



EDO UNIVERSITY IYAMHO
Department of Nursing Science
NSC 301 Medical Surgical Nursing

Instructor: *Mr. Ogunlade, Alade Aderinto*; email:ogunlade.alade@edouniversity.edu.ng

Lectures: Monday, 10am – 12 pm, LT3, phone: (+234) 8062489290

Office hours: Monday, 8 am to 9:45 am (just before class), Office: Department of Nursing Rm 37

Teaching Assistants: *Mr. N.E Chukwuyem*

General overview of lecture: This introduces students to surgical patients with emergencies as well as cares before, during and after operation.

Prerequisites: Students should have knowledge of foundation of professional nursing practice and theory, anatomy, physiology and biochemistry.

Learning outcomes: At the completion of this course, students are expected to:

- i. differentiate among classifications of surgery and types of anaesthesia.
- ii. describe the assessment data to collect for a surgical patient.
- iii. demonstrate postoperative exercises: diaphragmatic breathing, coughing, incentive spirometer use, turning, and leg exercises.
- iv. design a preoperative teaching plan
- v. prepare a patient for surgery.
- vi. explain the nurse's role in the operating room.
- vii. describe the rationale for nursing interventions designed to prevent postoperative complications.

Assignments: We expect to have 5 individual homework assignments throughout the course in addition to a Mid-Term Test and a Final Exam. Home works are due at the beginning of the class on the due date. Home works are organized and structured as preparation for the midterm and final exam, and are meant to be a studying material for both exams. There will also be seminar presentation.

Grading: We will assign 10% of this class grade to home-works, 10% for seminar presentations, 10% for the mid-term test and 70% for the final exam. The Final exam is comprehensive.

Textbook: The recommended textbooks for this class are as stated:

Title: Brunner & Suddarth's Textbook of Medical-Surgical Nursing.

Authors: Smeltzer, S.C., Bare, B.G., Hinkle, J.L and Cheever, K.H

Publisher: Wolters Kluwer Health / Lippincott Williams & Wilkins.

ISBN-978-1-60831-080-7

Title: Introductory Medical-Surgical Nursing

Authors: Timby, B.K and Smith, N.E.

Publisher: Wolters Kluwer Health / Lippincott Williams & Wilkins.

ISBN- 978-1-60547-063-4

Main Lecture: Below is a description of the contents.

Introduction to Perioperative Concepts and Nursing Management

Perioperative nursing care is nursing care given before (preoperative), during (intraoperative), and after (postoperative) surgery. It takes place in hospitals, surgical centres attached to hospitals, freestanding surgical centres, or health care providers' offices. Perioperative nursing is a fast-paced, changing, and challenging field. It is based on the nurse's understanding of several important principles, including:

- a) High-quality and patient safety–focused care.
- b) Multidisciplinary teamwork.
- c) Effective therapeutic communication and collaboration with the patient, the patient's family, and the surgical team.
- d) Effective and efficient assessment and intervention in all phases of surgery.
- e) Advocacy for the patient and the patient's family.
- f) Understanding of cost containment.

Working in a perioperative setting, requires the practice of strict surgical asepsis, thoroughly documentation of care, and laying emphasis on patient safety in all phases of care. Effective teaching and discharge planning prevent or minimize complications and ensure quality outcomes.

Classification of Surgical Procedures

a. According to Seriousness

Major: Involves extensive reconstruction or alteration in body parts; poses great risks to well-being for example, Coronary artery bypass, colon resection, removal of larynx, and resection of lung lobe.

Minor: Involves minimal alteration in body parts; often designed to correct deformities; involves minimal risks compared with major procedures e.g. Cataract extraction, facial plastic surgery, and tooth extraction.

b. According to Urgency

Elective: It is performed on basis of patient's choice; is not essential and is not always necessary for health. Examples are; facial plastic surgery, hernia repair, and breast reconstruction

Urgent: It is Necessary for patient's health; often prevents additional problems from developing (e.g., tissue destruction or impaired organ function); not necessarily emergency Excision of cancerous tumour, removal of gallbladder for stones, vascular repair for obstructed artery (e.g., coronary artery bypass)

Emergency: This must be done immediately to save life or preserve function of body part. Examples are; repair of perforated appendix or traumatic amputation, control of internal haemorrhage

c. According to Purpose

Diagnostic Surgical exploration: This allows health care providers to confirm diagnosis; often involves removal of tissue for further diagnostic testing e.g. exploratory laparotomy (incision into peritoneal cavity to inspect abdominal organs), breast mass biopsy.

Palliative Relieves: It reduces intensity of disease symptoms; does not produce cure. Examples include Colostomy, debridement of necrotic tissue, resection of nerve roots.

Reconstructive/restorative: Restores function or appearance to traumatized or malfunctioning tissues, for example internal fixation of fractures and scar revision.

Constructive Restores function lost or reduced as result of congenital anomalies. This include repair of cleft palate, closure of atrial septal defect in heart.

Cosmetic: It is performed to improve personal appearance Blepharoplasty for eyelid deformities; rhinoplasty to reshape nose.

Preoperative Surgical Phase

Patients having surgery enter the health care setting in different stages of health. A patient may enter the hospital or ambulatory surgical centre on a predetermined day feeling relatively healthy and prepared to face elective surgery. In contrast, a person in a motor vehicle crash may face emergency surgery with no time to prepare. The ability to establish rapport and maintain a professional relationship with the patient is an essential component of the preoperative phase.

