

Since the same procedure room may be used for both upper and lower endoscopy, the endoscopy equipment may need to be reconfigured or the patient oriented relative to the video and other monitoring equipment.

The scopes, along with dilators, scope accessories, and clinical supplies, may be stored in the procedure room or in an adjacent room and hand carried or brought to the procedure room in procedure carts just before the procedure begins.

After the procedure, the scope is hand wiped, covered, and transported to an instrument processing area. The scope is flushed with sterilizing solution and high-level disinfectant. Then hospital-grade air is blown through its channels before it is hung to “drip dry” in an enclosed but vented cabinet in the storage room or procedure room.

It takes, on average, at least 20 minutes to “turn around” a scope prior to another procedure. The number of scopes in a given unit will be determined by the number of procedures performed, average turnaround time, types of procedures performed, and rate of damage/service to scopes.

Endoscopy procedures also may be performed on a scheduled or emergency basis in other departments within a hospital when patients cannot be moved to the endoscopy department. In these cases, the instruments, equipment, and supplies must be transported to the point of care.

## ***Staff***

Endoscopy departments have a variety of highly trained personnel often with training in specialties or with a background in surgery.

### **Physician Staff**

#### ***Physicians***

The physicians who perform the endoscopy procedures are generally specialists in GI (gastroenterologists) or internal medicine (internists). They also could be residents, interns, and attending or staff physicians. The physicians are the decision makers on the purchase of scopes.

### **Nursing Staff**

#### ***Endoscopy Nurse Manager***

The endoscopy nurse manager is a registered nurse who is administratively responsible for the endoscopy service and usually has endoscopic clinical experience. This position is responsible for department budgets, staffing, maintaining departmental relationships with other medical units, and managing supplies and equipment. This position is generally the decision maker for support equipment, furnishings, carts, and general supplies.

#### ***Staff Nurses***

Endoscopy nurses with specialization in the practice of GI medicine are responsible for assisting in procedures, for the room and procedure set-up, patient monitoring and contact, documentation, and charting. They are also responsible for the specification/design of carts and procedure room functionality and have a major influence on the purchase of carts and supplies.

#### ***Endoscopy Assistant***

The endoscopy assistant or endoscopy technician (who may or may not be a nurse) generally receives endoscopy training on the job, and assists the physician during procedures.

The endoscopy assistant is responsible for prep, cleaning, processing, and storing scopes and has a major influence on the purchase of scope processing, storage equipment, and endoscopy supplies.

### **Support Staff**

Other administrative and medical staff will vary based on the size of the department and may include a receptionist/scheduler.

### ***Advantages of Movable Modular Casework***

Endoscopy departments may vary widely in type of unit, square footage, method of operation, and staffing, but each endoscopy department has certain functional areas in common. The following pages describe the advantages of movable modular casework, give a brief description of the functional areas of the endoscopy department, and provide typical plan views of movable modular casework applications.

#### **Movable Modular Casework**

Movable modular casework offers the following major advantages and differences when compared with fixed casework or millwork:

- *All* movable modular casework components can be easily rearranged or reused by the end user, allowing ongoing changes with new technology and accommodate major procedural changes as well as hour-to-hour variations in activities.
- Movable modular casework components have been specifically designed to meet the functional requirements of endoscopy departments.
- Components are sanitizable, and every configuration can be disassembled to easily clean parts.
- Specialized storage and transport units complement the general storage system.
- Wall-hung systems offer more effective use of vertical space, flexibility to make changes easily, and increased worker productivity.
- Modular components provide efficient placement of clinical work surfaces for charting and efficiently arranged workstations.
- Additional components can be added at any time.

#### **Materials Handling Components**

Storage components can become mobile by combining them with wheeled components. This can be especially useful in procedure rooms for supporting effective and efficient placement, storage, access to, and transport of supplies and equipment during procedures:

- Specialized supplies and equipment can easily be positioned close to the patient and point of use.
- Components can quickly and easily be relocated in a procedure room when a specific procedure requires that the patient be turned around.

Specific components appropriate for use in the endoscopy department include

- Bronchoscopy procedure carts.
- Endoscopy procedure carts.
- Endoscopy emergency procedure carts.
- Video procedure carts.
- Mobile procedure/supply carts.
- Crash carts.
- L carts.
- Mobile process tables.
- Endoscopy storage cabinets.

#### **Modular Furniture Systems**

- Panel systems for administrative areas offer the use of less space, the flexibility to make changes easily, and increased worker productivity.
- The system provides cantilevered work surfaces and efficiently arranged workstations.

#### **Financial Advantages**

The initial cost of movable modular casework is competitive with fixed casework or millwork. However, the life cycle cost of movable modular casework is far *less* than fixed casework because of

- Longer product life.
- Minimal maintenance cost.
- Continual reuse of the components for new or different functions.
- Ability to install and reconfigure with little downtime.
- Accelerated depreciation rate, especially important to “for-profit” organizations.

For preliminary budget purposes, movable modular casework for an endoscopy department has an average price in the range of \$272 to \$408 per linear foot.

This range will be affected by the amount of mobile equipment used rather than movable modular casework.

**Functional Areas**

**Waiting and Reception**

The waiting and reception area must be large enough to accommodate the patient along with one or two companions who will accompany the patient and wait for the patient to undergo the procedure.

Generally, up to eight seats should be allowed for each procedure room.

The layout should be designed so that patients being transferred to the procedure area have minimum exposure to post-endoscopic patients or the endoscope, since this may be somewhat frightening to patients prior to the procedures.

A private area may be needed for discussing financial or personal information.

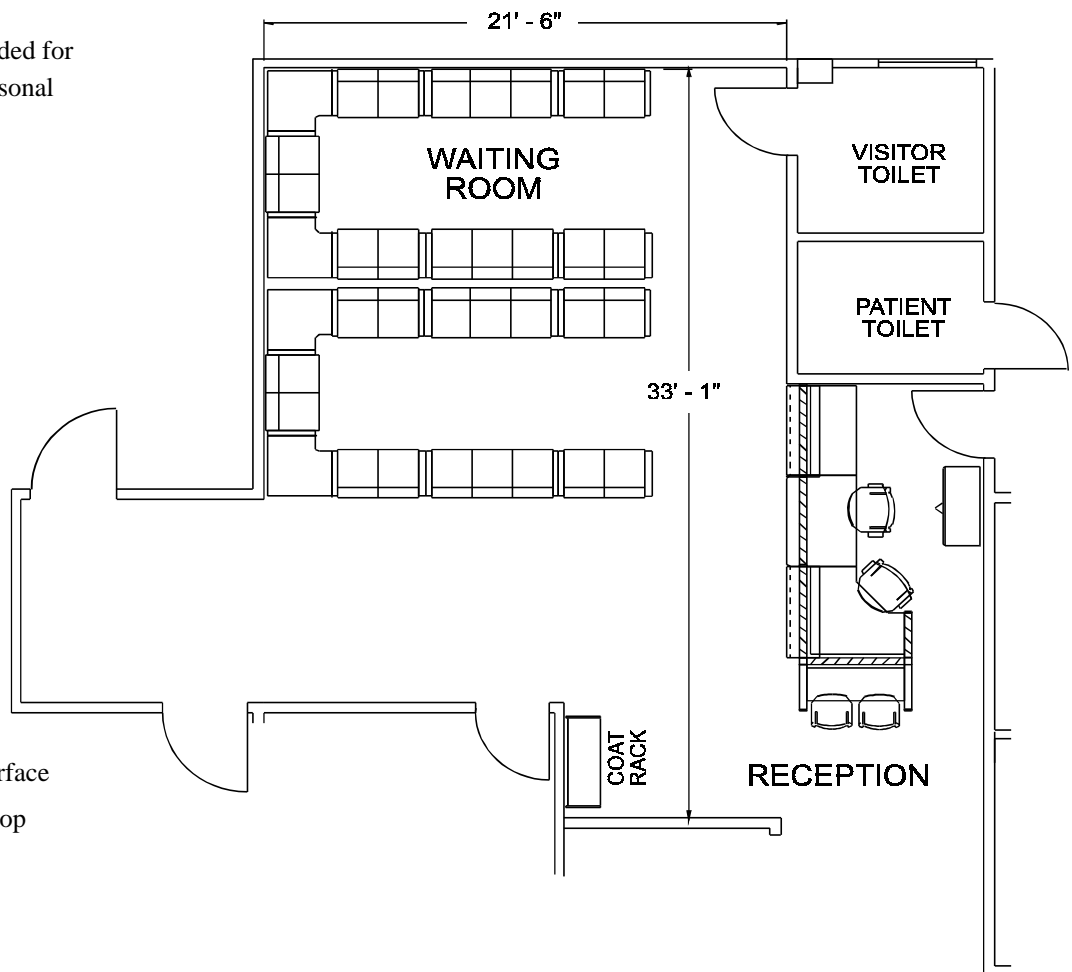
**Movable Modular Casework and Furniture Systems Applications**

