HEALTH TECH ACADEMY

Health Care Facility Structure and Environment

Introduction to Surgical Technology

Lesson Objectives:

1. Describe the principles of operating room design
2. Identify common items found in the surgical suite
3. Discuss the functions of various work areas in the surgical suite
4. List common hospital ancillary services and describe their functions
5. Discuss the advantages and disadvantages of ambulatory surgical facilities
6. Identify perioperative professionals and their roles

Why is Facility's Structure and Environment Important?

Structure refers to:

- Layout
- Construction
- Design elements (walls, floors, ceilings)

Environment includes

- Overall surroundings within the structure
- Cleanliness
- Air quality
- Noise levels
- Accessibility

Standards and Recommendations

- Following **agencies** set standards for facilities:
  - Association for Professionals in Infection Control and Epidemiology (APIC)
  - Agency for Healthcare Research and Quality (AHRQ)
  - American Institute of Architects (AIA)
  - Environmental Protection Agency (EPA)
  - Occupational Safety and Health Administration (OSHA)

- **Accreditation**
  - Process by which a team of professionals evaluates a health care institution's practices and policies and the outcomes of patient care.
  - Awarded accreditation when standards are met
  - Implies high standard of care and commitment

The Perioperative Environment

Components of Perioperative Environment

- Operating Room
- Surgical Suite
- Special Procedure Room
- Airflow and Ventilation
- Lighting
- Gases
- Electricity

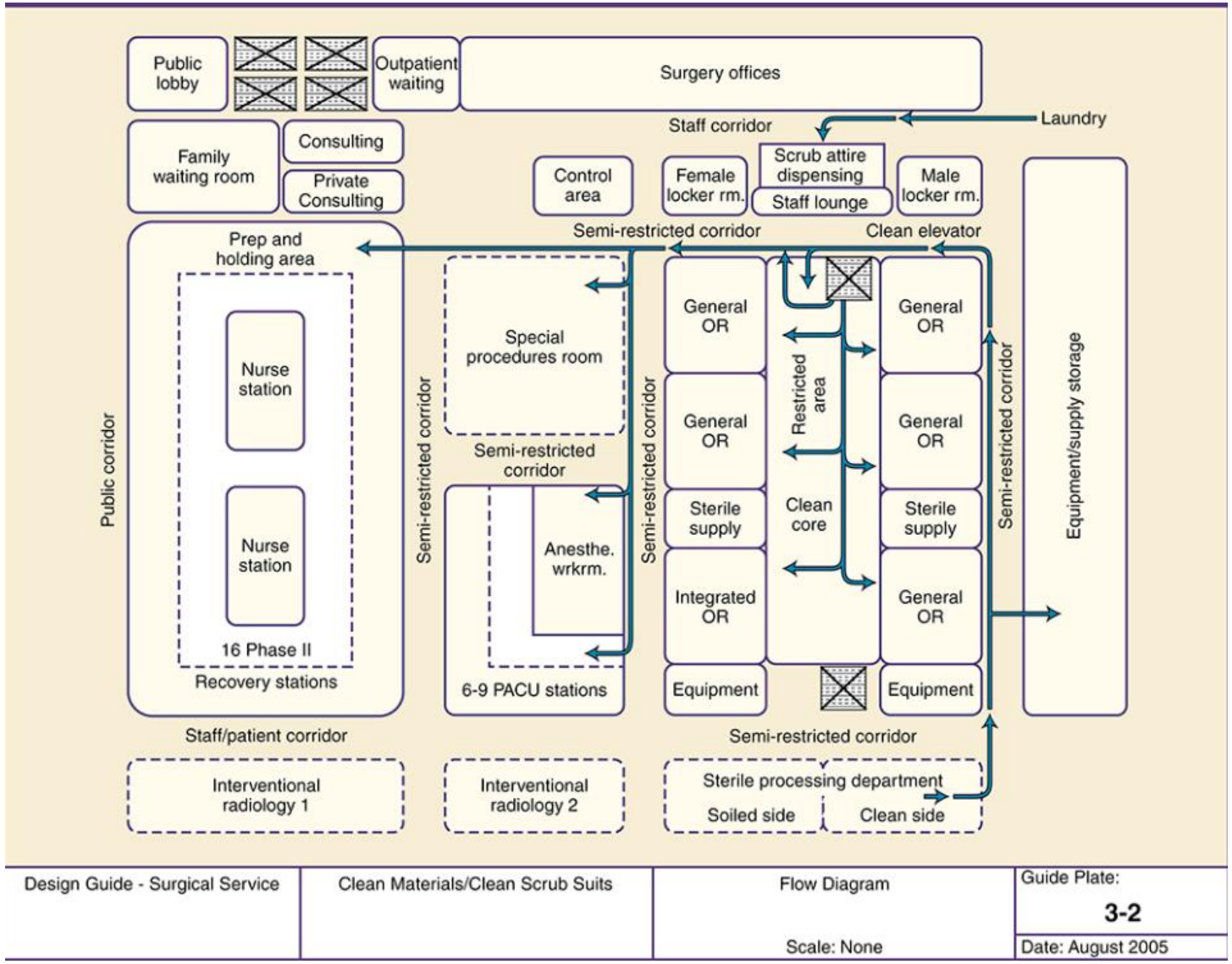
OR - Principles of Operating Room (OR) Design

