OPERATING ROOM NURSING

PERIOPERATIVE NURSING

- It is a term used to describe the nursing care provided in the total surgical experience of the patient. The **perioperative period** consists of three phase that begin and end at a particular point in the sequence of events in the surgical experience.
- **Preoperative phase** begins when the decision to proceed with surgical intervention is made and ends with the transfer of the patient onto the operating room (OR) table.
- **Intraoperative phase** begins when the patient is transferred onto the OR table and ends with admission to the PACU (Post Anesthesia Care Unit)
- **Postoperative phase** begins with the admission of the patient to the PACU and ends with a follow-up evaluation in the clinical setting or home

SURGICAL CLASSIFICATIONS

- **Diagnostic** (eg, biopsy, exploratory laparotomy)
- **Curative** (eg, excision of a tumor or an inflamed appendix)
- **Reparative** (eg, multiple wound repair)
- **Reconstructive or cosmetic** (eg, mammoplasty or a facelift)
- **Palliative** (eg, to relieve pain or correct a problem-for instance, a gastrostomy tube may be inserted to compensate for the inability to swallow food)

ACCORDING TO THE DEGREE OF URGENCY

- **Optional** – Surgery is scheduled completely at the preference of the patient (eg, cosmetic surgery)
- **Elective** – The approximate time for surgery is at the convenience of the patient; failure to have surgery is not catastrophic (eg, a superficial syst)
- **Required** – The condition requires surgery within a few weeks (eg, eye cataract)
- **Urgen**t – The surgical problem requires attention within 24 to 48 hours (eg, cancer)
- **Emergency** – The situation requires immediate surgical attention without delay (eg, intestinal obstruction)

INFORMED CONSENT (OPERATIVE PERMIT)

- **Informed consent** is the patient's autonomous decision about whether to undergo a surgical procedure. It is the process of informing the patient about the surgical procedure; that is risks and possible complications of surgery and anesthesia. Consent is obtained by the surgeon. This is a legal requirement.
- **Purposes**
  - To ensure that the patient understands the nature of the treatment, including potential complications
  - To indicate that the patient's decision was made without pressure
  - To protect the patient against unauthorized procedure is performed on the correct body part
  - To protect the surgical team and hospital against legal action by a patient who claims that an unauthorized procedure was performed

THE SURGICAL TEAM

- **Circulating Nurse**
  - Main responsibilities include:
    - ✓ Verifying consent
    - ✓ Coordinating the team
    - ✓ Ensuring cleanliness
    - ✓ Proper temperature and humidity
    - ✓ Lighting and safe function of equipment and the availability of supplies and materials.
  - The circulating nurse monitors aseptic practices to avoid breaks in technique while coordinating the movement of related personnel (medical, x-ray, and laboratory) as well as implementing fire safety precautions.
  - Responsible for ensuring that the second verification of the surgical procedure and site takes place is documented.

- **SCRUB NURSE**
  - Performs surgical hand scrub
  - Setting up the sterile tables
  - Preparing sutures, ligatures, and special equipment (eg, laparoscope)

- Assisting the surgeon and the surgical assistants during the procedure by anticipating the instruments and supplies that will be required, such as sponges, drains, and other equipment
- Scrub nurse and the circulator count all needles, sponges, and instruments to be sure they are accounted for and not retained as a foreign body in the patient

❖ **SURGEON**
- Performs the surgical procedure, heads the surgical team and is specially trained and qualified
- Has the ultimate responsibility for performing the surgery in an effective and safe manner

❖ **ANESTHESIOLOGIST**
- Assesses the patient before surgery, selects anesthesia, administers it, intubates patient if necessary, manages any technical problems related to the administration of the anesthetic agents, and supervises the patient's condition throughout the surgical procedure
- During surgery, the anesthesiologist monitors the patient's blood pressure, pulse, and respirations as well as the electrocardiogram (ECG), blood oxygen saturation level, tidal volume, blood gas level, blood pH, alveolar gas concentrations, and body temperature

SURGICAL ENVIRONMENT

❖ The surgical suite is behind double doors, and access is limited to authorized personnel. External precautions include adherence to principles of surgical asepsis; strict control of the OR environment is required, including traffic pattern restriction

❖ To provide the best possible conditions for surgery, the OR is situated in a **location that is central to all supporting services**

❖ To help decrease microbes, the surgical area is divided into three zones:
  - **Unrestricted zone:** where street clothes are allowed; area in the operating room that interfaces with other departments; includes patient reception area and holding area
  - **Semi-restricted zone**: area in the operating room where scrub attire (scrub clothes and caps) is required; may include areas where surgical instruments are processed
  - **Restricted zone:** scrub clothes, shoe cover caps, and masks are worn; includes operating room and sterile core area

SURGICAL ATTIRE

❖ **SCRUB SUIT**
- Two-piece pant suit
- Worn in the semi-restricted
- Must fit the body properly
- Waistline drawstrings must be tucked in
- Wet or soiled garments should be changed