Movable modular casework and modular furniture systems components allow for future flexibility and change and may include

- Integral computer support components, such as keyboard trays and turntables.
- Above work surface counters or transactional work surfaces.
- Cantilevered work surfaces.
- Integrated form trays and chart shelves.
- Lateral filing components.
- Task lighting where needed.
- Unlimited electrical capabilities.
- Overhead shelves for manuals and reference materials.
- Comfortable, durable waiting room seating.

**Plan View of a Waiting and Reception Area**

- 16 linear feet work surface
- 8 linear feet countertop
- 168 filing inches
- 4 feet coat storage
- 700 square feet





## Patient Prep/Holding

Patients arriving for endoscopy procedures are held in this area until the appropriate procedure room is ready.

Patients will change into hospital attire in dressing cubicles before entering the prep/holding area. An area should be available to store patients' clothing and personal belongings.

Adequate patient toilet facilities should be close to reception areas and to the patient prep and recovery areas.

If the patient is to receive intravenous sedation prior to entry into the procedure room itself, an area must be designed for storage of venipuncture needles, tourniquets, alcohol sponges, tape, and supplies.

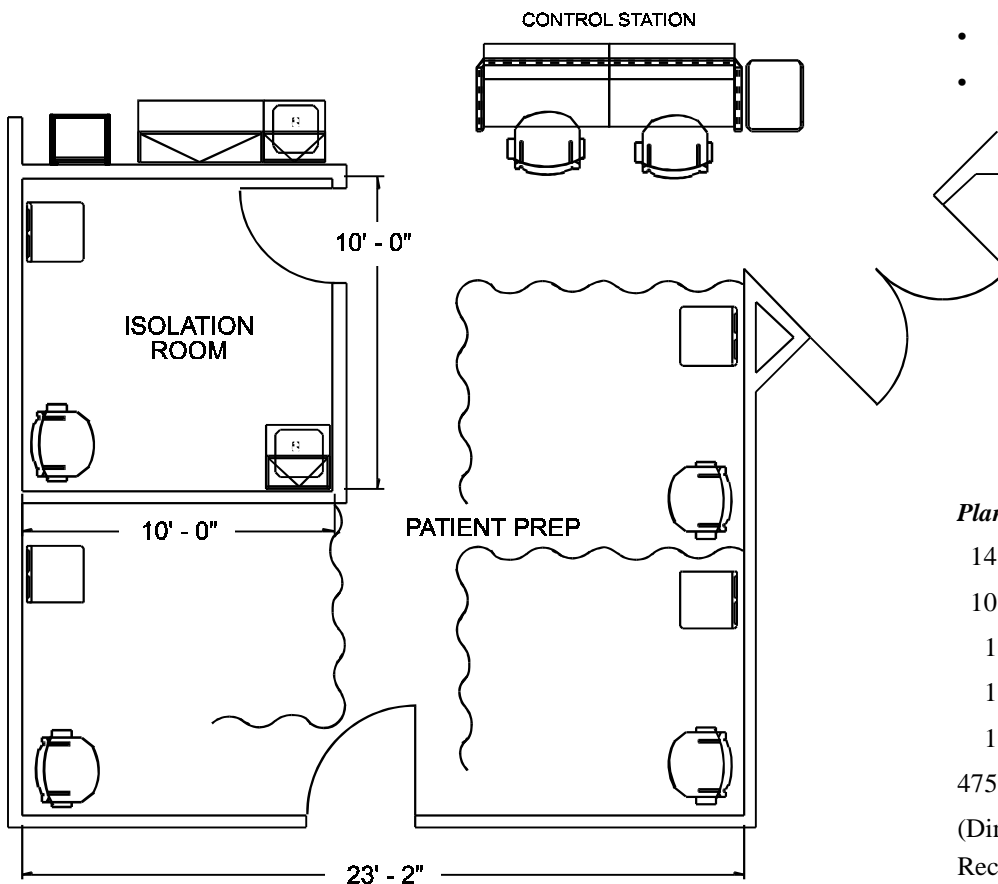
A nurses' control station and medication preparation area are often an integral part of this area.

One room may be set aside to use as an isolation room for patients with infectious diseases.

### *Movable Modular Casework Applications*

A patient prep/holding area can be planned using movable modular casework and may include

- Control station.
- Locker to hold patient care supplies.
- Flipper door units for use as patient lockers.
- L cart, procedure/supply cart, or rail-hung C frame with drawers placed near each stretcher for patient supplies.
- Procedure/supply carts.
- Wire carts or Intersite® carts for linen.
- Crash cart.
- Extra-deep modular shelving units.
- Sink unit.
- Seating for patient/companion.



### *Plan View of a Patient Prep/Holding Area*

- 14 linear feet work surface
- 10 linear feet overhead storage
- 1 locker for IVs and supplies
- 1 L cart storage unit per bed
- 1 crash cart

475 square feet

(Dimensions may be common to the Recovery Area.)

**Procedure Room**

The procedure room is generally located in the interior of the building without windows and often resembles a subacute OR suite.

The clear floor area should accommodate a full 360-degree turning radius of the procedure table so that the patient can be oriented according to the procedure being performed.

In most procedures, the physician and assistant are on opposite sides of the patient, and the room is naturally divided in half to form two zones, each containing the equipment and supplies for their respective needs. The physician is positioned next to the patient. An assistant monitors the patient and assists the physician with supplies and charting. The assistant will need access to a hand sink and a water source during the procedure.

A small workstation with a task light can be used to read charts before and during the procedure. A telephone and intercom system may also be incorporated into the area.

Endoscopes generally are not stored in the procedure room. If the scope is stored in the procedure room, care is taken to shroud it from view by the patient before the procedure.

Mobile carts may be used to hold the necessary equipment for the procedure, contain the supplies required during the procedure, and provide additional work space.

Mobile carts also may be used to transport equipment and supplies from room to room to maximize the use of available procedure rooms and to maintain maximum flexibility.

The light source, suction devices, controllers, and monitors can be housed vertically on mobile carts. The carts should have adjustable shelving and internal power strips with wiring channels to hold and organize the necessary cables.

Mobile carts also allow the flexibility of performing endoscopic procedures, including ERCP and video procedures, more easily in other areas of the hospital.