The patient meets many health care personnel, including surgeons, nurse anaesthetists, anaesthesiologists, surgical technologists, and nurses. All play a role in the patient's care and recovery. Family members attempt to provide support through their presence but face many of the same stressors as the patient.

Assessment

A thorough patient assessment and critical analysis of findings ensure that you make patient-centred clinical decisions required for safe nursing care. The aim of the preoperative assessment is to identify the patient's normal preoperative function to recognize, prevent, and minimize possible postoperative complications. A multidisciplinary team approach is essential. Patients are admitted only hours before surgery; thus it is important for nurse to organize and verify data obtained before surgery and implement a perioperative plan of care. Most assessments begin before admission for surgery; in the health care provider's office, preadmission clinic, or anaesthesia clinic or by telephone. A health care provider performs a physical examination or orders laboratory tests and before surgery nurses begin teaching, answer questions, and begin paperwork. This streamlines the care required by the patient on the day of surgery. So as not to waste time duplicating information from the preoperative examination, focus on key measurements for all body systems to ensure that no one overlooked any obvious problems.

Even though the surgeon screens the patient before scheduling surgery, preoperative assessment occasionally reveals an abnormality that delays or cancels surgery. For example, consider an infection in a patient with a cough and low-grade fever on admission and notify the surgeon immediately.

Nursing History: An initial interview is conducted to collect a patient history. If a patient is unable to relate all of the necessary information, family members can be relied on as resources.

Medical History: A review of the patient's medical history includes past illnesses and surgeries and the primary reason for seeking medical care. The patient's current medical record and medical records from past hospitalisations are excellent sources of data. Pre-existing illnesses influence patients' abilities to tolerate surgery and nurses' choices of therapies to help them reach full recovery. The history of previous surgery influences the level of physical care required

after an upcoming surgical procedure. Screen patients scheduled for ambulatory surgery for medical conditions that increase the risk for complications during or after surgery. For example, a patient who has a history of heart failure may experience a further decline in cardiac function during and after surgery. The patient with heart failure in the preoperative period may require beta-blocker medications, intravenous (IV) fluids infused at a slower rate, or administration of a diuretic after blood transfusions.

Medication History: Presence of pre-existing co-morbid conditions such as hypertension, renal or heart disease, respiratory disorders, and diabetes increases a patient's surgical risk. If a patient regularly uses prescription or over-the-counter medications, the surgeon or anaesthesia provider may temporarily discontinue the drugs before surgery or adjust the dosages. Certain medications pose greater risks for surgical complications.

Allergies: Assess for patients' allergies to drugs during the perioperative period. Also assess for latex, food, and contact allergies (e.g., to tape, ointments, or solutions). Allergies are not the same as unpleasant side effects. For example, codeine may cause nausea (a side effect) or hypotension and confusion (an allergy). When asking a patient about allergies, realize that the term *allergy* is confusing for some patients. Asking a patient if he or she has ever "had a problem with a medication or substance" is a helpful approach to questioning.

Smoking Habits: The patient who smokes is at greater risk for postoperative pulmonary complications than a patient who does not. The chronic smoker already has an increased amount and thickness of mucus secretions in the lungs. General anaesthetics increase airway irritation and stimulate pulmonary secretions, which the airways retain as a result of reduction in ciliary activity during anaesthesia. After surgery the patient who smokes has greater difficulty clearing the airways of mucus secretions and needs to know the importance of postoperative deep breathing and coughing.

Alcohol Ingestion and Substance Use and Abuse: Habitual use of alcohol and illegal drugs predisposes the patient to adverse reactions to anaesthetic agents. Some patients experience a cross-tolerance to anaesthetic agents, necessitating higher-than normal doses.

Occupation: Surgery often results in physical changes and limits that prevent a person from returning to work or lengthen recovery time before work can be resumed. Assess the patient's occupational history to anticipate the possible effects of surgery on recovery, return to work, and eventual work performance. Explain any restrictions such as lifting, use of the extremities, or climbing stairs before a patient returns to work. When a patient is unable to return to a job, refer him or her to a social worker and/or occupational therapist for job-training programs or to help him or her seek economic assistance.

Preoperative Pain Assessment: Surgical manipulation of tissues, treatments, and positioning on the operation table contribute to postoperative pain. There is a need to conduct a comprehensive pain assessment, including the patient's and family's expectations for pain management following surgery. Ask patients to describe their perceived tolerance to pain, past experiences, and prior successful interventions used.

Review of Emotional Health: Surgery is psychologically stressful. Patients are often anxious about the surgery and its implications and believe that they are powerless over their situation.

Family members may perceive the patient's surgery as a disruption of their lifestyle. Hospitalization and the recovery period at home are sometimes lengthy. The family is usually concerned about the patient returning to a normal, productive life. When the patient has chronic illness, the family is either fearful that surgery will result in further disability or hopeful that it will improve their lifestyle. To understand the impact of surgery on a patient's and family's emotional health, assess the patient's feelings about surgery, self-concept, body image, and coping resources.

Self-Concept: Patients with a positive self-concept are more likely to approach surgical experiences appropriately. Poor self-concept hinders the ability to adapt to the stress of surgery and aggravates feelings of guilt or inadequacy.

