

Nursing

Lecture 1

Introduction to nursing

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<u>Definition of nursing:</u> is an integral part of the health care system, encompasses the promotion of health, prevention of illness, and care of physically ill, mentally ill, and disabled people of all ages.

The nurse is a person who has completed a program of basic, generalized nursing education .

OBJECTIVE OF NURSING IN WARD:

- 1. Qualitative care to the patient.
- Care based on the patient's needs.

- Accurate assessment of illness.
- Adequate material resources at all times.
- 5. Health education to the patient and attendants.
- 6. Managerial skills as and when required.
- Privacy at all levels. Nurses develop a plan of care, working together with physicians, the patient, the patient's family, and other team members that focuses on treating illness to improve quality of life.
- Working independently and with other health care professionals, nurses promote the health of individuals, families, and communities.

Nursing activities include the following:

- 1. Providing direct care to the ill person, such as administering medications and specific procedures.
- 2. Performing diagnostic and assessment procedures, such as measuring blood pressure.
- 3. Consulting with other health care professionals about patient problems.
- 4. Teaching patients about recovery activities, such as exercises that will accelerate recovery after a stroke .
- 5. Rehabilitating patients to their optimal functional level following physical or mental illness and injury .

Standards of Clinical Nursing Practice:

- 1. Assessment: the nurse collects patient health data.
- 2. Diagnosis: the nurse analyzes the assessment data in determining diagnoses.
- 3. Outcome identification: The nurse identifies expected outcomes individualized to the patient.
- 4. Planning: the nurse develops a plan of care that prescribes interventions to attain expected outcomes.
- 5. Implementation: the nurse implements the interventions identified in the plan of care.
- 6. Evaluation: the nurse evaluates the patients progress toward attainment of outcomes.

Nursing process: is a systemic method for providing care to patients.

Purposes of nursing process:

- 1) Providing a good quality nursing care.
- 2) Directs nursing activities for health promotion, health protection, and disease prevention .

Phases of nursing process:

- 1. Assessment phase: Is the first step in the nursing process and includes
- Data collection

- Data verification
- Data organization
- Data interpretation
- Data documentation

medication.

- **Diagnosis phase :** Involves further analysis and synthesis of the data that have been collected . Medical diagnosis is a clinical judgment by the physician that identifies or determines a specific disease, condition, or pathological state.
- 3. <u>Planning phase:</u> Based on the assessment and diagnosis, teaching the patient include moving from bed to chair at least three times per day; maintaining adequate nutrition by eating smaller, more frequent meals and managing pain through adequate

- Implementation phase: It consists of performing nursing activities. This phase requires nursing interventions such as applying a cardiac monitor or oxygen, direct or indirect care, medication administration, standard treatment protocols.
- **Evaluation phase:** This final step of the nursing process is important to a positive patient outcome. Reassessment may frequently be needed depending upon overall patient condition.



Nursing

Lecture 2

Pre-operative nursing management

and general physical assessment

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- ☐ There are 3 phases of surgery:
- 1) <u>Preoperative phase:</u> period of time from decision for surgery until patient is transferred into operating room
- 2) <u>Intraoperative phase:</u> period of time from when patient is transferred into operating room to admission to post-anesthesia care unit (PACU)
- 3) <u>Postoperative phase:</u> period of time from when patient is admitted to PACU to follow-up evaluation in clinical setting or at home

Nurse duties in the preoperative phase include:

- 1. Pre-operative assessment
- 2. Obtaining informed consent
- 3. Pre-operative teaching
- 4. Physical preparation of patient
- 5. Psychological preparation of patient

1. <u>Pre-operative assessment</u>

- A. Review preoperative laboratory and diagnostic tests:
- Complete blood count.
- Blood group and cross match
- blood urea , serum creatinine and random blood sugar
- Virological screen
- ➤ Chest X-rays
- **ECG**
- ➤ Other tests related to procedure or patient's medical condition such as: bleeding time, clotting time, and other tests .