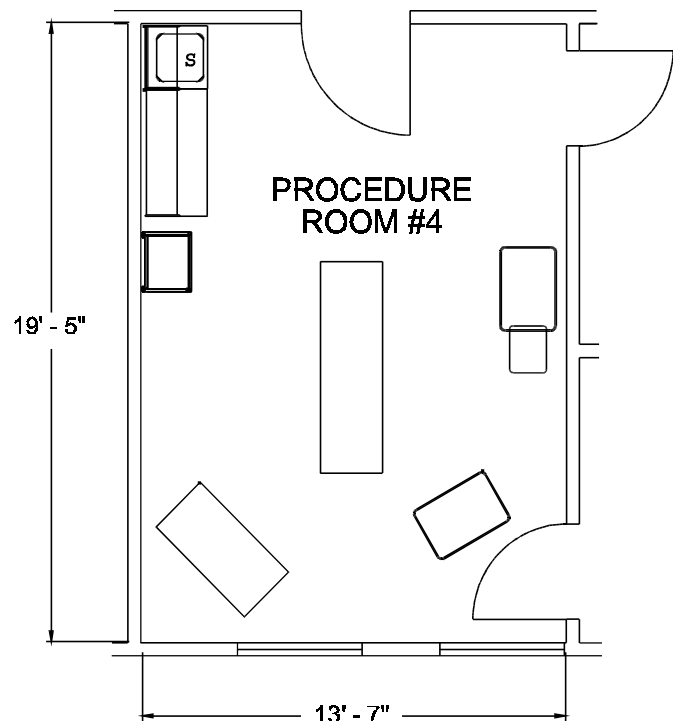
**Movable Modular Casework Applications**

A procedure room can be planned using movable modular casework and materials handling components and may include

- Work surface with deep sink.
- Small administrative workstation for paperwork.
- Enclosed overhead storage for linens, suction containers, etc.
- Locker to hold endoscopy accessories.
- Mobile procedure/supply cart.
- Mobile equipment cart.
- Mobile video cart.

**Plan View of a Procedure Room**

- |                                 |                            |
|---------------------------------|----------------------------|
| 6 linear feet work surface      | 1 endoscopy procedure cart |
| 10 linear feet overhead storage | 1 endoscopy video cart     |
| 1 locker for supplies           | 1 endoscopy supply cart    |
| 275 square feet                 |                            |



**Recovery**

The recovery area is usually in an open space with patients separated by cubicle curtains.

Most endoscopy units perform the procedure with the patient on a stretcher or gurney which can be fixed during the examination and moved into the recovery area immediately after the procedure.

Adjacent to each recovery stretcher should be at least one chair for a relative or companion who has accompanied the patient. A storage area must be provided for tissue paper, toilet paper, emesis basin, and a bed pan.

The layout of this space usually includes a nurses' control station often with a medication preparation area, an area for supplies and equipment, hand-washing sinks, and a patient toilet.

**Step-Down Recovery**

After the patients are stable, they are moved to a step-down recovery area before being discharged.

**Discharge**

Consideration should be given to whether patients will get dressed and leave the unit directly and whether there is a need for space where family members may help a patient get dressed.

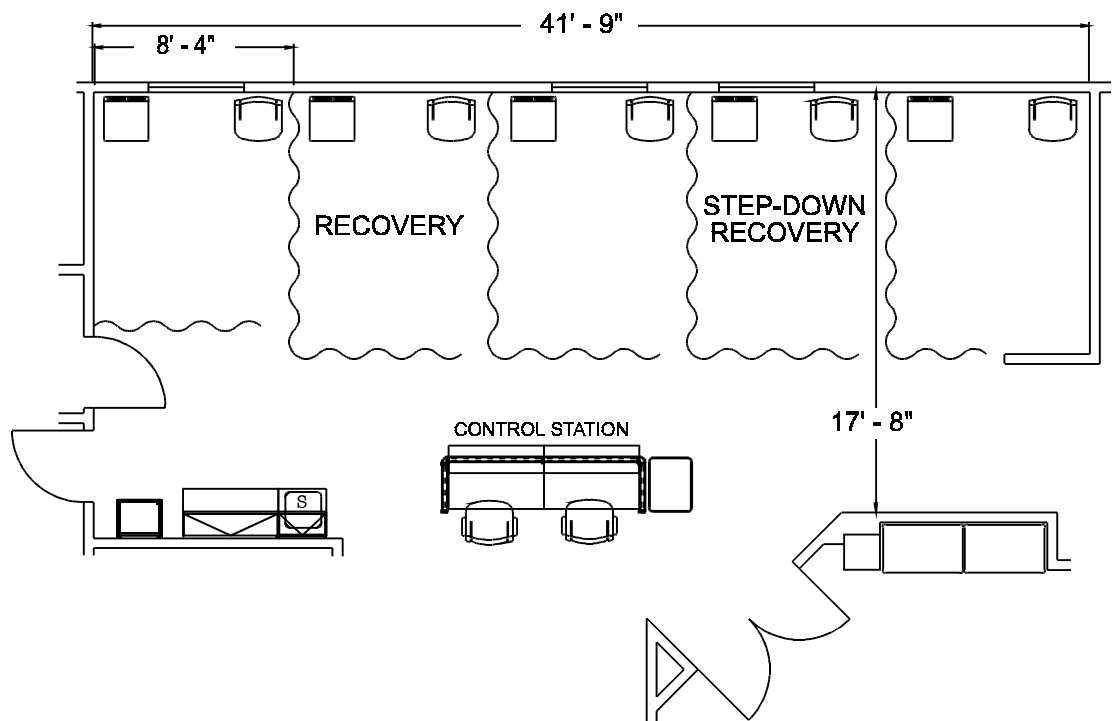
**Movable Modular Casework Applications**

Movable modular casework components appropriate for use in the recovery area include

- L cart, procedure/supply cart, or rail-hung C frame with drawers placed near each stretcher for patient supplies.
- Lockers for medical supplies.
- Lockers, wire carts, or Intersite carts for linen.
- Nurses' control station.
- Cantilevered sink units.
- Refrigerator for patient nourishment.
- Crash cart.
- Patient and visitor seating.

**Plan View of a Recovery Area**

- 14 linear feet work surface
  - 10 linear feet overhead storage
  - 1 locker for IVs and supplies
  - 1 L cart storage unit per bed
  - 1 crash cart
  - 750 square feet
- (Dimensions may be common to Patient Prep/Holding area.)



**Instrument Processing**

The cleaning of endoscopes and related equipment is an activity that can affect the timing and efficiency of an entire operation. Ideally, the cleaning area should be adjacent to the procedure site and can serve two procedure rooms.

Cleaning rooms should allow for the flow of instrumentation from the contaminated area to the clean area and, finally, to storage. The clean equipment rooms, including storage, should protect the equipment from contamination.

The cleaning area is a very wet area. Several oversized sinks are required to clean gross material from scopes. There must be a generator machine near the sink so that air, suction, and water may be infused through the various channels of the instruments.

Some scopes may be washed in an automatic endoscope washing machine. Automated cleaning equipment often has a computer processor and requires support for a monitor and keyboard.