❖ **HEAD COVER**
- Should cover the hair completely
- Worn in the Semi restricted
- Never comb your hair when wearing a scrub suit
- Disposable caps are preferred
- Bald head also causes contamination by shedding squamous cells
- Net caps do not prevent contamination

❖ **SHOES AND SHOE COVER**
- Worn is semi restricted area
- Should be comfortable and puncture resistant
- Shoe covers are worn during procedures with expected spills/splashes of blood or body fluids
- Street shoes are not used
- Shoe covers should be disposed before leaving the OR

❖ **SURGICAL MASK**
- High filtration masks decrease the risk of post wound infection
- Worn inside the restricted area **at all times**
- Should cover nose and mouth completely
- Should fit tightly
- Double masking - a barrier not a filter
- Masks are changed between patients and should not be worn outside OR

- Handle the mask by the ties or strings
- Front of the mask is contaminated
- Mask should never be hanged on the neck or place on top of cap
- It should not be kept in the pocket after use
- Should not interfere with breathing, speech or vision

❖ **EYE WEAR**
- Eyewear or a face shield protects the eyes from splashing of blood and body fluids or from debris when bone drilling is performed

❖ **LASER EYEWARE**
- Protects the eyes from the intense light created by laser surgery

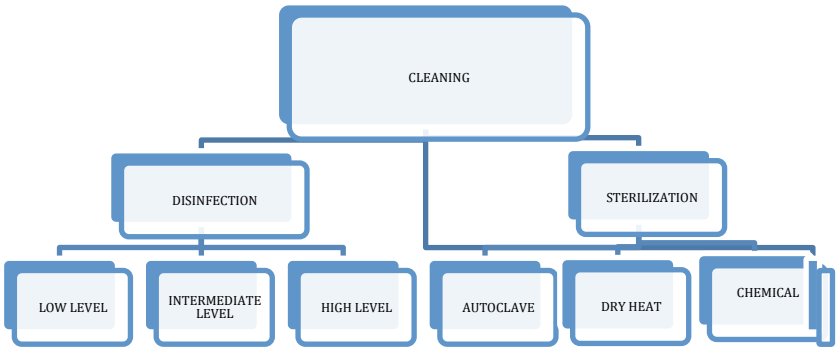
❖ **GLOVES**
- Nonsterile gloves: Donned for clean procedures
- Sterile gloves: Donned for sterile procedures

PRINCIPLES OF SURGICAL ASEPSIS

❖ All surgical supplies, instruments, needles, sutures, dressings, gloves, covers, and solutions that may come in contact with the surgical wound or exposed tissue must be sterilized before use
❖ The surgeon, surgical assistants, and nurses prepared themselves by scrubbing their hands and arms with antiseptic soap and water or alcohol-based product or scrubless soap is used to prepare for surgery
❖ During surgery, only personnel who have scrubbed, gloved, and gowned touch sterilized objects
❖ Requires meticulous cleaning and maintenance of the OR environment
❖ An area of the patient's skin larger than that requiring exposure during the surgery is meticulously cleansed, and an antiseptic solution is applied

BASIC GUIDELINES FOR MAINTANING SURGICAL ASEPSIS

❖ Only sterile surfaces/articles may touch other sterile surfaces/articles.
❖ Gowns of the surgical team are considered sterile in front from the chest to the level of the sterile field. The sleeves are also considered sterile form 2 inches above the elbow to the stockinette cuff.
❖ Only the top surface of a draped table is considered sterile.
❖ Sterile supplies, including solutions, are delivered to a sterile field or handed to a scrubbed person in such a way that the sterility of the object or fluid remains intact.
❖ The movements of the surgical team are from sterile to sterile areas and from unsterile to unsterile areas.
❖ Movement around a sterile field must not cause contamination of the field.
❖ Whenever a sterile barrier is breached, the area must be considered contaminated.
❖ Items of doubtful sterility are considered unsterile.



INSTRUMENT DECONTRAMINATION PROCESS

❖ **CLEANING**
- Removal of foreign material from the instrument by a combination of mechanical means (scrubbing) and chemical means (Enzyme and detergents)

PROCEDURES UNDER HIGH LEVEL DISINFECTION

❖ **PHYSICAL DISINFECTION BY BOILING**
- Uses 100°C boiling water to destroy most pathogens except spores

❖ **PASTEURIZATION**
- Used for items such as reusable respiratory devices and anesthesia breathing circuit
- Exposure to hot water with temperature of 60°C-80°C for 30 mins.