- B. Obtain medical history: including past medical history, past surgical history and past drug history
- C. Physical assessment : includes checking
- Vital signs (Blood pressure, pulse rate, respiratory rate, spO2, temperature)
- Level of consciousness
- ➤ Weight and height
- D. Psychological assessment : includes the patient's understanding of the surgery and previous surgical experiences .

Obtaining informed consent

Before surgery, the patient must sign a surgical consent form or operative permit.

Patients must sign a consent form for any procedure that requires anesthesia and

has risks of complications. If an adult patient is confused, unconscious, a family

member must sign the consent form. If the patient is younger than 18 years of age,

a parent or legal sign the consent form.

3. <u>Pre-operative teaching</u>

The purpose of preoperative teaching is to decrease patient anxiety and prepare the patient for surgery, It will also decrease fear. Preoperative teaching can alter unfavorable attitudes, influence postoperative recovery and promote satisfaction with care. Instruction about the surgery itself includes informing the patient about what will be done during the surgery, and how long the procedure is expected to take. Explain how to deep breathing and coughing exercises. Pre-operative medication medications are given before surgery to decrease anxiety and provide sedation, sometimes antibiotic might be given too before surgery.

Educate the patient how to change position to prevent bedsores and leg exercise to prevent formation of deep vein thrombosis post-operatively. Encouraging mobility and active body movement.

4. Physical preparation of the patient

Physical preparation of patient includes:

Nutrition and fluids: the patient should be adequately hydrated and fed. Patient should be fasting 8 hours prior to surgery. Inadequate intake or an improper diet can impair the patient's ability to tolerate the stress of surgery, It may also have an impact on wound healing.

- ➤ Bowel and bladder elimination :enema may be used , Foley catheter might be placed before the surgery .
- > Removal of jewelry and other objects
- > Recent vital signs checking
- > The patient should wash and clean the operative site.



Nursing

Lecture 3

Pre-anesthetic, intra-anesthetic and

post-anesthetic management of the patient

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Pre-anesthetic management

□ Pre-anesthetic evaluation is the first step in a series of anesthetic actions performed on a patient. The things that need to be done include history taking, physical examination, laboratory examination, and physical status checking.

Pre-anesthetic evaluation goals:

- Determine the physical status of pre-operative patients,
- 2) Analyze the type of surgery
- 3) Choose the type and technique of anesthesia
- 4) Predict complications that may occur
- 5) Prepare drugs and anesthesia tools

- In elective surgery, pre-anesthesia evaluation is done a few days before surgery, then the day before surgery, then the morning before the patient is sent to the operating room and finally performed in the preparation room to determine physical status.
- □ In emergency surgery, the evaluation is carried out in the emergency room (IRD) operating room preparation room, because the time available for evaluation is very limited.
- ☐ The physical status that needs to be considered in the pre-anesthesia evaluation starts with the problems of the experience of surgery and anesthesia that have been experienced and the physiological changes caused by the disease, both diseases that are planned for surgery and other diseases that accompany it

Pre-anesthesia evaluation of the patient's psychological status is no less important than his physical status. The patient's psychological readiness can be done by educating the patient and the patient's family about the anesthesia procedure that will be undertaken, anesthesia drugs that will be used before, during, and after surgery, side effects of anesthetic drugs given, and surgical procedures to be performed.

□ Pre-anesthesia evaluation includes :

➤ <u>Anamnesis</u>: anamnesis must start from the patient's identity. The patient should be asked about Specific history related to the surgical disease, complete medical history which includes past medical history, history of the use of drugs that might interact with anesthetics, and history of allergy to drug.

▶ Physical examination: examination of level of consciousness, respiratory rate, blood pressure, pulse rate and body temperature, examination of psychological states such as anxiety, fear and pain. Investigation such as complete blood count, blood group and Rh, blood urea, serum creatinine, random blood sugar, virological test, covid 19 test, ECG, Chest x-ray, bleeding time and clotting time.

Pre-anesthesia preparation include :

- ➤ Psychological support
- Physical preparation include stop smoking and stop using certain drugs , fasting 8 hours before operation .