The design of the operating room is purposely created to establish zones to prevent the transmission of infectious microorganisms.

Objectives of OR Design

- Infection control
  - Physical separation between the surgical environment and any source of contamination
  - Containment of sources of infection
- Environmental safety
  - follows national medical engineering standards for electrical circuits, inline gases, lighting, and other utilities
- Efficient use of personnel, time, space, and material resources

Example of OR Design



Watch the "Operating Room Furniture" Video for an overview of the standard operating room tables and stands

Operating Room Furniture Video

Operating Room Furniture Video

Summary of Video:

- Back Table: Main instrument setup
- Mayo Stand: Over patient, working area for Scrub
- Ring Stands: Hold Basins
- Prep Stand: Used for Surgical Prep
- Kick Bucket: For collection of saturated sponges

Surgical Suit - Equipment and Furniture
(Slide 1 of 3)

- **Operating Table (OR Bed)**
  - The bed the patient lays on during surgery
  - Comes in many types
  - Check the bed's weight limits
  - Designed for access to surgical site

- **Standard OR Table**
- Most Universal, used for Supine position

Surgical Suit - Equipment and Furniture
(Slide 2 of 3)

- **Jackson Bed**
  - Flat top
    - Allows access all around patient
  - "Bumpy" top
    - Used for Prone Position
    - Spinal Surgeries

- **Diving Board Bed**
- Surgery on Legs

- **Fracture Table**
  - Orthopedic

Surgical Suit - Equipment and Furniture
(Slide 3 of 3)

- **Back table**
  - The main sterile instrument setup
  - Comes in types: double decker, mayfield, etc

- **Mayo stand**
  - Goes over top of patient
  - Working space for the Scrub
  - Sterile underside

- **Ring stand**
  - Designed for Basins
  - Single or Double

Surgical Suit - Equipment and Furniture
(Slide 3 of 3)

- **Prep Stand**
  - Historically used for Prep
  - Most prep now disposable
  - Typically used for supplies or as safe transfer zone

- **Kick Bucket**
  - Scrub discards used sponges
  - Is not Sterile

Special Procedure Room

- Differs from standard operating rooms
- Designed with specialized equipment

- **Special Procedure Areas:**
  - Cystoscopy room
  - Interventional radiology
  - Labor and Delivery ORs
  - "Hybrid ORs"
    - These contain C-Arms for Radiology/Fluoroscopy
    - Can also do standard surgical procedures
    - Combined procedure in one setting: Surgical and Endovascular
  - Nuclear medicine department
  - Emergency department/Trauma Bays

Airflow, Ventilation and OR Utilities

- Airflow and ventilation are strictly regulated to reduce airborne particles that may carry infectious microorganisms
  - Positive Pressure continually pushes the old air outward
  - Clean air is brought in above the patient. Air is exchanged continually
- Lighting
  - Many different light sources are used in the OR
  - Surgical Lights, Surgeon Headlights, Endoscopy Scope Light Sources
- Gases
  - Different types of compressed gases are used as adjuncts to anesthesia and as power sources for pneumatic devices
- Electricity
  - Electrical outlets are necessary for a variety of equipment and devices
  - "Red Outlets" receive electricity from backup generators in event of power failure

Watch the "Laminar Airflow in the OR" Video for an overview of the importance of airflow in the Operating Room

Laminar Airflow in the OR Video

Laminar Airflow in the OR Video

Summary of Video:

- Laminar Airflow travels in a straight line, no turbulence
- Clean/Fresh air comes through the center of the room – Above the Patient
- Air is collected in the corners of the room and recirculated
- The OR is a "Positive Pressure" environment
    - This always pushes air outward
    - Clean air coming to the patient, old air pushed outward