❖ **CHEMICAL DISINFECTION**

- Items are soaked in a disinfectant
- Choice depends on compatibility and effectiveness on the instruments
- Used for heat labile instruments that cannot be boiled or sterilized

STERILIZATION

- Process in which all pathogens are destroyed including spores
- Highest level of decontamination

METHODS OF STERILIZATION

❖ **CHEMICAL STERILIZATION**
- Ethylene oxide gas is used to sterilize items that are sensitive to heat or moisture

❖ **AUTOCLAVING**
- Most common method
- Uses steam with **121°C** temperature and **1 atm** pressure for **30 minutes**

❖ **DRY HEAT STERILIZATION**
- Dry heat in form of air is used
- Sterilizes anhydrous oils, petroleum products and talc powder

INDICATORS USED IN STERILIZATIONS

❖ Indicators never indicate sterility; it is only a parameter that instruments have undergone sterilization
❖ Event related not based on time
❖ Expiration date is only an estimate
❖ Shelf life depends on
- Amount of handling
- The quality of packaging materials used
- Storage condition

3 CATEGORIES UNDER SPAULDING'S CLASSIFICATION

❖ **NON-CRITICAL**
- Items that come in contact with INTACT SKIN.
  - ✓ Stethoscope
  - ✓ BP cuffs
  - ✓ Tourniquet
  - ✓ Floor and linens

❖ **SEMI-CRITICAL**
- Items that come in contact with **MUCOUS MEMBRANES and NON-INTACT SKIN**
- High level disinfection
  - ✓ Anesthesia equipment
  - ✓ GI endoscopes
  - ✓ Speculum
  - ✓ Bronchoscopes
  - ✓ Laryngoscope
  - ✓ Thermometer
  - ✓ Respiratory therapy equipment

❖ **CRITICAL**
- Items that come in penetrate sterile tissues such as **BODY CAVITY** and **VASCULAR SYSTEM**
  - ✓ Surgical instruments
  - ✓ Intra-uterine devices
  - ✓ Vascular catheters
  - ✓ Implants
  - ✓ Urinary catheter, needles

PREOPERATIVE MEDICATION

❖ Reduce anxiety
❖ Promote relaxation
❖ Reduce pharyngeal secretions
❖ Prevent laryngospasm
❖ Inhibit gastric secretion
❖ Decrease amount of anesthetic needed for induction and maintenance of anesthesia
❖ **Anesthesia**

- A state of narcosis (severe central nervous system depression produced by pharmacologic agents), analgesia, relaxation, and reflex loss

❖ **General Anesthesia**
- A reversible consisting of complete loss of consciousness that provides analgesia, muscle relaxation, and sedation, Protective reflexes are lost.
- Lose the ability to maintain ventilator function and require assistance in maintaining a patent airway

ADMINISTRATION OF GENERAL ANESTHESIA

❖ **Inhalation**
- **Inhaled anesthetic agents** include volatile liquid agents and gases.
- **Volatile liquid:** anesthetic agents produce anesthesia when their vapors are inhaled
  - ✓ Halothane (Fluothane)
  - ✓ Enflurane (Ethrane)
  - ✓ Isoflurane (Forane)
  - ✓ Sevoflurane (Ultrane)
  - ✓ Desflurane (Suprane)
  - **Gas anesthetic** agents are administered by inhalation and are always combined with oxygen. Nitrous oxide is the most used gas anesthetic agent.

❖ **Intravenous Administration**
- General anesthesia can also be produced by the IV administration of various substances, such as:
- Barbiturates
- Benzodiazepines
- Non-barbiturate hypnotics
- Dissociative agents
- Opioid agents

STAGES OF GENERAL ANESTHESIA

❖ **STAGE 1 (BEGINNING ANESTHESIA/INDUCTION)**
- Feeling of detachment
- Drowsy/dizziness
- Hallucination occurs
- Close O.R doors
- Ringing, roaring or buzzing in the ears
- Keep quiet because exaggerated noises are heard by the patient
- Standby to assist the client

❖ **STAGE 2 (EXCITEMENT/DELIRIUM)**
- Pupils are dilated, pulse rate are rapid, and may have irregular respiration
- Because of uncontrolled movement of the patient, restraints are necessary

❖ **STAGE 3 (SURGICAL ANESTHESIA)**
- Patient is unconscious and lies quietly
- Pupils are small but reactive to light
- Respirations are regular, the pulse and volume are normal
- Skin is pink or slightly flushed

❖ **STAGE 4 (MEDULLARY DEPRESSION/DANGER)**
- Too much anesthesia has been administered
- Shallow respiration, weak and thread pulse
- Widely dilated pupils
- Death may occur
- If this stage develops, discontinue anesthesia and initiate respiratory and circulatory support

REGIONAL ANESTHESIA

❖ Anesthetic agents are injected around nerves so that the region supplied by these nerves is anesthetized

❖ Patient receiving regional anesthesia is awake and aware of his or her surroundings unless medications are given to produce mild sedation or to relieve anxiety

❖ **Epidural anesthesia**
- Achieved by injecting a local anesthetic agent into the epidural space that surrounds the dura mater of the spinal cord
- Advantage absence of headache

- Disadvantage: greater technical challenge of introducing the anesthetic agents into the epidural rather than the subarachnoid space