Intra-anesthetic management

- □Intra-anesthesia period : is the period of time during which the patient is anesthetized during the surgical operation .
- During anesthesia , continuous monitoring of :
- 1) Blood pressure
- 2) Pulse rate
- 3) Respiratory rate
- 4) Oxygen saturation by pulse oximeter
- 5) Temperature
- 6) ECG

■ Types of anesthesia :

General anesthesia: general anesthesia makes the entire body, including the brain, into a state of unconsciousness during which the patient has no awareness and feels nothing. General anesthesia is administered by injection or through a breathing mask, or sometimes both. In order to control breathing, patients are intubated, which is the insertion of a flexible tube down the trachea. The tube is inserted after the anesthesia is given and removed as patient is waking up and breathing adequately, upon awakening from anesthesia, patients may have mild sore throat from the intubation. Sometimes laryngeal mask

airway can be used instead of intubation.

- Local anesthesia: regional anesthesia is the injection of a local anesthetic around major nerves or the spinal cord (Nerve block) to block pain from a large region of the body, such as a limb. Regional anesthesia provides muscle relaxation as well as postoperative pain relief since its effects can last 8 to 12 hours, depending on the dose. This reduces the need for pain medicine after surgery, as well as other side effects of surgery, such as nausea.
- 3. <u>Epidural / spinal anesthesia :</u> epidural and spinal anesthesia can be used for most surgeries below the umbilicus .

- Epidural anesthesia: is administered in the lower back/lumbar region using a special needle that is inserted between the vertebrae of the spinal column into the epidural space around the spine. Once in place, a small catheter(tube) is placed into the epidural space via the needle, and then the needle is removed, leaving the tube in place. Local anesthetics and narcotics are then given through the catheter.
- B) <u>Spinal Anesthesia</u>: is administered in the lower back/lumbar region using a spinal needle that is inserted between the vertebrae of the spinal column into the dural membrane, which covers the spine and nerve roots. Once in place, a

local anesthetic and sometimes a nametic are given through the needle, then

Post-anesthetic management

- □ <u>Post-anesthetic care</u>: it is the specialized care given to the patients who have undergone anesthetic management.
- □ Purposes of post-anesthesia care are :
- 1) Enable a successful and faster recovery of the patient post operatively.
- 2) To reduce post operative mortality rate.
- 3) To reduce the length of hospital stay of the patient.

Airway management and oxygen administration In the post anesthesia period, vital signs (blood pressure, pulse rate, respiratory) rate, temperature, Spo2) should be monitored. Monitoring your surgical site (for bleeding , mucopurulent discharge , swelling , hematoma, infection), **dressings**, **drains** and **tubes**. Giving medication to control the post-operative pain. Treat the post-operative nausea vomiting and shivering.



Nursing

Lecture 4

Introperative nursing management,

Nursing care in recovery room

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Introperative nursing management

- The intraoperative phase extends from the time the patient is admitted to the operating room, to the time of anesthesia administration, performance of the surgical procedure and until the patient is transported to the recovery room or postanesthesia care unit (PACU).
- ☐ Goals of introperative phase :
- 1) <u>Asepsis</u>: surgical asepsis is a state of absence of all microorganism

- 2) Safe administration of anesthesia
- 3) <u>Hemostatsis</u>: is the mechanism that leads to stop bleeding from a blood vessel.
- □ Surgical team consists of :
- 1) Surgeon
- 2) Anesthesiologist
- 3) Operating room nurse: responsibility of the operating room nurse nurse is
- A. Assures cleanliness in the Operating room.
- B. Guarantees the proper room temperature, humidity and lighting in Operating room.

- C. Make certain that equipments are safely functioning.
- D. Ensure that supplies and materials are available for use during surgical procedures.
- E. Monitors aseptic technique while coordinating the movement of related personnel.
- F. Monitors the patient throughout the operative procedure to ensure the person's safety and well being
- 4) Perioperative nurse: responsibility of scrub nurse is

A. Scrubbing for surgery.

- C. Preparing sutures and special equipments.
- D. Assists the surgeon and assistant during the surgical procedure by anticipating the required instruments, drains and other equipment.
- E. Checks equipments and materials such as needles, and instruments as the surgical incision is closed
- □ Nursing Assessment after anesthesia:
- 1) Monitoring vital signs.
- 2) Observe patient and record the time when motion and sensation of the legs and the toes return.