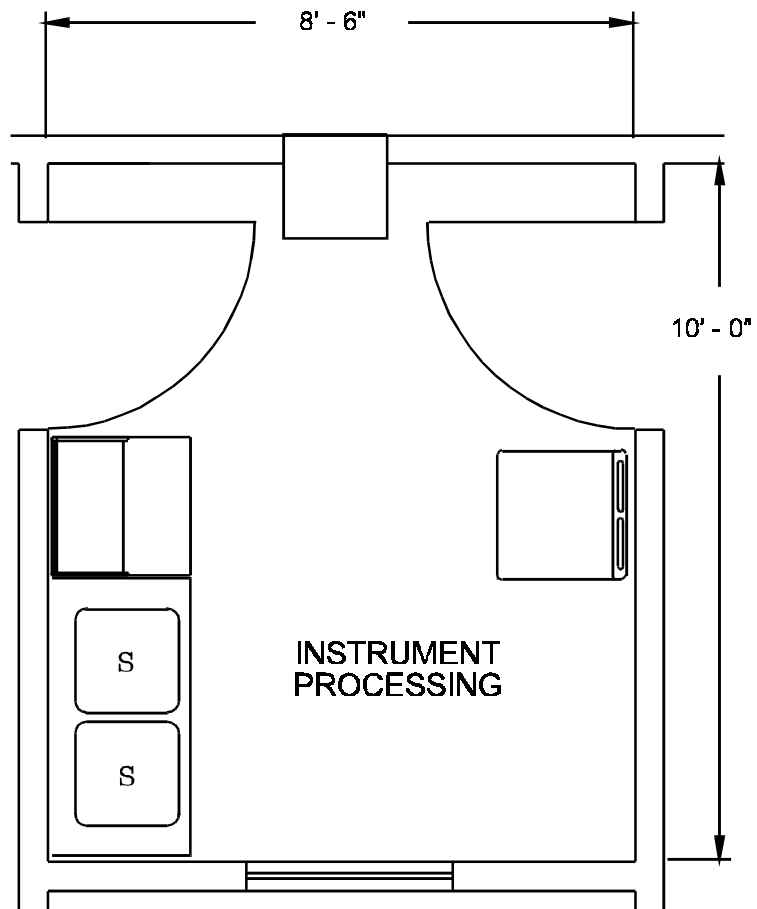
The cleaning area should have adequate counter space for accessory cleaning equipment. There should be an accessory washer so that snares, dilators, and biopsy forceps can be handled separately.

**Movable Modular Casework Applications**

- Wall strips with heavy-duty work surfaces – work surfaces may need to be 30" deep in order to accommodate an automatic endoscope washing machine.
- EDP flipper units.
- Base cabinets for storage.
- Locker for storing accessories, supplies, and personal protection equipment.

**Plan View of an Instrument Processing Room**

- 6 linear feet work surface
- 4 linear feet overhead storage
- 1 L cart
- 85 square feet



**Scope Storage**

Generally, endoscopes and associated reusable equipment are not stored in the procedure room, but in a separate, adjacent central storage room, ideally connected to the instrument processing room. Often supplies are stored in the same central storage room.

Endoscopes are very expensive and fragile instruments and are easily damaged. Flexible scopes need to be hung to drip dry after washing and securely supported.

Scopes generally need to be enclosed and/or locked in a well-ventilated, protective cabinet to prevent accidental damage or tampering. The cabinet must accommodate a drip pan to collect residual moisture from scopes hanging to dry. The doors must not pose a risk for damaging the scope tubes.

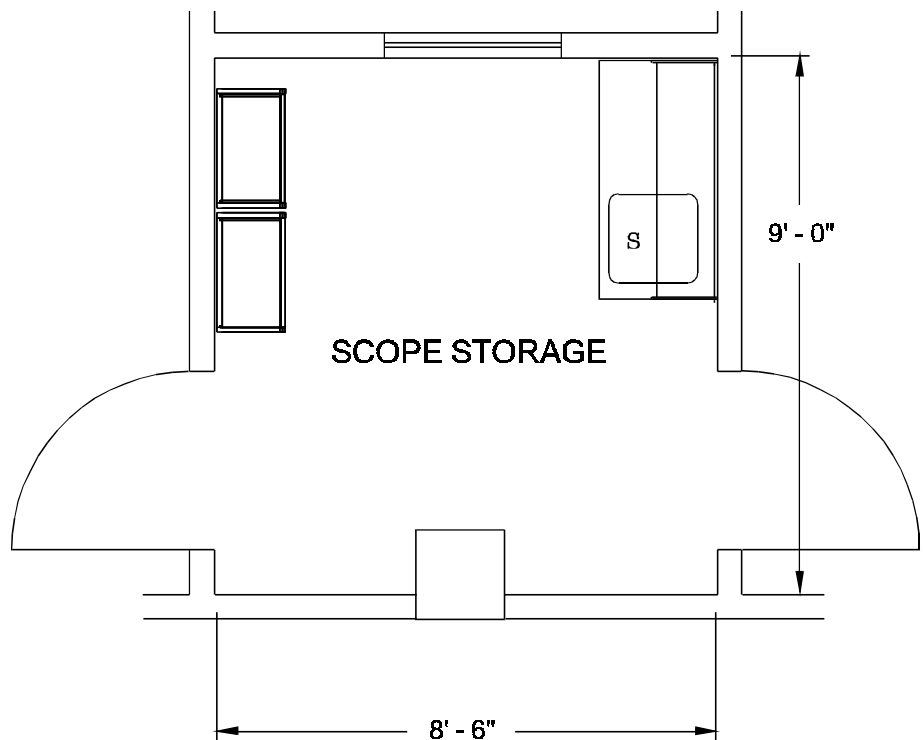
Additional floor space should accommodate storage of mobile equipment, IV poles, and scope accessories.

**Movable Modular Casework Applications**

- Cabinets for scope storage.
- Subdivided storage for snares and other supplies.
- Lockers and wire carts for supplies and equipment storage.
- Lockers for surgical attire – dresses, suits, caps, and shoe covers.

**Plan View of a Scope Storage Room**

- 4 linear feet work surface
- 4 linear feet overhead storage
- 2 scope cabinets
- 80 square feet



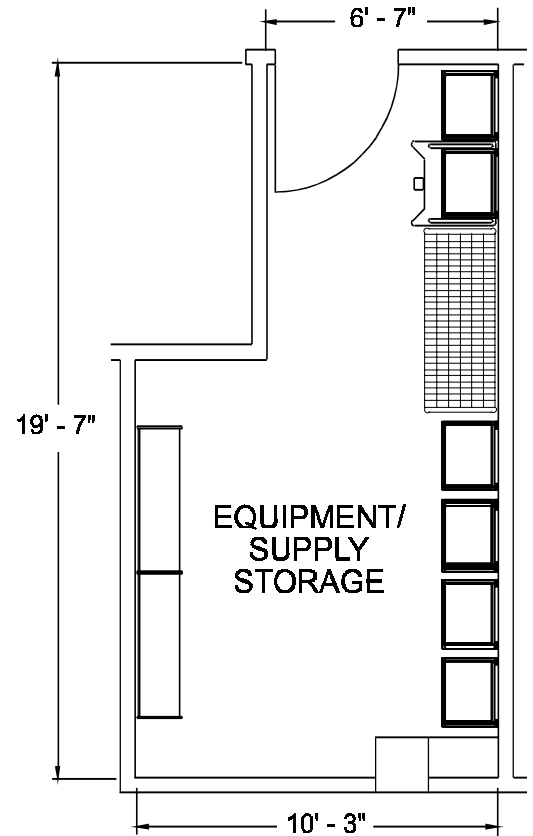
**Equipment/Supply Storage**

A separate room can be planned for general equipment and supplies storage.

**Movable Modular Casework Applications**

A storage room can be planned using movable modular casework and may include

- Lockers.
- Shelving units.
- Mobile carts.
- Wire carts.



**Plan View of an Equipment/Supply Storage Room**

- 8 linear feet overhead shelving
- 6 lockers for supplies
- 1 wire cart
- 130 square feet

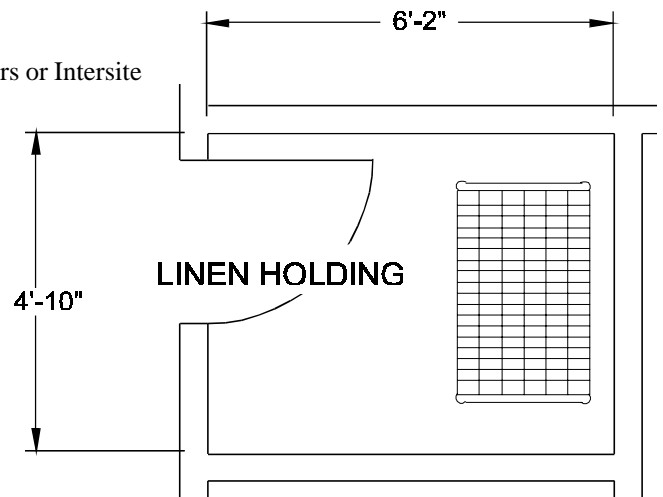
**Linen Holding**

A room may be provided for storing clean linen to be used for procedures.