❖ **Spinal anesthesia**
- Extensive conduction nerve block that is produced when a local anesthetic agent is introduced into the subarachnoid space at the lumbar level, usually between L4 and L5.
- It produces anesthesia of the lower extremities, perineum, and lower abdomen

❖ **Moderate sedation**
- Previously referred to as **conscious sedation**, is form of anesthesia that involves the IV administration of sedative or analgesic medications to reduce patient's anxiety and to control pain during diagnostic or therapeutic procedures

❖ **Monitored anesthesia care (MAC)**
- Also referred to as monitored sedation, is moderate sedation administered by an anesthesiologist or anesthetist who must be prepared and qualified to convert to general anesthesia if necessary

❖ **Local anesthesia**
- Injection of a solution containing the anesthetic agent into the tissues at the planned incision site

PREOPERATIVE PHASE

❖ **Preoperative Assessment**
- The goal in the preoperative period is for the patient to be as healthy as possible
  - ✓ Consent
  - ✓ Health history is obtained
  - ✓ Nutritional and fluid status
  - ✓ Dentition
  - ✓ Alcohol and drug use
  - ✓ Respiratory status
  - ✓ Cardiovascular status
  - ✓ Hepatic, Renal and endocrine function
  - ✓ Previous medication used

PREOPERATIVE NURSING INTERVENTIONS

Providing Patient Teaching

❖ **Deep Breathing, Coughing and Incentive**
- **Spirometry**
  - ✓ Demonstrates how to take deep, slow breath and how to exhale slowly
  - ✓ Instruct the patient to breathe deeply, exhale through the mouth, take a short breath, and cough from deep in the lungs
  - ✓ Demonstrates how to use an incentive spirometer

❖ **Mobility and Active Body Movement**
- Patient should be taught that early and frequent ambulation, exercise of the extremities and frequent change of position immediately postoperative as tolerated will help to prevent complications

❖ **Pain Management**
- Patient is instructed to take the medication as frequently as prescribed during the initial postoperative period for pain relief

❖ **Reducing Anxiety and Decreasing Fear**
- Assists the patient to identify coping strategies that he or she has previously used to decrease fear

❖ **Managing Nutrition and Fluids**
- NPO overnight or longer to prevent aspiration
- Specific recommendations depend on the age of the patient and the type of food eaten (ex. Adult is advised to fast for 8hours after eating fatty food)

❖ **BOWEL PREPARATION**
- Enemas are not commonly prescribed preoperatively unless the patient is undergoing abdominal or pelvic surgery
- Allow satisfactory visualization of the surgical site and to prevent trauma to the intestine or contamination of the peritoneum by fecal material
- Cleansing enema or laxatives may be prescribed evening before the surgery and may be repeated the morning of surgery

❖ **SKIN PREPARATION**
- Goal is to decrease bacteria without injuring the skin

- Cleanse the skin with soap containing detergent-germicide
- If hair must be removed, electric clippers are used

IMMEDIATE PRE-OP NURSING INTERVENTIONS

- Assist the patient in changing hospital gown
- Cover the head completely with cap
- Inspect the mount, dentures and plates are removed
- Remove all jewelries/body piercing
- If the patient objects in removing wedding ring, secure it with tape
- All valuable articles are given to family members or labelled it clearly and store it in a safe and secured place according to hospital policy
- Patient should void first before going to OR
- If preanesthetic medication is administered, the patient is kept in bed with the side rails raised
- The completed chart (with the preoperative checklist and verification form) accompanies the patient to the OR with the surgical consent form attached, along with all laboratory reports and nurse's records
- Transfer the patient to the holding area/presurgical suite 30-60 minutes before anesthetic agent is administered
- Patient safety in the preoperative area is a priority.

SURGICAL POSITIONS

- **SUPINE (DORSAL) POSITION**
  - Patient is flat on the back, both arms are positioned at the side of the table, one with the hand placed palm down; the other is carefully positioned on an armboard to facilitate IV infusion of fluids, blood, or medications
  - Used for procedures of anterior surface of the body, such as abdominal, abdominothoracic and some lower extremity procedures.
  - **Shoulder or anterolateral procedures:** the patient is on supine position with a small sandbag/water bag/roll/pad is placed under the affected side to elevate and expose the shoulder
  - **Dorsal recumbent:** for vaginal or perineal procedures
  - **Modified dorsal recumbent (frog-leg):** surgical procedures in the groin lower extremities
  - **Arm extension:** surgical procedures of the breast, axilla, upper extremities or hand
- **TRENDELENBURG'S POSITON**
  - Usually is used for surgery on the lower abdomen and pelvis to obtain good exposure by displacing the intestines into the upper abdomen
- **REVERSE TRENDELENBURG'S POSITON**
  - Used for thyroidectomy, laparoscopic gallbladder, biliary tract or stomach procedure
- **FOWLER'S POSITION**
  - Used for shoulder, nasopharyngeal, facial and breast reconstruction procedure
- **SITTING POSITION**
  - Occasionally used for otorhinologic and neurosurgical procedure
- **LITHOTOMY POSITION**
  - Used for perineal, vaginal, urologic and rectal procedures
- **PRONE POSITION**
  - Used for all procedures with dorsal or posterior approach
  - **Modified prone procedure** is used foe neurosurgical and spine procedures
- **KRASKE (JACK-KNIFE) POSITION**
  - Hips are positioned over the center break of the operating table between the body and leg section.
  - The leg section of the operating bed is lowered (usually 90°) and the entire operating bed is tilted head downward to elevate the hips above the rest of the body
  - Done for rectal procedures (pilonidal sinus, hemorrhoidectomy)
- **KNEE-CHEST POSITION**
  - Used for sigmoidoscopy or culdoscopy
- **LATERAL POSITION**
  - Used for renal surgery