Work Areas

Units in surgical department

- OR Front Desk
- Scrub sinks and Anterooms
- Sterile Processing Department (SPD)
- Sterile instrument room
- Clean processing area
- Decontamination Area
- Supply Room and Central core
- Equipment storage
- Dirty Utility/Trash Room
- EVS/Cleaning Room
- Preoperative patient care area
- Postanesthesia care unit (PACU)
- Surgery patient waiting area
- Anesthesia Department/Offices
- Surgical Offices
- Locker room/lounge area

Watch the "OR Tour" Video for a tour of an Operating Room and its work areas

OR Tour Video

OR Tour Video

Summary of Video

- Support areas contain resources for the OR
- Every OR is setup differently, but has same components
    - Sterile Instruments, Supply Room, and Equipment room most important for ST
- Tour the OR/Procedure area when you start at a new location

Health Care Facility Departments and Functions

- Pathology
- Nuclear medicine
- interventional radiology
- Infection control
- Biomedical engineering
- Materials management
- Central supply
- Pharmacy
- Laboratory
- Blood bank
- Risk management department
- Communication systems
- Medical records
- Facilities maintenance
- Environmental services
- Security
- Nutritional services

Ambulatory and Outpatient Surgery

- **Surgical procedures that do not require an overnight hospital stay.**

Ambulatory Surgery

- Emphasizes mobility aspect.
- Involves procedures where patient is admitted and discharged on the same day.
- Patient can walk in and out of the surgical facility without overnight stay.

Outpatient Surgery

- Generic term for surgeries not requiring overnight stay.
- Patients admitted to hospital or surgical center.
- Procedure performed and patient discharged home on same day.

Types of Ambulatory Facilities

Freestanding facility

- Designed for "day case" patients' needs.
- Required to have emergency plan for perioperative emergencies.
- Also called "Outpatient Centers"

Integrated hospital-based outpatient services

- Share surgery facilities with inpatient care areas
- Outpatient clinic requires dedicated areas for preoperative and postoperative (recovery) care.

Self-contained hospital outpatient facility

- Independent of inpatient services
- Allows sharing of some resources with the hospital while focusing on non-emergent care.

Office-based outpatient surgery

- Convenience for both patient and surgeon.
- Lower cost per surgery.

Ambulatory Surgery Facilities

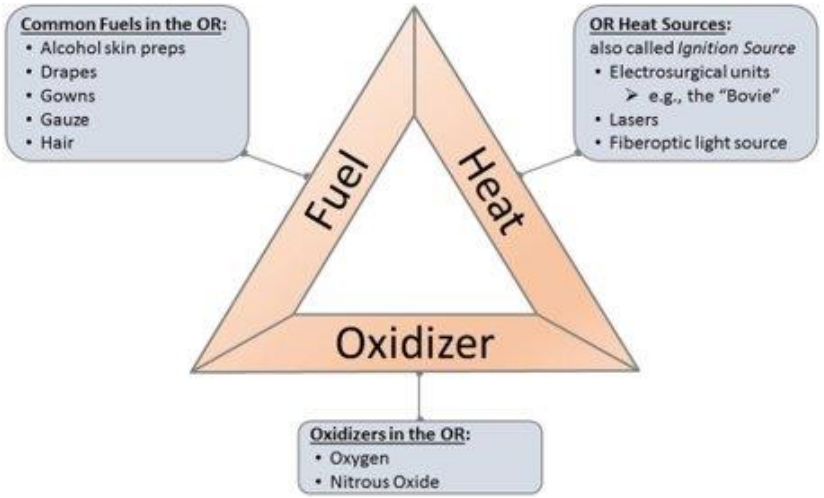
Advantages	Disadvantages
• Patient acceptance • Cost effectiveness • Ease of scheduling cases • Control over the surgical environment and supplies • Efficiency	• May lack sufficient physical space or staff • Responsibility for areas not usually assigned • May require special staff training or retraining to ensure standards are met • Increased medical-legal responsibilities • May lack centralized support staff and services • No skilled care available after discharge

Hazards and Regulatory Agencies

Types of Hazards:

- Physical hazards-radiation, fire, sharps
- Biological hazards-plume, body fluids
- Chemical hazards-

  disinfects, waste gases, etc

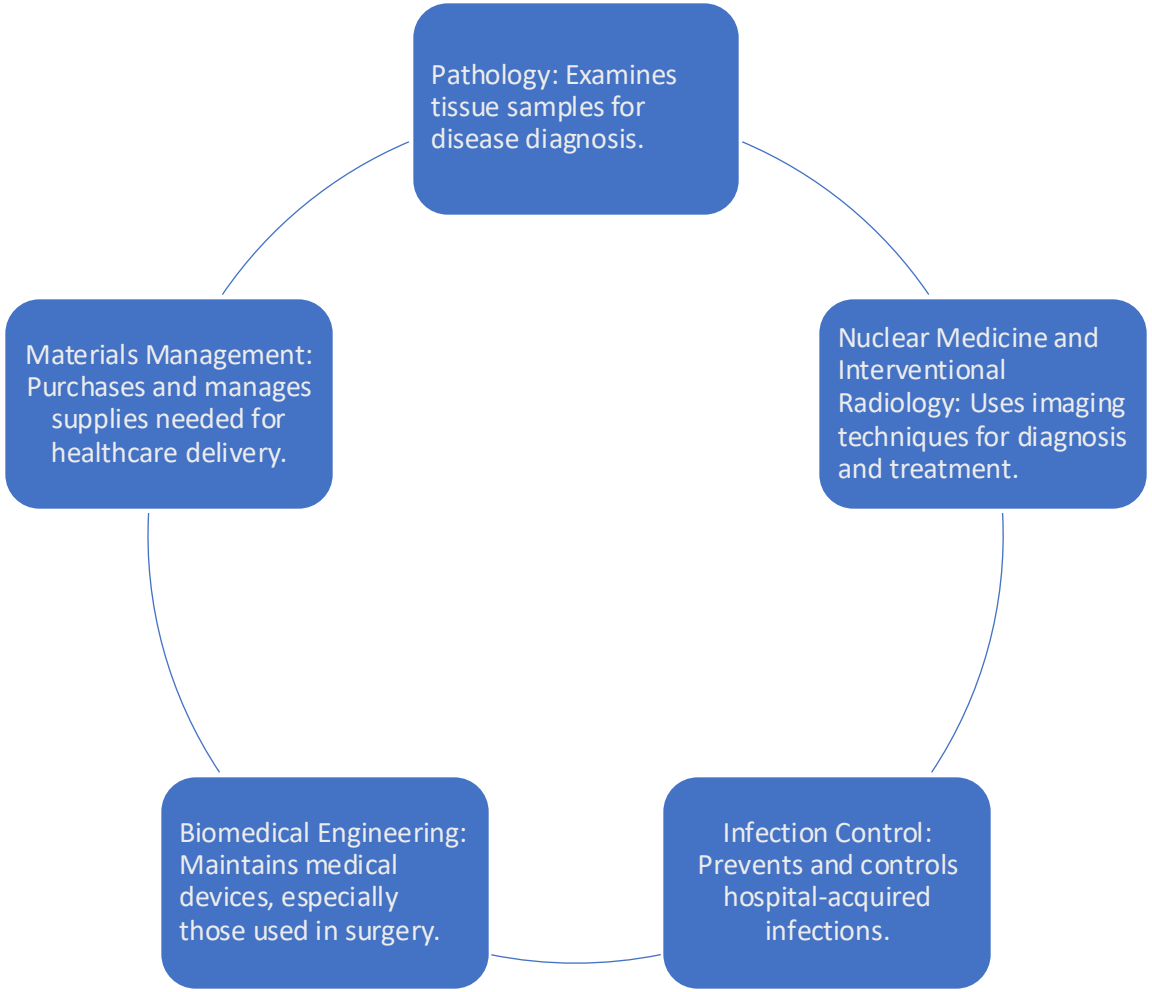


Health Care Facility Departments and Functions

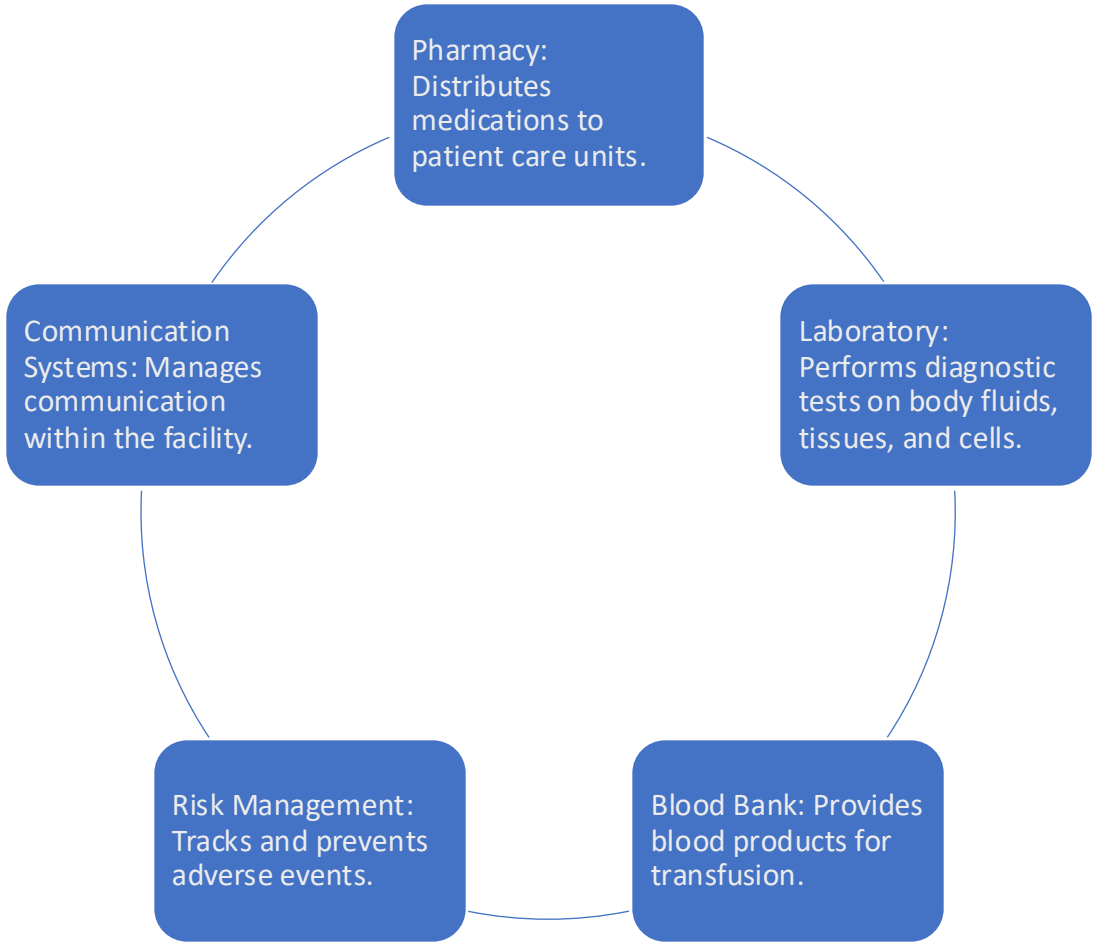
Team Approach to Patient Care:

- Perioperative staff collaborate with various professionals and departments.
- Operating room relies on collaborative efforts from departments outside.
- Effective communication crucial for cohesive team approach.
- Patience, respect, and professionalism vital for interdepartmental relationships.