**Materials Handling Components**

This room may hold

- Wire carts with covers or Intersite carts to store linen.



**Plan View of a Linen Holding Room**

- 1 wire cart with cover
- 30 square feet

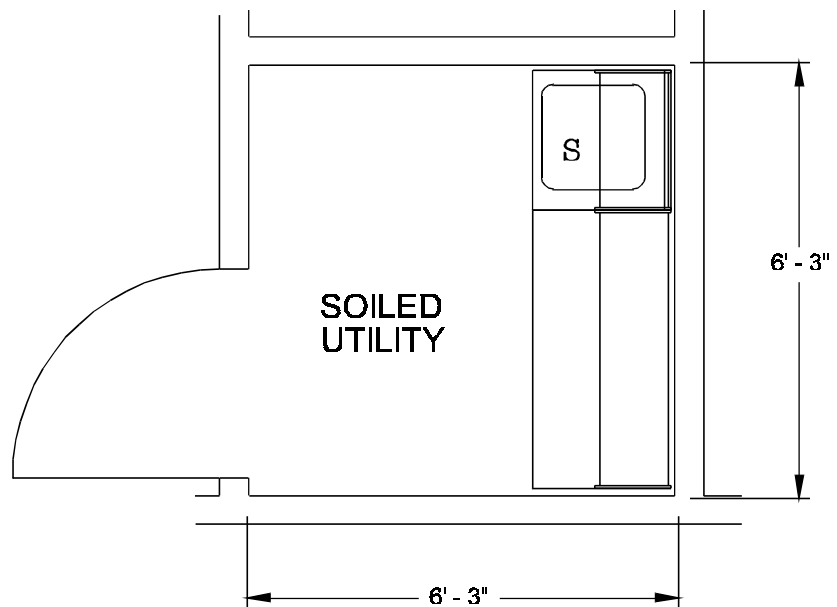
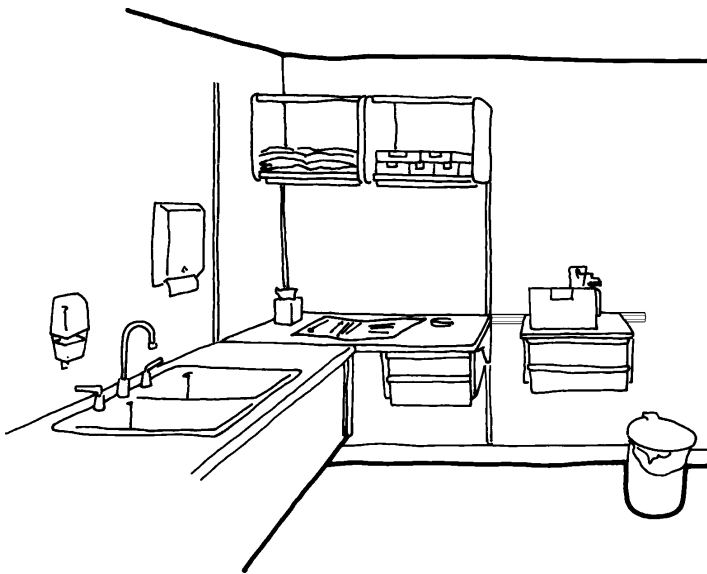
### Soiled Utility

After a procedure, used linen and reprocessable supplies are placed in this utility room until they are reprocessed.

#### *Movable Modular Casework Applications*

This room may hold

- Linen hopper.
- Work surface and sink.
- Open shelving.



#### *Plan View of a Soiled Utility Room*

- 6 linear feet work surface
- 12 linear feet overhead shelving
- 40 square feet

### **Nurse Manager Office**

Private office spaces are required for medical and administrative staff and may include an area for consultations and meetings with staff.

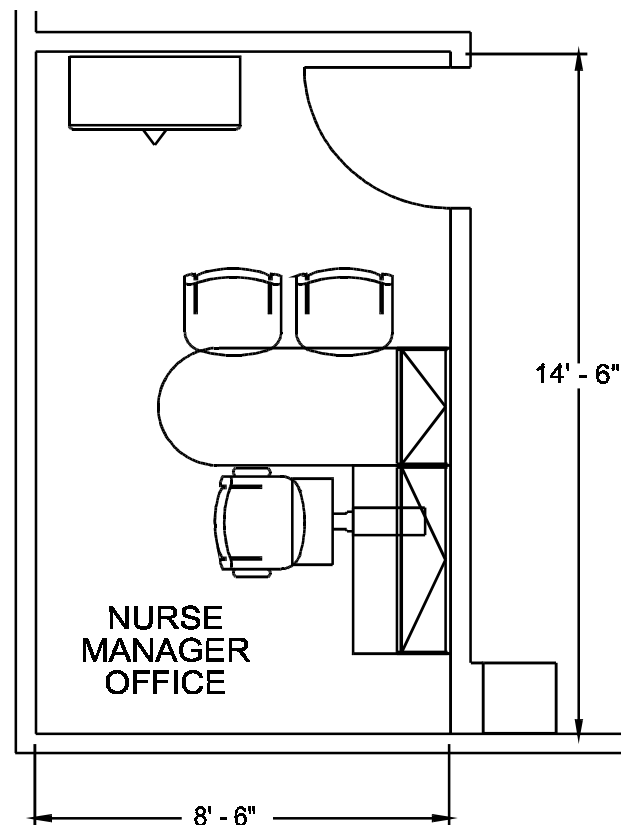
#### ***Movable Modular Casework and Furniture Systems Applications***

These offices may be furnished with modular furniture systems and seating and may include

- Cantilevered work surfaces.
- Tool bar with accessories for paper handling.
- Overhead storage, flipper units, display shelves, and marker boards for displaying information.
- Task lights and personal lights.
- Freestanding, under-work-surface, or wall-attached drawers and files.

#### ***Plan View of a Nurse Manager Office***

- 8 linear feet work surface
- 13 linear feet overhead storage
- 168 filing inches
- 125 square feet





**Consultation Room**

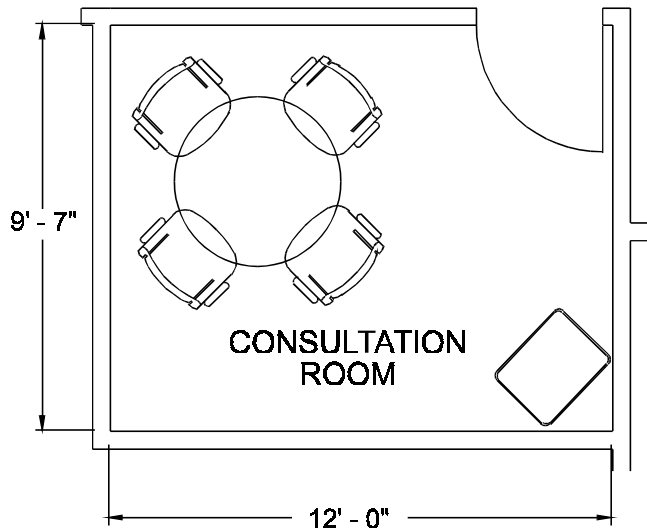
Private consultation rooms are necessary to interview patients prior to endoscopic procedures and for patients and families to meet with the physician after the procedure to discuss sensitive issues, endoscopic findings, and prognosis. Patients and visitors may need to gather and watch informational videotapes regarding the procedure to be undertaken. Consultation rooms may include patient and visitor seating, bookshelves, and VCR equipment.