Body Image: Surgical removal of any diseased body part often leaves permanent disfigurement, alteration in body function, or concern over mutilation. Loss of certain body functions (e.g., with a colostomy or amputation) may compound a patient's fears. Assess for body image alterations that patients perceive will result from surgery. Often surgery changes the physical or psychological aspects of patients' sexuality. Surgery such as hernia repair or cataract extraction forces patients to temporarily refrain from sexual intercourse until they return to normal physical activity. Encourage patients to express concerns about their sexuality. Hold discussions about the patient's sexuality with his or her sexual partner so the partner gains a shared understanding of how to cope with limitations in sexual function.

Coping Resources: Assessment of feelings and self-concept reveals whether the patient is able to cope with the stress of surgery. The physiological effects of stress are well documented. When reviewing the patient's coping resources, ask him or her about specific family members and friends who may provide support. Once identified, include these individuals in any patient teaching and interventions to manage stress and anxiety.

Physical Examination: Conduct a partial or complete physical examination, depending on the amount of time available and the patient's preoperative condition.

General Survey: Observe the patient's general appearance. Gestures and body movements may reflect weakness caused by illness. Assess the patient for a malnourished appearance. Height, body weight, and history of recent weight loss are important indicators of nutritional status.

Preoperative vital signs, including blood pressure while sitting and standing, and pulse oximetry provide important baseline data with which to compare alterations that occur during and after surgery. An elevated temperature before surgery is a cause for concern. If the patient has an underlying infection, the surgeon may choose to postpone surgery until the infection has been treated.

Head and Neck: The condition of oral mucous membranes is one indicator of the level of hydration. Inspect the area between the gums and cheek, the soft palate, and the nasal sinuses. Sinus drainage indicates respiratory or sinus infection. During the examination of the oral

mucosa, identify any loose or capped teeth because they can become dislodged during endotracheal intubation.

Integument: Carefully inspect the skin, especially over bony prominences such as the heels, elbows, sacrum, back of head, and scapula. During surgery patients often lie in a fixed position for several hours, making them at increased risk for pressure ulcers.

Thorax and Lungs: Assessment of the patient's breathing pattern and chest excursion measures ventilatory capacity. A decline in ventilatory function places the patient at risk for respiratory complications.

Heart and Vascular System: Assess the character of the apical pulse and listen to heart sounds. Assess peripheral pulses, capillary refill, and the colour and temperature of extremities.

Abdomen: Assess the abdomen for size, shape, symmetry, and presence of distention. Ask how often the patient has regular bowel movements and inquire about the colour and consistency of stools. Auscultate bowel sounds.

Neurological Status: Preoperative assessment of neurological status is important for all patients receiving general anaesthesia. The baseline neurological status assists with the assessment of ascent from anaesthesia. Observe the patient's level of orientation, alertness, mood, and ease of speech, noting whether he or she answers questions appropriately and is able to recall recent and past events.

Diagnostic Screening: Patients have a variety of preoperative tests and procedures to confirm or rule out pre-existing alterations requiring surgery or that will affect recovery. The patient's medical history, physical assessment findings, and surgical procedure determine the type of tests ordered. For example, a type and cross-match are indicated before surgery for procedures in which blood loss is expected.

Preoperative Teaching Plan: Successful planning requires involving the surgical patient and family to set realistic expectations for care. Early involvement of the patient when developing the surgical care plan minimizes surgical risks and postoperative complications. A patient informed about the surgical experience is less likely to be fearful and is able to participate in the postoperative recovery phase so expected outcomes are met.

Informed Consent: Surgery cannot be legally or ethically performed until a patient understands the need for a procedure, the steps involved, risks, expected results, and alternative treatments. It is the surgeon's responsibility to explain the procedure and obtain the informed consent. After the patient completes the consent form, place it in the medical record.

Preoperative Teaching: Patient education is an important aspect of the patient's surgical experience. Provided in a systematic and structured format with teaching and learning principles, preoperative teaching regarding a patient's expected postoperative course has a positive influence on the patient's recovery. It is ideal to attempt perioperative education before admission, during the hospital stay, and after discharge. Including family members in perioperative preparation is advisable. Often a family member is the coach for postoperative exercises when the patient returns from surgery. The family often has better retention of preoperative teaching and will be with the patient and able to help them in their recovery. If

anxious relatives do not understand routine postoperative events, it is likely that their anxiety heightens the patient's fears and concerns.

Physical Preparation: The degree of preoperative physical preparation depends on the patient's health status, the planned surgery, and the surgeon's preferences. A seriously ill patient receives more supportive care in the form of medications, IV fluid therapy, and monitoring than the patient facing a minor elective procedure.

Maintaining Normal Fluid and Electrolyte Balance: The surgical patient is vulnerable to fluid and electrolyte imbalances as a result of the stress of surgery, inadequate preoperative intake, and the potential for excessive fluid losses during surgery.

Preoperative Fasting: There is a need to observe preoperative fasting for elective procedures requiring general anaesthesia, regional anaesthesia, or sedation. For non-emergent procedures, clients should not take clear liquids for 2 hours; do not take breast milk for 4 hours; and do not take formula, solids, and nonhuman milk for 6 hours. For fatty, fried, and meat sources the recommended fast is for 8 hours.