POTENTIAL INTRAOPERATIVE COMPLICATIONS

- **NAUSAE AND VOMITING**
  - Administer antiemetics preoperatively or intraoperatively as ordered to counteract possible aspiration

- If gagging occurs, turn the patient to the side, the head of the table is lowered, and a basin is provided to collect the vomitus
- Suction saliva and vomited gastric content

❖ **RESPIRATORY COMPLICATIONS**
- May lead to brain damage if not recognized
- Be vigilant in monitoring the patient's oxygenation status.
- Check peripheral perfusion frequently

❖ **HYPOTHERMIA**
- Patient's temperature may fall during the anesthesia
- May occur as a result of a low temperature in the OR, infusions of cold fluids, inhalation of cold gases, open body wounds or cavities and decreased muscle activity
- Environmental temperature in the OR can temporarily be set at 25□□C to 26.6□□C
- Warm IV and irrigating fluids
- Wet gowns and drapes are removed promptly and replace with dry materials

PREVENTING INTRAOPERATIVE POSITIONING INJURY
- ❖ The patient should be in as comfortable a position as possible, whether conscious or unconscious
- ❖ The operative field must be adequately exposed
- ❖ An awkward position, under pressure on a body part, or use of stirrups or traction should not obstruct the vascular supply.
- ❖ Respiration should not be impeded by pressure of arms on the chest or by a gown that constricts the neck or chest.
- ❖ Nerves must be protected from undue pressure. Improper positioning of the arms, hands, and legs, or feet can cause serious injury or paralysis. Shoulder braces must be well padded to prevent irreparable nerve injury, especially when the Trendelenburg position is necessary.
- ❖ Precautions for patient safety must be observed, particularly with thin, elderly, or obese patient and those with a physical deformity.
- ❖ The patient may need light restraint before induction in case of excitement.

CLASSIFICATIONS OF INSTRUMENTS

❖ **CUTTING AND DISECTING**
- Used to dissect, incise, separate or excise tissues.
- **Scalpels**
  - ✓ Blades 10, 11,12 and 15 fits handle size #3 or 7
  - ✓ Blades 20,22,25 fits handle size #4
  - ✓ Blade #10 is used to open the skin
  - ✓ Blade #11 makes initial skin puncture for tiny deep incisions
  - ✓ Blade #12 is commonly used for tonsillectomy
  - ✓ Blade #15 is used for shallow short controlled incisions
  - ✓ Blade #20 same with #10but larger in size.

❖ **SCISSORS**
- ✓ **Suture scissors** are used to cut sutures
- ✓ **Wire scissors** are used to cut wires
- ✓ **Bandage scissors** are used to cut drains and dressings and to open items such as plastic packets
- ✓ **Sharp-tipped angled scissors** with short jaws used for vascular surgery
- ✓ **Mayo scissors** are used for cutting heavy fascia and sutures.
- ✓ **Metzenbaum scissors** are more delicate than mayo scissors and are used to cut delicate tissues.

❖ **Curettes**
- Tissue from bone is removed by scraping with the sharp edge of the loop or scoop on the end of the curette

GRASPING AND HOLDING

❖ Tissues should be grasped held in position so surgeon can perform the design and the maneuver without injuring the surrounding tissues.
- **Delicate Forceps-** hold fine tissues such as eye tissues
- **Adson forceps-** used to pick up or hold soft tissues during closure
- **Smooth Forceps (thumb forceps)-** used to prevent injury to the suture
- **Toothed Forceps-** hold on tough tissue

- **Allis Forceps-** used to hold tough tissue
- **Babcock Forceps-** end of each jaw is rounded to grasp tissue without injury (e.g. Fallopian tube)
- **Lahey Forceps-** has sharp point tips to grasp tough organs or tumors
- **Stone Forceps-** grasp calculi in kidney and gallbladder

CLAMPING AND OCCLUDING

❖ Instruments that apply pressure by clamping or occluding
- **Hemostatic Forceps-** used for occluding blood vessels
- **Crushing Clamps-** used to crushed tissues or clamp blood vessels