Some patients who are seen for endoscopic examinations may carry with them previous x-rays which should be reviewed prior to the endoscopic procedure. For this purpose, an x-ray view box may be needed in the consultation room.

*Movable Modular Casework and Furniture Systems Applications*

This environment should be easily cleaned, offer a warm, enjoyable atmosphere, and may require

- Tables and seating.
- Tackboards for displaying information.
- Mobile cart for VCR equipment.



*Plan View of a Consultation Room*

- 1 machine cart
- 120 square feet

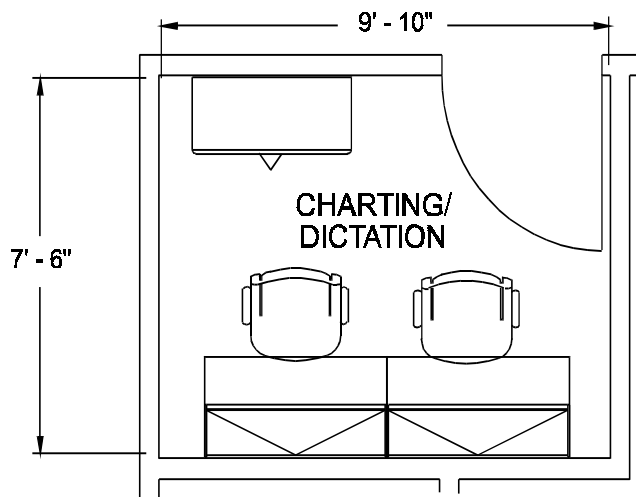
**Charting/Dictation**

If reports are to be dictated, a special area should be provided for dictation. This area may include computer terminals for charting patient records, work surface and seating for paperwork, chart storage, and overhead storage for manuals. The area should be large enough to accommodate the appropriate number of physicians.

*Movable Modular Casework and Furniture Systems Applications*

This environment may be furnished with

- Cantilevered work surfaces.
- Flipper door units with task lights.
- Tool bar with accessories for paper handling and charts.
- Tackboards for displaying information.



*Plan View of a Charting/Dictation Area*

- 8 linear feet work surface
- 16 linear feet overhead storage
- 168 filing inches
- 75 square feet

**Procedure Carts**

Video cameras and equipment have become standard adjunctive instruments for endoscopy and other surgeries, and most minimally invasive procedures utilize some type of medical imaging equipment.

In many cases this delicate medical imaging equipment needs easy access and secure transport to the point of care. That may include transport from room to room within the endoscopy department. Or procedures may need to be performed in other departments within the hospital when the patient cannot be moved to the endoscopy department – such as radiology or radiology/oncology for fluoroscopy procedures or at the patient bedside in ICU, CCU, the emergency department, or pediatrics.

The endoscopy procedure room generally has at least one video cart and an additional procedure cart. This procedure cart can be used in the department or for travel within the hospital. The department usually sets aside one travel procedure cart per department that is not dedicated to a procedure room.

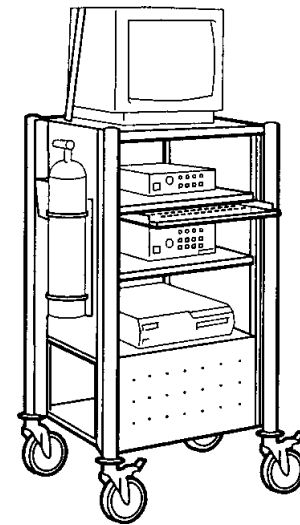
**Materials Handling Components**

Mobile technology carts are used by the endoscopy department to store and transport the scope, video equipment, and supplies that are used for endoscopy procedures.

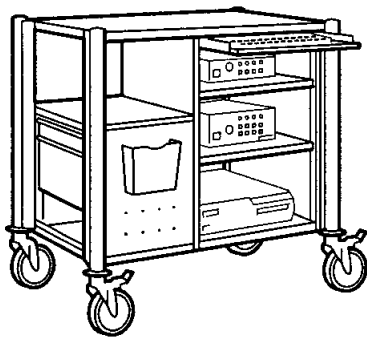
The carts must be able to be configured for specialty procedures with drawers that organize and hold supplies, work surfaces for staging instruments or performing paperwork, adjustable shelves to accommodate various sizes of equipment and monitors, and hospital-grade outlet strips with heavy-duty cord wraps for wire and cable management.

A mobile technology cart may include

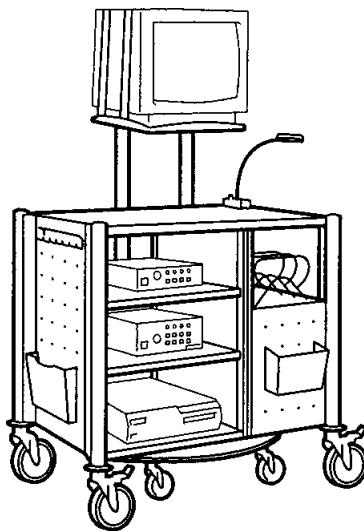
- Adjustable shelves.
- Keyboard tray.
- Accessory baskets.
- Hospital-grade outlets and cord wraps.
- Drawers for supply storage.
- Accessory bins.