Preventing Bowel and Bladder Incontinence: Some patients receive a bowel preparation (e.g., a cathartic or enema) if the surgery involves the lower GI system or lower abdominal organs. Manipulation of portions of the GI tract during surgery results in absence of peristalsis for 24 hours and sometimes longer. Enemas and cathartics such as polyethylene glycol electrolyte solution (GoLytely) clean the GI tract to prevent intraoperative incontinence and postoperative constipation. An empty bowel reduces risk of injury to the intestines and minimizes contamination of the operative wound if a portion of the bowel is incised or opened accidentally or if colon surgery is planned.

Hygiene: Basic hygiene measures provide additional comfort before surgery. If the hospitalized patient is unwilling to take a complete bath, a partial bath is refreshing and removes irritating secretions or drainage from the skin. Because the patient cannot wear personal nightwear to the operating room because it is restrictive and is a flammable hazard, provide a clean hospital gown. When the patient is NPO for the last several hours, his or her mouth is often very dry. Offer the patient mouthwash and toothpaste, again cautioning the patient not to swallow water.

Hair and Cosmetics: During surgery with the patient under general anaesthesia, his or her head is positioned to introduce an endotracheal tube into the airway. This procedure may involve manipulation of the patient's hair and scalp. To avoid injury ask the patient to remove hairpins or clips before leaving for surgery. Electrocautery is frequently used during surgery. Hairpins and clips can become an exit source for the electricity and cause burns. Remove hairpieces or wigs as well. The patient applies a disposable hat before entering the OR. During and after surgery the anaesthesia provider and nurse assess skin and mucous membranes to determine the patient's level of oxygenation and circulation. Therefore remove all makeup (i.e., lipstick, powder, blush, nail polish) to expose normal skin and nail colouring. Pulse oximetry records accurate measurements through

Removal of Prostheses: It is easy for any type of prosthetic device to become lost or damaged during surgery. The patient needs to remove all prostheses, including partial or complete

dentures, artificial limbs, artificial eyes, and hearing aids. If a patient has a brace or splint, check with the health care provider to determine whether it should remain with him or her.

For many patients it is embarrassing to remove dentures, wigs, or other devices that enhance personal appearance. Always offer privacy as the patient removes personal items. Patients are sometimes allowed to keep these until they reach the preoperative area. Place dentures in special containers, labelled with the patient's name and other identification required by the agency, for safekeeping to prevent loss or breakage. In many agencies you document an inventory of all prosthetic devices or personal items and have them locked away. It is also common practice for nurses to give prostheses to family members or to keep the devices at the patient's bedside.

Document these actions in the nursing notes, surgical checklist, or per agency policy.

Vital Signs: Measure a final preoperative set of vital signs. The anaesthesia provider uses these values as a baseline for intraoperative vital signs. If preoperative vital signs are abnormal, surgery may need to be postponed. Notify the surgeon of any abnormalities before sending the patient to surgery.

Documentation: Before the patient goes to the OR, check the contents of the medical record to be sure that pertinent laboratory results are present. Check consent forms for accuracy. A preoperative checklist is a useful tool for ensuring patient safety and completing nursing interventions. Check the nurses' notes to be sure that documentation of care is current. This is especially important if the hospitalized patient experienced unpredicted problems the night before surgery. Send a current medication administration record to the operating room.

Other Procedures: If an IV infusion is not started on the hospital unit, one will be placed in the preoperative holding area. An IV line is essential for establishing a route to deliver medications and fluids during surgery. Some patients need a nasogastric (NG) tube inserted before surgery, but this often occurs in the OR

Administering Preoperative Medications: The anaesthesia provider or surgeon sometimes orders pre-anaesthetic drugs to reduce the patient's anxiety, the amount of general anaesthesia required, the risk of nausea and vomiting and resultant aspiration, and respiratory tract secretions.

Eliminating Wrong Site and Wrong Procedure Surgery:

Because of errors made in the past with patients undergoing the wrong surgery or having surgery performed on the wrong site, there is a Universal Protocol guidelines for preventing such mishaps. The three principles of the protocol include the following: (1) a preoperative verification that ensures that all relevant documents (e.g., consent forms, allergies, medical history, physical assessment findings) and results of laboratory tests and diagnostic studies are available before the start of the procedure and that the type of surgery scheduled is consistent with the patient's expectations; (2) marking the operative site with indelible ink to mark left and right distinction, multiple structures (e.g., fingers), and levels of the spine; and (3) a "time out" just before starting the procedure for final verification of the correct patient, procedure, site, and any implants. All members of the surgical/procedure team perform the time out. This protocol

includes active patient or a legally designated representative involvement in the entire process. If the patient refuses a mark, note this on the procedure checklist and notify the surgeon.

Nursing Diagnosis

Preoperative nursing diagnoses allow you to take precautions and actions so care provided during the intraoperative and postoperative phases is consistent with the patient's needs. Nursing diagnoses made before surgery also focus on the potential risks that a patient may face after surgery. Preventive care is essential so you can manage the surgical patient effectively. The following are some common nursing diagnoses relevant to the patient having surgery:

Ineffective airway clearance, anxiety, fear, risk for deficient fluid volume, risk for perioperative positioning injury, impaired physical mobility, nausea, acute pain and delayed surgical recovery.