EXPOSING AND RETRACTING

❖ Soft tissues, muscles and other structures should be pulled aside for exposure of the surgical site
- **Malleable Retractors-** maybe bent to the desired angle and depth for retraction
- **Hooks-** commonly used to retract skin edges during a wide-flap dissection such as mastectomy
- **Self-retraining-** inserted to spread the edges of an incision and hold them apart. eg: Balfour

SUTURES

❖ Used for ligating, stitching or approximating tissues

ABSORBABLE SUTURES
- **Surgical Gut-** collagen derived from the submucosa of sheep's intestine or serosa of beef's intestine
- **Plain Surgical gut-** loses strength in 5-10 days and is digested within 70 days.
  - ✓ Used to ligate small vessels and sutures subcutaneous fats
- **Chromic Surgical Gut-** support the wound for about 14 days and loses tensile strength up to 21days and is absorbed within 90 days. Used for ligation of larger vessels and sutures urinary/biliary tract.
- **Synthetic Absorbable Polymers-** are absorbed by a slow hydrolysis process in the presence of tissue fluids
- **Polydioxanone Sutures (PDS)-** Useful in tissues in which wound healing is slow, as in the fascia, or where extended wound support is desirable.
- **Poliglecaprone 25 (Monocryl)-** loses all tensile strength by 21 days and absorption is between 91-119 days. Used in soft tissues such as gynecologic, urologic, and plastic surgery
- **Polyglactin 910 (Vicryl)-** absorbs rapidly within 90days. Uncoated polyglactin 910 is used for ophthalmic procedures

NON-ABSORBABLE SUTURES

❖ **Surgical silk**
- loses tensile strength when wet
- Used frequently in the serosa of the gastrointestinal tract and to close fascia in the absence of infection

❖ **Surgical Cotton**
- Gains tensile strength when wet
- Used in the most body tissues for ligating and suturing

❖ **Surgical stainless steel**
- Used for abdominal wall or for retention sutures to reduce the danger of wound disruption/dehiscence

SURGICAL NEEDLES

❖ **Point of the Needle-** honed to the configuration and sharpness desired for specific types of tissue
- **Cutting point** is used when tissue is difficult to penetrate (skin, tendon, and tough tissues in the eye)
  - ✓ Conventional cutting needles
  - ✓ Reverse-cutting needles
  - ✓ Side cutting needles
  - ✓ Trocar point
- **Taper (Round) point** is used when tissue such as intestines and peritoneum
- **Blunt point** is used for suturing friable tissues such as liver and kidney

❖ **Body of the Needle**
- **Straight needles** are used in readily accessible tissues
- **Curved needles** are used to approximately most tissues
- **French eye needle** has a slit from the inside of the eye to the end of the needle through which the suture strand is drawn
- **Eyeless needle** is a continuous unit with the suture strand, needle is swaged onto the end of the strand in the manufacturing process

POSTOPERATIVE NURSING

- **Care of the Patient in the Post-anesthesia Care Unit**
  - **The post-anesthesia care unit (PACU),**

Also called the recovery room or post-anesthesia recovery room, is located adjacent to the operating rooms suite

- **Phases of Post-anesthesia Care**
  - **Phase I PACU:** care of surgical patients immediately after surgery and for the patient whose condition warrants close monitoring and intensive care is provided
  - **Phase II PACU:** surgical patient's condition no longer requires close monitoring provided in a phase I PACU. Patient is prepared for self-care or care in the hospital or in extended care setting.
  - **Phase III PACU:** setting in which the patient is cared for in the immediate postoperative period and then prepared for discharge from the facility
- **Determining Readiness for Discharge From the PACU**
  - Many hospitals use a scoring system (Aldrete score) to determine the patient's general condition and readiness for transfer from the PACU
  - Throughout the recovery period, the patient's physical signs are observed and evaluated by means of a scoring system based on the set of objective criteria.
  - The patient is assessed at regular intervals, and a total score is calculated and recorded
  - Aldrete score is usually 8 to 10 before discharge from the PACU, patient with a score of less than 7 must remain in the PACU until condition improves or they transferred to an intensive care area
  - Area of assessment in Aldrete score includes:
    - ✓ activity
    - ✓ respiration
    - ✓ circulation
    - ✓ consciousness
    - ✓ oxygen saturation
- **PRIORITY # 1:** restoration of homeostasis and prevent complications
- **PRIORITY # 2**: maintain and promote adequate airway and respiratory function
- **PRIORITY # 3**: maintain adequate cardiac function and promote tissue
- **PRIORITY #4**: maintain adequate fluid and electrolyte balance and adequate renal function
  - sufficient fluids to maintain extracellular fluids and blood volume
  - prevent fluid overload with resultant
  - pulmonary congestion and edema
  - monitor serum electrolyte
  - accurate I&O recording
  - instruct and support breathing exercises
  - don't force fluid too soon
- **PRIORITY # 5:** promote comfort and rest
  - Manage pain during variety of approaches: pharmacologic (narcotic, analgesic), comfort measures
- **PRIORITY # 6:** promote adequate nutrition and elimination
  - normal peristalsis returns to 48 to 72 hrs post-op.
  - liquid diet (broth, tea, fruit juices, jello, soup)
  - early ambulation to prevent abdominal distension
- **PRIORITY # 7:** promote wound healing and prevention of:
  - **DEHISCENCE-** Total or partial disruption or (separation) in wound edges but underlying subcutaneous tissue has not parted
  - **EVISCERATION-** Protrusion of viscera through an abnormal wound opening