Health Care Facility Departments and Functions



Health Care Facility Departments and Functions



Health Care Financing

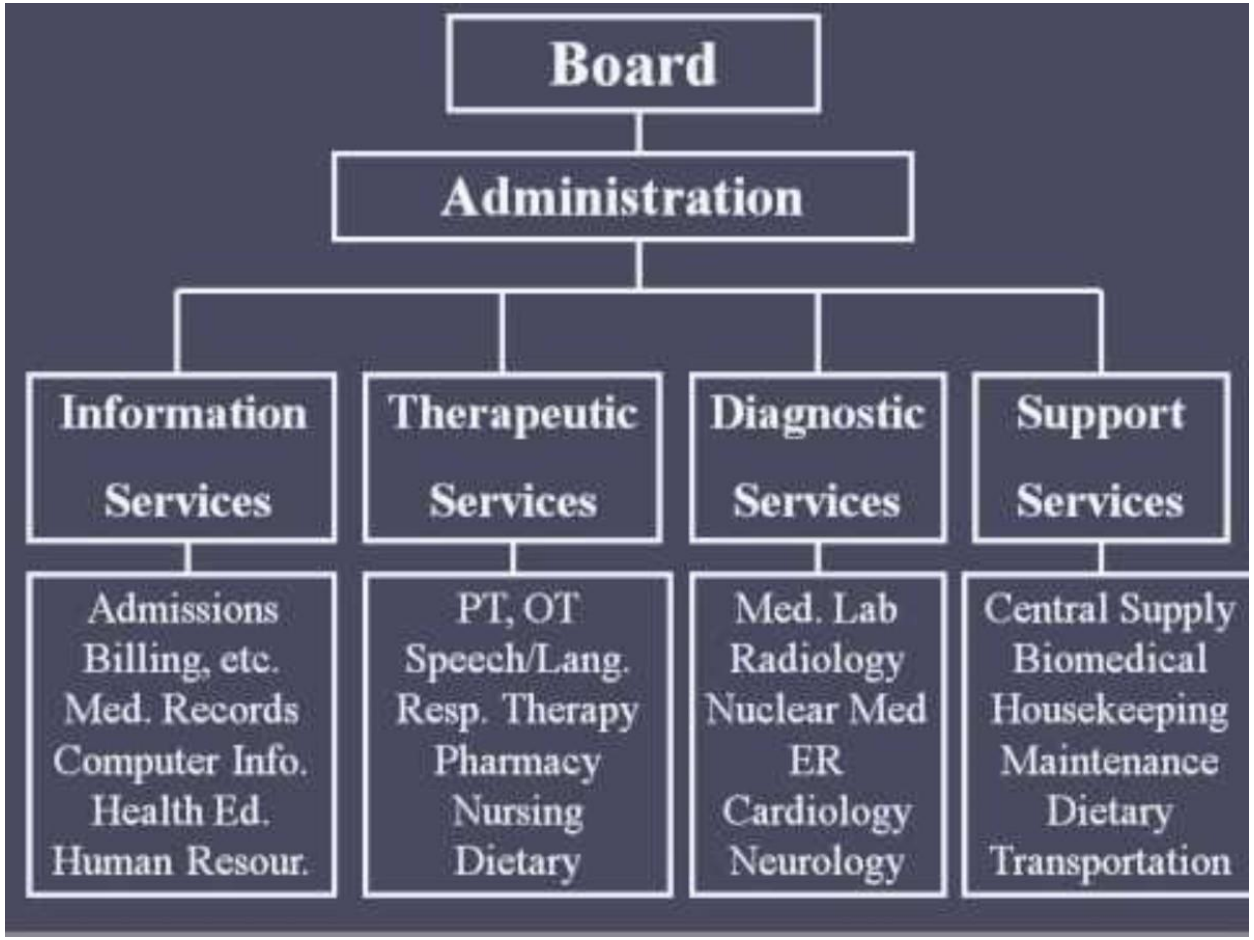
- **Government assisted health care systems**
  - Medicaid system (for low-income families)
  - Medicare system (like an insurance plan)
- **Private insurance**
  - PPO (Preferred Provider Organizations)
  - HMO (Health Maintenance Organization)
- **Payment systems**
  - Diagnosis-related group (DRG)
  - International classification of diseases (ICD)
  - Current procedural terminology (CPT)

Health Care Management and Structure

- Board of Directors/Trustees
- Administrative Sector
- Medical and Professional Staff
- Nursing Department
- Allied Health Departments

Watch the video on "Hospital Organizational Structure" to gain detailed insights.

Hospital Organizational Structure



Hospital Organizational Structure

Summary of the Video

- Organizational structure varies from hospital to hospital
- Common categorical grouping includes:
  - Administrative services
  - Informational services
  - Therapeutic services
  - Diagnostic services
  - Support services
- Hierarchical Structure

Perioperative Professionals

- **Surgical Team**
  - Surgeon (Attending/Primary)
  - Surgeon First Assistants:
    - Surgeon
    - Surgical Fellow
    - Surgical Resident
    - Physician Assistant (PA)
    - Nurse Practitioner (NP)
  - Scrub Person
    - Surgical Technologist
    - Registered Nurse (RN)
    - Licensed Practical Nurse (LPN)
  - Circulator
    - Registered Nurse (RN)

- **Anesthesia Team**
  - Anesthesiologist (Attending)
  - Hands-On Anesthesia Staff:
    - Anesthesia Fellow
    - Anesthesia Resident
    - Certified Registered Nurse Anesthetist (CRNA)
  - Anesthesia Tech

- **OR Support Personnel:**
  - Anesthesia Tech
  - OR Aide (Nursing Asst, Patient care tech, etc)
  - Sterile Processing Tech
  - Environmental Services (EVS)
  - Surgical Scheduler/Desk Clerk
  - OR Educator

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Get ready for your quiz and rest of the activities now. Best of luck!