Transport to the Operating Room

Personnel in the OR notify the nursing unit or ambulatory surgery area when it is time for surgery. In many hospitals a nursing orderly or transporter brings a stretcher for transporting the patient. The transporter checks the patient's identification bracelet for two identifiers (name, birth date, or hospital number) against the patient's medical record to be sure that the right person is going to surgery. Because some patients receive preoperative sedatives, the nurses and transporter help the patient transfer from bed to stretcher to prevent falls. The ambulatory surgery patient ambulates to the OR if able and not medicated. Provide the family an opportunity to visit before the patient is transported to the OR. Direct the family to a waiting area. In some hospitals the family is allowed to wait with the patient in the OR holding area until he or she is transported into the OR.

Intraoperative Surgical Phase

Care of the patient during surgery requires careful preparation and knowledge of the events that occur during the surgical procedure. The nurse usually functions in one of two roles: circulating nurse or scrub nurse. The **circulating nurse** must be an RN. His or her responsibilities include reviewing the preoperative assessment, establishing and implementing the intraoperative plan of care, evaluating the care, and providing for continuity of care after surgery. The circulating nurse assists with procedures such as endotracheal intubation and blood administration as needed. In addition, this nurse positions the patient, monitors sterile technique and a safe OR environment, assists the surgeon and surgical team by operating nonsterile equipment, provides additional supplies, verifies sponge and instrument counts, and maintains accurate and complete written records.

The **scrub nurse** is an RN. This individual maintains a sterile field during the surgical procedure, assists with applying sterile drapes, hands instruments and other sterile supplies to surgeons and counts the sponges and instruments.

Preoperative (Holding) Area

In most hospitals the patient enters a holding area, also known as the pre-anaesthesia care unit or pre-surgical care unit (PSCU), outside the OR. In the PSCU the nurse explains the steps for preparing the patient for surgery, reviews the preoperative checklist, assesses the patient's readiness both physically and emotionally, and reinforces teaching. Nurses in the PSCU are

members of the OR staff and wear surgical scrub suits, hats, and footwear in accordance with infection control policies. In the PSCU the nurse or anaesthesia provider inserts an IV catheter into the arm to establish a route for fluid replacement and IV drugs if not placed previously. A large-bore (18-gauge) IV catheter ensures easy infusion of fluids and blood products if necessary. The nurse monitors vital signs, including pulse oximetry. The anaesthesia provider usually performs a patient assessment at this time. Because of the preoperative medications, the patient begins to feel drowsy. The temperature in the PSCU and adjacent OR suites is usually cool. Offer the patient an extra blanket. Conscious sedation starts at this time. The patient's stay in the PSCU is usually brief.

Admission to the Operating Room

The OR staff transfer the patient to the OR room via a stretcher. The patient is usually still awake and notices nurses and health care providers wearing complete surgical masks, gowns, and eyewear. The staff carefully transfer the patient to the OR table, being sure that the stretcher and table are locked in place. After the patient is on the table, fasten a safety strap around him or her. Support the patient by explaining procedures and encouraging him or her to ask questions. Sights and sounds in the surgical suite are sometimes frightening to patients.

Physical Preparation: After safely securing the patient on the OR table, apply monitoring devices to him or her. Patients receiving general and regional anaesthesia undergo continuous electrocardiogram (ECG) and pulse oximetry monitoring. For ECG, place electrodes on the chest and extremities to record electrical activity of the heart. A monitor in the OR displays this activity. Pulse oximetry monitors oxygen saturation. Apply an electrical cautery grounding pad to the skin so cauterizing instruments can be used safely. Apply **graded compression stockings** (e.g., elastic stockings). Document compression device application, capillary refill, and patient tolerance to procedures. For limb surgeries assess peripheral pulses distal to the operative site. Measure temperature continuously via bladder, oesophageal, or rectal probes.

Latex Sensitivity/Allergy: As the incidence and prevalence of **latex sensitivity** and allergy increase, the need for recognition of potential sources of latex is extremely critical.

The OR and post-anaesthesia care unit (PACU) have many products that contain latex (e.g., gloves, IV tubing, syringes, and rubber stoppers on bottles and vials). It is also present in common objects such as adhesive tape, disposable electrodes, endotracheal tube cuffs, protective sheets, and ventilator equipment. Signs and symptoms of a latex reaction include local effects ranging from urticaria and flat or raised red patches to vesicular, scaling, or bleeding eruptions.

Acute dermatitis is sometimes present. Rhinitis and/or rhinorrhea are other common reactions to mild and severe latex allergy. Immediate hypersensitivity reactions are life threatening, with the patient exhibiting focal or generalized urticaria and oedema, bronchospasm, and mucus hypersecretion, all of which can compromise respiratory status.