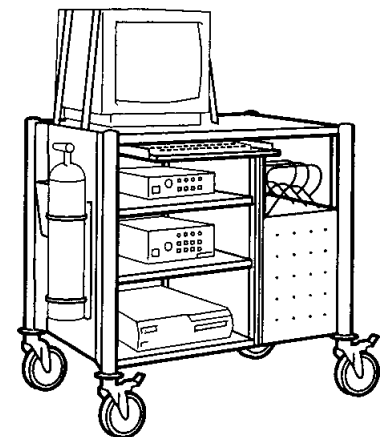
VIDEO  
 PROCEDURE CART



ENDOSCOPY EMERGENCY  
 PROCEDURE CART



ENDOSCOPY  
 PROCEDURE CART



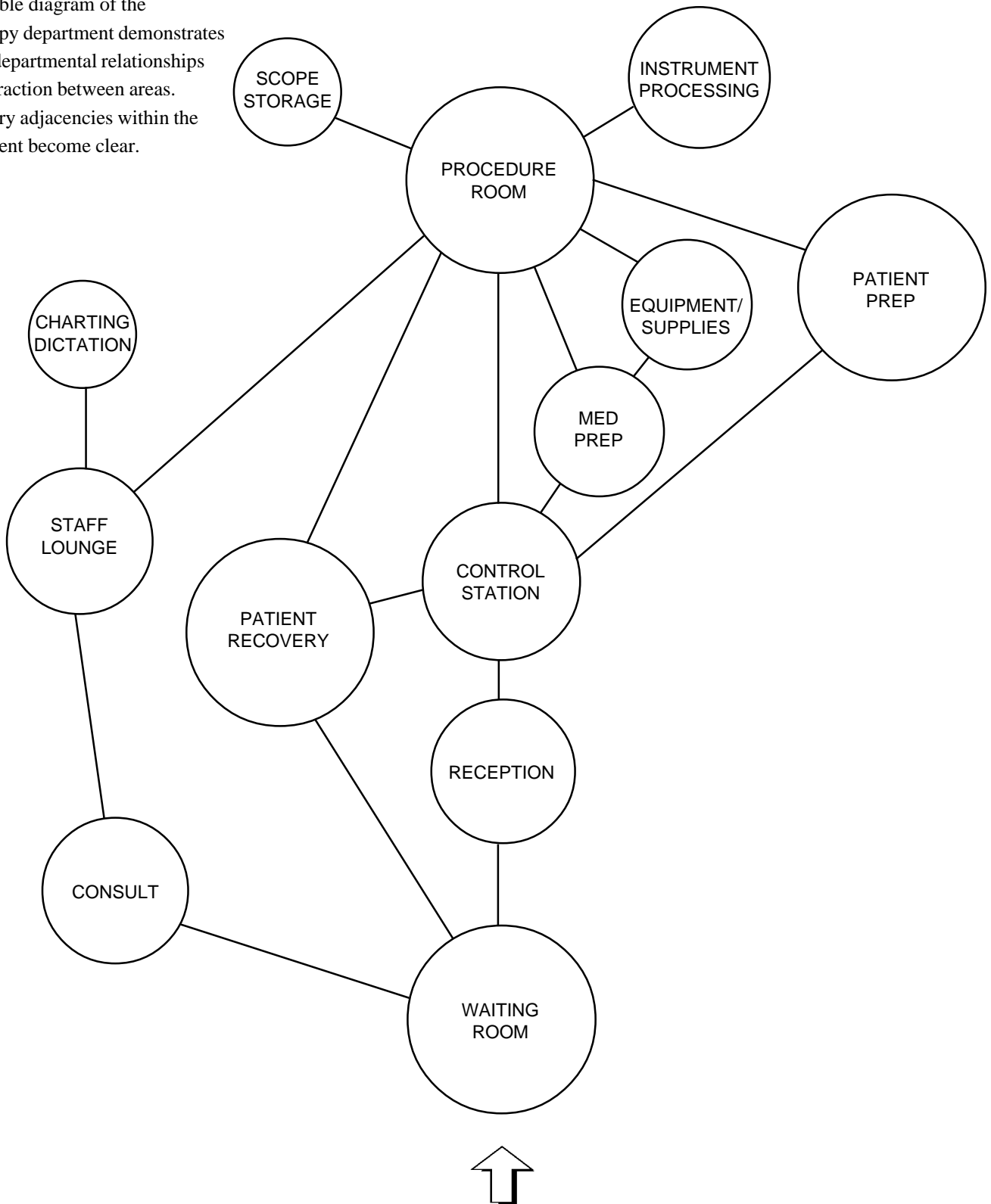
BRONCHOSCOPY  
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**Functional Program**

<i>Number</i>	<i>Department Area</i>	<i>Square Feet</i>
<b>Movable Modular Casework</b>		
_____	Patient Prep/Holding Area	_____
_____	Isolation Room	_____
_____	Procedure Rooms @ _____ sq. ft.	_____
_____	Nurses' Control Station	_____
_____	Recovery Area	_____
_____	Instrument Processing Area	_____
_____	Scope Storage Area	_____
_____	Equipment/Supply Storage Room	_____
_____	Linen Holding Room	_____
_____	Soiled Utility Room	_____
_____	Patient Toilets @ _____ sq. ft.	_____
_____	Visitor Toilets @ _____ sq. ft.	_____
_____	Staff Toilets @ _____ sq. ft.	_____
_____	Janitor's Closet	_____
	<b>Subtotal</b>	_____
<b>Modular Furniture Systems</b>		
_____	Waiting Area	_____
_____	Reception Area	_____
_____	Nurse Manager Office	_____
_____	Consultation Rooms	_____
_____	Charting/Dictation Area	_____
	<b>Subtotal</b>	_____
	<b>TOTAL NET SQUARE FEET</b>	_____
	Net-to-Gross Conversion Factor <b>X</b>	_____
	<b>TOTAL GROSS SQUARE FEET</b>	_____

**Bubble Diagram**

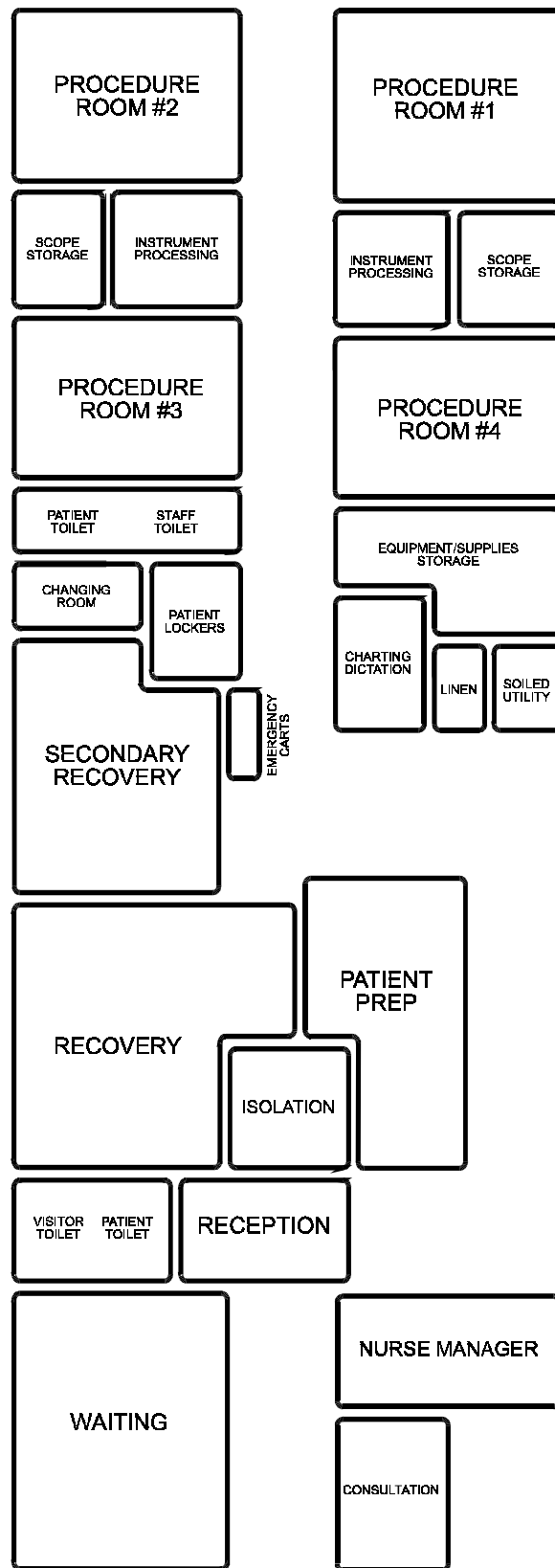
The bubble diagram of the endoscopy department demonstrates typical departmental relationships and interaction between areas. Necessary adjacencies within the department become clear.