NURSING MANAGEMENT IN THE PACU

- Assess patient's airway, respiratory function, cardiovascular function, skin color, level of consciousness, and the ability to respond to commands
- Check the surgical site for drainage or hemorrhage and make sure that all drainage tubes and monitoring lines are connected and functioning
- Monitoring v/s every 15 mins
- Administer postoperative analgesics
- **Maintaining Patent Airway**
  - Assess for hypopharyngeal obstruction, signs of occlusion include chocking, noisy and irregular respirations

- Suction mucus or vomitus that is obstructing the trachea (caution with patient who has had a tonsillectomy or other oral or laryngeal surgery)

❖ **Maintaining Cardiovascular Activity**
- **Hypotension** can result from blood loss, hypoventilation, position changes, pooling of the blood extremities, or side effects of medication and anesthetics

❖ **Shock,** one of the most serious postoperative complications, can result hypovolemia and decreased intravascular volume
- Primary intervention for **hypovolemic shock is volume replacement**
- Administer oxygen
- Continuously monitor patient's condition has stabilized
- Keep the [patient warm and maintain normothermia (normal body temperature)

❖ **Hemorrhage** is copious escape of blood from blood vessel

CLASSIFICATION OF HEMORRHAGE

Time Frame	
Primary	Hemorrhage occurs at the time of surgery.
Intermediary	Hemorrhage occurs during the few hours after surgery when the rise of blood pressure to its normal level dislodges insecure clots from untied vessels.
Secondary	Hemorrhage may occur sometime after surgery if a suture slips because of blood vessel was not securely tied, became infected, or was eroded by a drainage tube.
Types of Vessel	
Capillary	Hemorrhage is characterized by a slow, general ooze.
Venous	Darkly colored blood bubbles out quickly.
Arterial	Blood is bright red and appears in spurts with each heartbeat.
Visibility	
Evident	Hemorrhage is on the surface and can be seen.
Concealed	Hemorrhage is in a body cavity and cannot be seen.

❖ **Clinical Signs/ Intervention for Hemorrhage**
- Patient presents with hypotension, rapid, thready pulse, disorientation, restlessness, oliguria, cold and pale skin.
- Feeling of apprehension, decreased cardiac output and vascular resistance and signifies that the patient is in the early phase of shock
- Transfusing of blood or blood products and determining the cause of hemorrhage are the initial therapeutic measures
- Inspect surgical site and incision, if bleeding is evident, a sterile gauze pad and a pressure dressing are applied, and the site of the bleeding is elevated to heart is possible
- Place the patient in shock position (flat on back; legs are elevated at 20-degree angle; kept straight)
- If suspected for internal hemorrhage, patient is taken back to OR

❖ **Relieving Pain and Anxiety**
- Monitor the patient's physiological status, manage pain and provides psychological support to relieve the patients fears and concerns
- Opioid analgesics are administered mostly in the IV in the PACU, it immediately relief pain and are short acting

❖ **Controlling Nausea and Vomiting**
- Intervene immediately in the patient's first report of nausea to control the problem rather than the wait for it to progress vomiting
- Administer medicine such as Phenergan and Atarax as ordered to prevent post op nausea and vomiting
- Encourage the patient to breathe deeply to facilitate elimination of anesthetics

NURSING MANAGEMENT AFTER SURGERY

PREVENTING RESPIRATORY COMPLICATIONS

❖ Respiratory depressive effects of opioid medications, decreased lung expansion secondary to pain and decreased mobility, put the patient in risk for common respiratory complications such as:

- **Atelectasis –** alveolar collapse; incomplete expansion of lung
  - ✓ **Signs and symptoms include**

Decreased breath sounds over the affected area crackles and cough

- **Pneumonia –** characterize by chills and fever, tachycardia, and tachypnea. Cough may or may not be present and may or may not productive.

Hypostatic pulmonary congestion, caused by a weakened cardiovascular system that permit stagnation of secretion at lung bases, may develop.