Introduction of Anaesthesia: Patients undergoing surgical procedures receive one of four types of anaesthesia: general, regional, local, or conscious sedation.

a. General Anaesthesia (GA): Modern anaesthetic agents are much easier to reverse and allow the patient to recover with fewer negative effects. General anaesthesia results in an immobile,

quiet patient who does not recall the surgical procedure. The patient's amnesia acts as a protective measure from the unpleasant events of the procedure. An anaesthesia provider gives general anaesthetics by IV infusion and inhalation routes through the three phases of anaesthesia: *induction, maintenance, and emergence*. Surgery requiring general anaesthesia involves major procedures with extensive tissue manipulation. Induction includes the administration of anaesthetic agents and endotracheal intubation. The maintenance phase includes positioning the patient, preparing the skin for incision, and the surgical procedure itself. Appropriate levels of anaesthesia are maintained during this phase. During emergence anaesthetics are decreased, and the patient begins to awaken. Because of the short half-life of today's medications, emergence often occurs in the OR. The duration of anaesthesia depends on the length of surgery. The greatest risks from general anaesthesia are the side effects of anaesthetic agents, including cardiovascular depression or irritability, respiratory depression, and liver and kidney damage.

- b. Regional Anaesthesia.** Induction of **regional anaesthesia** results in loss of sensation in an area of the body. The method of induction such as spinal, epidural, or a peripheral nerve block influences the portion of sensory pathways that are anesthetised. No loss of consciousness occurs with regional anaesthesia, but the patient is often sedated. The anaesthesia provider gives regional anaesthetics by infiltration and local application. It is necessary to frequently observe the position of extremities and the condition of the skin.
- c. Local Anaesthesia.** It involves loss of sensation at the desired site (e.g., a skin growth or the cornea of the eye). The anaesthetic agent (e.g., lidocaine [Xylocaine]) inhibits nerve conduction until the drug diffuses into the circulation. It is injected locally or applied topically. The patient experiences a loss in pain and touch sensation and motor and autonomic activities (e.g., bladder emptying). Local anaesthesia is common for minor procedures performed in ambulatory surgery.
- d. Conscious Sedation.** It is routinely used for procedures that do not require complete anaesthesia but rather a depressed level of consciousness. A patient under conscious sedation must independently maintain a patent airway and adequate ventilation and be able to respond appropriately to verbal stimuli or light tactile stimulation. Short-acting IV sedatives such as midazolam (Versed) are given. Advantages of conscious sedation include adequate sedation, reduction of fear and anxiety, amnesia, relief of pain and noxious stimuli, mood alteration, elevation of pain threshold, enhanced patient cooperation, stable vital signs, and rapid recovery. A variety of therapeutic procedures is appropriate for conscious sedation.

Nurses assisting with the administration of local anaesthesia and conscious sedation need to demonstrate competency in the care of these patients. Knowledge of anatomy, physiology, cardiac dysrhythmias, procedural complications, and pharmacological principles related to the administration of individual agents is essential. You also need to assess, diagnose, and intervene in the event of untoward reactions and demonstrate skill in airway management and oxygen delivery

Positioning the Patient for Surgery; During general anaesthesia the nursing personnel and surgeon often do not position the patient until the stage of complete relaxation. The surgical approach usually determines the choice of position. Ideally the patient's position provides good access to the operative site, sustains adequate circulatory and respiratory function, and ensures the patient's safety and skin integrity. It should not impair neuromuscular structures. An alert person maintains normal range of joint motion by pain and pressure receptors. If a joint is extended too far, pain stimuli provide a warning that muscle and joint strain is too great. In a patient who is anaesthetised, normal defence mechanisms cannot guard against joint damage, muscle stretch, and strain. The muscles are so relaxed that it is relatively easy to place the patient in a position the individual normally could not assume while awake. He or she often remains in a given position for several hours. Although it may be necessary to place a patient in an unusual position, try to maintain correct alignment and protect him or her from pressure, abrasion, and other injuries. Positioning should not impede normal movement of the diaphragm or interfere with circulation to body parts. If restraints are necessary, pad the skin to prevent trauma.

Documentation of Intraoperative Care: Throughout the surgical procedure, keep an accurate record of patient care activities and procedures performed by OR personnel. Documentation of intraoperative care provides useful data for the patient's postoperative period.

Nursing Diagnosis

Review preoperative nursing diagnoses and modify them to individualize the care plan in the OR. The following are some common nursing diagnoses relevant to the patient intraoperatively: Ineffective airway clearance, risk for deficient fluid volume, risk for perioperative positioning injury and risk for impaired skin integrity.

Postoperative Surgical Phase

After surgery a patient's care is often complex as a result of physiological changes. The type of anaesthesia, nature of surgery, and the patient's previous condition determine the phases of recovery that he or she undergoes and the length of time spent in convalescence on an acute care nursing unit. Typically at the end of surgery the anaesthesia provider and the circulating nurse accompany the patient to the PACU and provide a report to the nursing staff. Patients who undergo general anaesthesia are more likely to face complications than those who have only local anaesthesia or conscious sedation.

Before the patient arrives in the PACU, a PACU nurse obtains data from the surgical team in the OR regarding the patient's general status and need for special equipment and nursing care. Careful planning allows the nursing staff to consider placement of patients in the PACU. Use standard precautions for infection control for all patients. When the patient is admitted to phase I recovery, personnel notify the nurses on the acute care nursing unit of his or her arrival.