**Block Diagram**

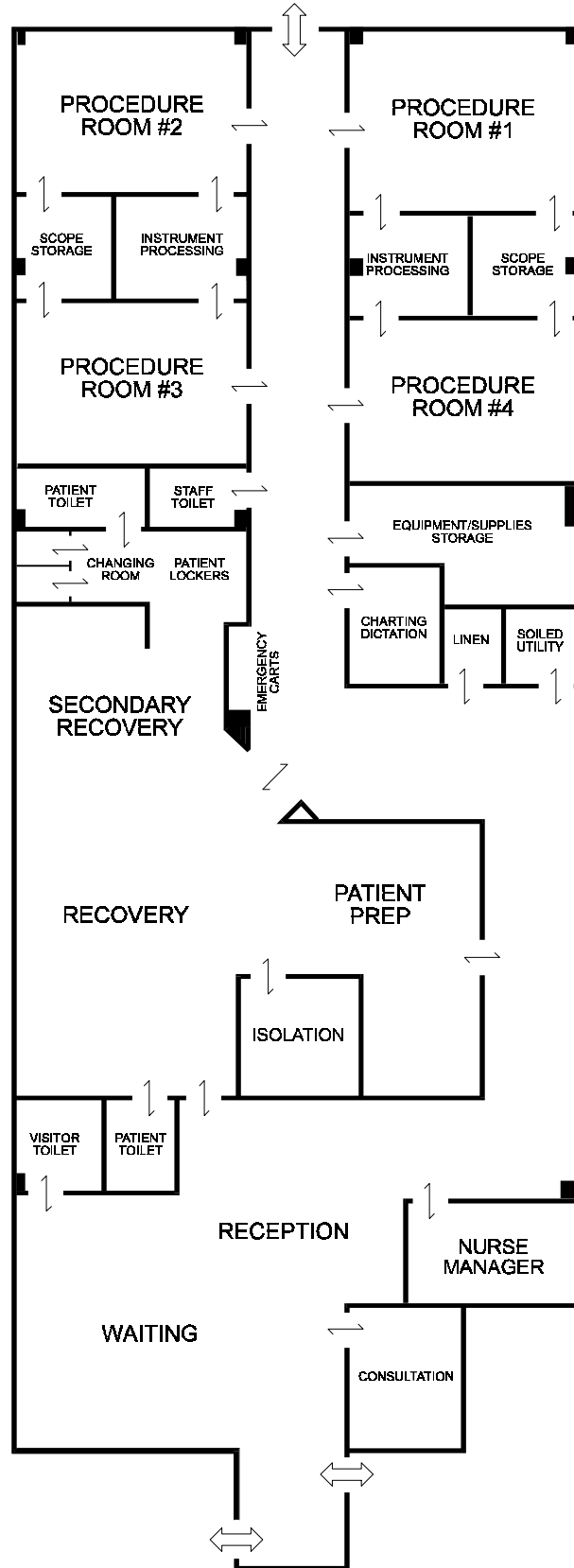
The block diagram demonstrates the adjacencies and relative sizes for the areas within a typical endoscopy department. Evaluation of the work flow and materials flow from the bubble diagram has determined this initial general layout.

The size of each area is determined by combining the typical movable modular casework plans for each identified function. Traffic patterns are developed, and an overview of the general work process can be evaluated.



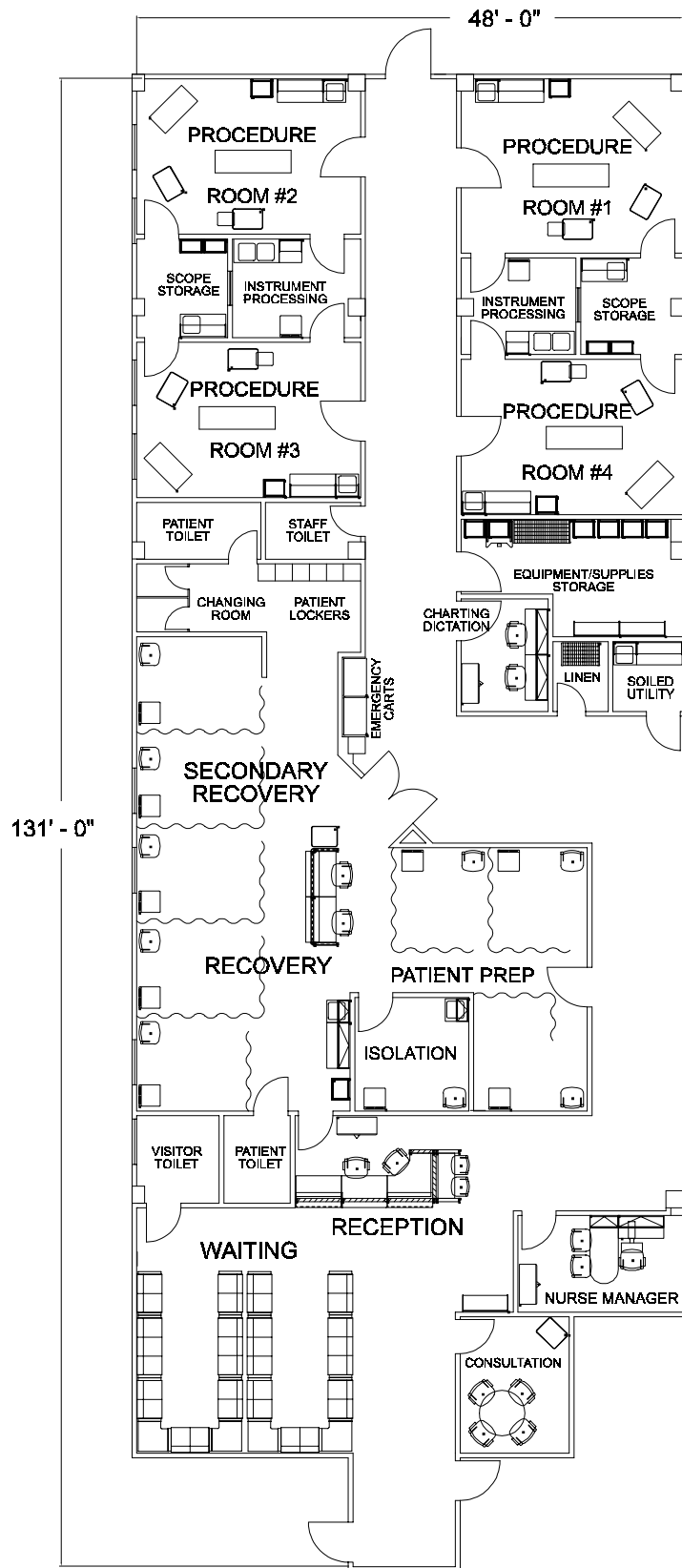
***Preliminary Plan***

The preliminary plan clarifies the endoscopy department space requirements by showing the location of all the fixed walls and open areas and identifies entrances, exits, and exact traffic patterns.



**Schematic Plan**

The schematic plan shows all of the specific movable modular casework, modular furniture systems, and materials handling components appropriate for a typical endoscopy department.



## ***Future Trends***

### **New Technologies**

In the future, managed care and general consolidation in the healthcare industry are expected to result in strategies that involve using endoscopes more efficiently by reducing the number of scopes purchased and using similar scopes to perform a wide range of procedures.

Escalating healthcare costs and the managed care environment have influenced the market for endoscopes.

Cost-containment pressures will likely require future product development to be based on its ability to reduce the costs of delivering care, whether by easing patient recovery, reducing surgery time, or lending itself to a variety of procedures.

The mature markets for endoscopes used in specialties such as urology, gastroenterology, gynecology, and for procedures such as laparoscopy and arthroscopy have experienced little technological change and operate mostly as replacement markets.

New devices for rigid scopes for intracranial and spinal endoscopes have shown innovation, gained wider acceptability, and promise large potential for growth in the future.

The market for new types of endoscopes depends on surgeon training and product acceptability, where technology rather than price is the primary factor propelling the business.

### **Sterilization**

Sterilization of scopes has become a major issue as the use of disinfectants is being phased out due to their harmful effects on the users and on the environment.

Manufacturers have recently introduced newer sophisticated autoclavable endoscopes, designed to withstand the high temperatures required with the use of the autoclave, a highly effective method of sterilization.

### **Facilities**


The expansion of the physicians' office market is expected to offer potential for growth. Primary barriers to the use of endoscopes in small practices are issues over health insurance reimbursement and other financial pressures. Health insurance companies are often reluctant to reimburse for emerging treatments. Consequently, many doctors are unwilling to take the risk with the initial high cost of capital purchase.


The growth of the endoscope market and facilities for performing endoscopic procedures will largely depend on reimbursement codes being granted for new procedures. Growth will also depend on the development of standardized scopes that can be used across different specialties and scopes that are compatible with a variety of instruments and accessories.



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