Clinical manifestations include:

- ✓ Slight elevation temperature, pulse, and respiratory rate, cough
- ✓ Dullness and crackles at the base of the lungs

❖ **Nursing Interventions**

- Encourage the patient to turn frequently, take deep breaths, cough and use the incentive spirometer at least every 2 hours
- Careful splinting of abdominal or thoracic incisions sites help the patient to overcome the fear that the exertion of coughing might open the incisions
- Administer oxygen
- Encouraged the patient to yawn or take sustained maximal inspirations to promote lung expansions
- Coughing is contraindicated in patients who have head injuries or who have undergone intracranial surgery, eye surgery and plastic surgery
- Early ambulation increases metabolism and pulmonary aeration

ASSISTING POSTOPERATIVE PATIENT IN AMBULATION

❖ Early ambulation has a significant effect on the recovery and the prevention of complications (eg, atelectasis, hypostatic pneumonia, gastrointestinal discomfort and circulatory problems such as blood stasis and thromboembolism)

- Help the patient move gradually from lying position to the sitting position by the raising the head of the bed and encourage the patient to splint the incisions when applicable
- Position the patient completely upright (sitting) and turned so that both legs are hanging over the edge of the bed.
- Help the patient stand beside the bed
- Nurse should be on the patient's side to give physical support and encouragement
- Bed exercises are also encouraged to improve circulation
  - ✓ arm exercises
  - ✓ hand and finger exercises
  - ✓ foot exercises to prevent DVT, foot, drop and toe deformities and to aid in maintaining good circulation
  - ✓ leg flexion and leg-lifting exercises to prepare patient for ambulation
  - ✓ abdominal and gluteal contraction exercises

PREVENTING DEEP VEIN THROMBOSIS

❖ DVT occurs in pelvic veins or in the deep veins of the lower extremities in postoperative patients. DVT is most common after hip surgery. Venus thrombi located above the knee are considered as the major source of pulmonary emboli.

❖ **Clinical Manifestation**

- **Homan's sign:** Calf pain upon dorsiflexion
- Painful swelling of the entire leg
- Slight fever, chills, perspiration
- Marked tenderness over the anteromedial surface of the thigh
- Intravascular clotting without marked inflammation may develop, leading to phlebothrombosis
- Circulation distal to the DVT may be compromised if sufficient swelling is present

❖ **Nursing Interventions and Management**

- Hydrate patient adequately postoperatively to prevent hemoconcentration.
- Encourage leg exercises and ambulate patient as soon as permitted by surgeon.
- Avoid restricting devices such as tight straps that can constrict and impair circulation
- Avoid rubbing or massaging calves and thighs
- Instruct to avoid standing or sitting in one place for prolonged periods and crossing legs when seated

- Assess distal peripheral pulses, capillary refill and sensation of lower extremities.
- Check the positive Homan's sign –calf pain on dorsiflexion of the foot.
- Prevent the used of bed rolls or knee-gatch on the patients at risk because there is danger of constricting the vessels under the knee.
- Initiate anticoagulant therapy either I.V subcutaneously or orally as prescribed.
- Prevent swelling and stagnation of venous blood by applying approximately fitting elastic stockings or wrapping the legs from the toes or the groin with elastic bandage.
- Apply external pneumatic compression intraoperatively to patients of highest risk of DVT.

PULMONARY EMBOLISM

- Pulmonary embolism (PE) is cause by the obstruction of one or more pulmonary arterioles by the embolus originating somewhere in the venous system or in the right side of the heart.
- Postoperatively, most emboli develop in the pelvic or in the iliofemoral veins before becoming dislodged and travelling to the lungs
- **Clinical Manifestation**
  - Dyspnea is the most frequent symptom
  - Chest pain is common and is usually sudden and pleuritic in origin
  - Anxiety, fever, tachycardia, apprehension, cough, diaphoresis, hemoptysis, and syncope.
  - Most frequent sign is tachypnea
- **Nursing Interventions**
  - Administer oxygen
  - Calm the patient
  - Monitor visual signs, ECG, arterial blood gases.
  - Treat for shock or heart failure as directed.
  - Give analgesics or sedatives as directed to control pain or apprehension.
  - Prepare for anticoagulation or thrombolytic therapy or surgical intervention. Management depends on the severity of pulmonary embolism.

WOUND INFECTION

- Second most common nosocomial infection. The infection may be limited to the surgical site or may affect the patient systematically.
- **Clinical Manifestation**
  - Redness, excessive swelling, tenderness, warmth.
  - Red streaks in the skin ear the wound
  - Pus or other discharge in the wound
  - Tender, enlarge lymph nodes in the axillary region or groin closest to the wound
  - Foul smell from the wound
  - Generalized body chills or fever
  - Elevated temperature and pulse
  - Increasing pain from the incision site
- **Nursing Interventions**
  - Keep dressing intact, reinforcing if necessary, until prescribed otherwise.
  - Used strict sterile technique when dressings are changed.
  - Monitor and document the amount, type, and location of the drainage. Ensure that all drains are working properly.
  - A culture is taken and sent to the laboratory for bacterial analysis.
  - Wound irrigation may be done; have the aseptosyringe and saline available
  - A drain may be inserted, or the wound may be packed with sterile gauze.
  - Administer antibiotics as prescribed.
  - If deep infection is suspected, the patient may be taken back to the operating room.