This allows the nursing staff to inform family members. Family members usually remain in the designated waiting area so they can be found when the surgeon arrives to explain the patient's condition. *It is the surgeon's responsibility to describe the patient's status, the results of surgery, and any complications that occurred.*

A standardized approach or tool for “hand-off” communications assists in providing accurate information about a patient’s care, treatment and services, current condition, and any recent or anticipated changes. The surgical team’s report includes a review of anaesthetic agents administered so the PACU nurse is able to anticipate how quickly a patient should regain consciousness and analgesic needs. The OR nurse or anaesthesia provider discusses whether there were complications during surgery such as excessive blood loss or cardiac irregularities. He or she also reports intraoperative patient positioning and condition of the skin. Frequently this report takes place while PACU nurses are admitting the patient. The PACU nurse attaches the patient to monitoring equipment such as the non-invasive blood pressure monitor, ECG monitor, and pulse oximeter. Patients often receive some form of oxygen in this immediate recovery period. After receiving hand-off communication from the OR, the PACU nurse conducts a complete systems assessment during the first few minutes of PACU care. Assessments are performed at least every 15 minutes or more frequently, depending on the patient’s condition and unit policy. This assessment usually continues until discharge from the PACU. In the PACU, nursing interventions focus on monitoring and maintaining airway, respiratory, circulatory, and neurological status and managing pain. When the patient is stable, the OR staff transport the patient on a stretcher to the nursing unit. Staff members from the unit assist in safely transferring the patient to a bed.

Maintaining Respiratory Function: To prevent respiratory complications begin pulmonary interventions early. The benefits of thorough preoperative teaching are reached when patients are able to participate actively in postoperative exercises. When patients awaken from anaesthesia, help them maintain a patent airway. Position the patient on one side with the face downward and the neck slightly extended to facilitate a forward movement of the tongue and the flow of mucus secretions out of the mouth. Suction artificial airways and the oral cavity for mucus secretions. Before you remove an artificial airway (or the patient removes it), suction the back of the airway so secretions are not retained.

Achieving Rest and Comfort: Pain control is a priority to facilitate a surgical patient’s recovery. A patient’s pain increases following surgery as the effects of anaesthesia diminish. The patient becomes more aware of the surroundings and more perceptive of discomfort. The incisional area is only one source of pain. Irritation from drainage tubes, tight dressings, or casts and the muscular strains caused from positioning on the OR table also cause discomfort. It is common to administer opioid analgesics (e.g., morphine or fentanyl) immediately after surgery. Initial analgesic doses are usually given by IV infusion in the PACU and titrated to patient comfort.

Temperature Regulation: Temperature regulation is important after surgery. Patients are often cool after surgery; the PACU nurse provides warmed blankets immediately. If the temperature is 35.6° C (96° F) or below, use forced air or a convective warming device. Increasing body warmth causes the patient’s metabolism to rise and circulatory and respiratory functions to improve. Shivering is not always a sign of hypothermia but rather a side effect of certain

anaesthetic agents. Deep breathing and coughing are performed to help to expel retained anaesthetic gases.

Malignant hyperthermia is a potentially lethal condition that can occur in patients receiving various inhaled anaesthetic agents and succinylcholine. Suspect this when there is unexpected tachycardia and tachypnoea; elevated carbon dioxide levels; jaw muscle rigidity; body rigidity of limbs, abdomen, and chest; or hyperkalaemia. Surgical patients are at risk for infection for various reasons. If a patient becomes febrile, be aggressive in providing routine postoperative nursing interventions. For example, deep breathing and coughing, early ambulation, prompt removal of indwelling urinary and IV catheters, and aseptic care of the surgical wound decrease the risk of postoperative infections. Obtain wound and or blood cultures from patients suspected of having infections.

Maintaining Neurological Function: Orientation to the environment is important in maintaining the patient's mental status. Reorient the patient, explain that surgery is completed, and describe procedures and nursing measures. The patient who was properly prepared before surgery is less likely to be anxious during the postoperative period. Report any change in level of consciousness to health care providers.

Maintaining Fluid and Electrolyte Balance: An important nursing responsibility is maintaining patency of IV infusions in the postoperative period. The patient's only source of fluid intake immediately after surgery is through IV catheters. The health care provider orders a prescribed rate for each infusion. As the patient begins to take and tolerate oral fluids, the IV rate is decreased. When an ambulatory surgical patient awakens and is able to tolerate fluids by mouth without GI upset, the health care provider orders removal of the IV catheter.

Promoting Normal Bowel Elimination and Adequate Nutrition: Normally a patient who has had general anaesthesia does not receive fluids to drink in the PACU because of bowel sluggishness, the risk of nausea and vomiting, and grogginess from general anaesthesia. To minimize nausea, avoid suddenly moving the patient. For patients at high risk for the development of nausea and vomiting or those who must not vomit (e.g., eye surgery), a combination of anti-emetics is often more effective than a single agent. If the patient has an NG tube, keep it patent by irrigating it. Occlusion of an NG tube results in accumulation of gastric contents within the stomach. Patients who have had abdominal surgery are usually NPO the first 24 to 48 hours. As flatus and peristalsis return, provide clear liquids, followed by full liquids, a light diet of solid foods, and finally a patient's usual diet. Encourage intake of foods high in protein and vitamin C.

Promoting Urinary Elimination: The depressant effects of anaesthetics and analgesics impair the sensation of bladder fullness. If bladder tone is reduced, the patient has difficulty starting urination. However, patients need to void within 8 to 12 hours after surgery. Because a full bladder is painful and often causes restlessness in recovery, it often becomes necessary to insert a straight catheter. If the patient has an indwelling urinary catheter, the goal is to remove it as soon as possible. Monitor I&O. If a patient has an indwelling catheter, expect an output of about 30 to

50 mL/hr. An accepted level of urinary output is at least 1 mL/kg/hr for adults. For example, a 132-pound woman (60 kg) would be expected to produce 60 mL of urine hourly.

Promoting Wound Healing: A surgical wound undergoes considerable stress during convalescence. The stresses of inadequate nutrition, impaired circulation, and metabolic alterations increase the risk for delayed healing. A clean surgical wound usually does not regain strength against normal stress for 15 to 20 days after surgery. Use aseptic technique during dressing changes and wound care. Keep surgical drains patent so accumulated secretions can escape from the wound bed. Ongoing observation of the wound identifies early signs and symptoms of infection.

Nursing Diagnosis

The following are some of post-operative nursing diagnoses; ineffective airway clearance, anxiety, fear, risk for infection, deficient knowledge, impaired physical mobility, nausea, acute pain and delayed surgical recovery.

Postoperative Complications

Respiratory System

Atelectasis: Collapse of alveoli with retained mucus secretions. Anaesthesia, analgesia, and immobilized position prevent full lung expansion.

Pneumonia: It occurs as a result of poor lung expansion with retained secretions or aspirated secretions.

Pulmonary embolism: Embolus blocking pulmonary arterial blood flow to one or more lobes of lung. Signs and symptoms include dyspnoea, sudden chest pain, cyanosis, tachycardia, and drop in blood pressure. Same factors lead to formation of thrombus or embolus. Immobilized surgical patient with pre-existing circulatory or coagulation disorders is at risk.

Circulatory System

Haemorrhage.

Hypovolemic shock

Thrombophlebitis: Inflammation of vein often accompanied by clot formation. Veins in legs are most commonly affected. Signs and symptoms include swelling and inflammation of involved site and aching or cramping pain. Vein feels hard, cordlike, and sensitive to touch. Prolonged sitting or immobilization aggravates venous stasis. Trauma to vessel wall and hypercoagulability of blood increase risk of vessel inflammation.

Thrombus: Formation of clot attached to interior wall of a vein or artery, which can occlude the vessel lumen. Symptoms include localized tenderness along distribution of the venous system, swollen calf or thigh, calf swelling >3 cm (1.2 in) compared to asymptomatic leg, pitting oedema in symptomatic leg, and decrease in pulse below location of thrombus (if arterial).

Embolus: Piece of thrombus that has dislodged and circulates in bloodstream until it lodges in another vessel (commonly lungs, heart, brain, or mesentery).

Gastrointestinal System

Paralytic ileus: Non-mechanical obstruction of the bowel caused by physiological, neurogenic, or chemical imbalance associated with decreased peristalsis. It is common in initial hours after

abdominal surgery. Handling of intestines during surgery leads to loss of peristalsis for a few hours to several days.

Abdominal distention: Retention of air within intestines and abdominal cavity during gastrointestinal surgery. Signs and symptoms include increased abdominal girth, patient complaints of fullness, and “gas pains.” Slowed peristalsis from anaesthesia, bowel manipulation, or immobilization.

Nausea and vomiting

Genitourinary System

Urinary retention: Involuntary accumulation of urine in bladder as result of loss of muscle tone. Signs and symptoms include inability to void, restlessness, and bladder distention. It appears 6-8 hours after surgery.

Urinary tract infection: Signs and symptoms include dysuria, itching, abdominal pain, possible fever, cloudy urine, presence of WBCs and leukocyte esterase positive on urinalysis. It is most frequently a result of catheterization of the bladder.

Integumentary System

Wound infection: An invasion of deep or superficial wound tissues by pathogenic microorganisms; signs and symptoms include warm, red, and tender skin around incision; fever and chills; purulent material exiting from drains or from separated wound edges. Infection usually appears 3-6 days after surgery. Infection is caused by poor aseptic technique or contaminated wound or surgical site before surgical exploration

Wound dehiscence: Separation of wound edges at suture line. Signs and symptoms include increased drainage and appearance of underlying tissues. This usually occurs 6-8 days after surgery. Malnutrition, obesity, preoperative radiation to surgical site, old age, unusual strain on suture line from coughing or positioning and poor circulation to tissues are causes of dehiscence.

Wound evisceration: Protrusion of internal organs and tissues through incision. Incidence usually occurs 6-8 days after surgery. Patient with dehiscence is at risk for developing evisceration.

Skin breakdown: Result of pressure or shearing forces. Surgical patients are at increased risk if alterations in nutrition and circulation are present, resulting in oedema and delayed healing.

Prolonged periods on the OR table and in the bed after surgery lead to pressure breakdown. Skin breakdown results from shearing during positioning on the OR table and improperly pulling patient up in bed.

Nervous System

Intractable pain: Pain that is not amenable to analgesics and pain-alleviating interventions.

Intractable pain may be related to the wound or dressing, anxiety, or positioning.

Malignant hyperthermia: Severe hypermetabolic state and rigidity of the skeletal muscles caused by an increase in intracellular calcium ion concentration. Rare genetic condition triggered with exposure to inhaled anaesthetic agents and the depolarizing muscle relaxant succinylcholine.