Nursing care in recovery room

- ☐ The recovery room: is a special nursing unit that the patient is taken to after surgery to safely regain consciousness from anesthesia and receive appropriate post-operative care.
- □ Patients who have had surgery or diagnostic procedures requiring anesthesia or sedation are taken to the recovery room, where their vital signs (e.g., pulse, blood pressure, temperature, blood oxygen levels) are monitored closely as the effects of anesthesia wear off. The patient may be disoriented when he or she regains consciousness, and the recovery room nursing staff will work to ease their anxiety and ensure their physical and emotional comfort.

- ☐ The purpose of a recovery room is to provide direct and continuous patient observation during emergence from general or regional anesthesia.
- The recovery room staff will pay particular attention to the patient's respiration, or breathing, as the patient recovers from anesthesia. A pulse oximeter measure the oxygen saturation level of the blood, is usually used to assess respiratory stability. If the oxygen saturation level is too low, supplemental oxygen may be administered through a nasal cannula or face mask. Intravenous fluids are also frequently administered in the recovery room.

- □ Because general anesthesia can cause a patient's body temperature to drop several degrees, retaining body heat to prevent hypothermia and encourage good circulation is also an important part of recovery room care. Patients may be wrapped in blankets
- The amount of time a patient requires in the recovery room will vary by surgical or diagnostic procedure and the type of anesthesia used. As the patient recovers from anesthesia, their post-operative condition is assessed by the recovery room nursing staff. A doctor may order analgesic or antiemetic medication for any pain or nausea and vomiting, and the surgeon and/or anesthesiologist may come by to examine the patient.
- of complications he is prepared to return to the nursing unit

Complications in the recovery room

The first hours after surgery require alert attention to prevent occurrence of complications that may happen while the patient is in the recovery room.

Respiratory distress: is caused by laryngospasms (a complication that may happen after the patient's endotracheal tube is removed by the anesthetist or anesthesiologist), by aspiration of vomitus, or by preoperative medications. Some preoperative medications can depress respirations, especially morphine. If the patient's breathing is obstructed because his tongue has fallen back and has obstructed the nasopharynx, the lower jaw is pulled forward and an oropharyngeal

airway is inserted . The airway is left in p 9 until

the patient is conscious. The airway prevents the tongue of the unconscious patient from blocking the air passages . Nursing duties to prevent respiratory distress are :

- 1) Report labored and shallow or rapid respirations to the Charge Nurse
- 2) Maintain patent airway with oropharyngeal airway
- 3) Suction the patient via nose and/or orally as ordered.
- 4) Maintain the patient's position to facilitate lung expansion
- 5) Administer oxygen as ordered.
- 6) Maintain patient's position to prevent aspiration of vomitus

- <u>Hypovolemic Shock</u>: Hemorrhage secondary to surgery, which may be internal or external, may cause hypovolemic shock. Nursing duties for the early detection of hypovolemic shock;
- 1) Inspect the surgical dressing and report bleeding to the Charge Nurse.
- 2) If the patient has a large dressing in place, always check under the patient because the blood may drain down the sides and pool under the patient. There may be no evidence of bleeding on the top of the dressing.
- 3) Reinforce the original dressing after indicating outline of blood perimeter stain on original dressing.

- 4) Report to the Charge Nurse the color and amount of blood. Bright red blood indicates fresh bleeding; brownish blood indicates bleeding that is not fresh.
- 5) Record all of the above events in the Nursing Notes.
- 6) Monitor vital signs as ordered and report : fall in blood pressure , rapid and weak pulse , restlessness , cold and moist skin .
- 7) Administer fluids to replace volume as ordered by the physician. Fluids include whole blood products, plasma expanders, and Intravenous fluids.

General nurse duties for the care of patient

- Maintain proper functioning of drains, tubes, and intravenous lines.
- ☐ Prevent kinking or clogging that interferes with adequate drainage of catheters and drainage tubes.
- ☐ Encourage and assist the patient to cough, to turn frequently, and to take deep breaths several times each hour
- ☐ Monitor the patient's intake and output accurately, including all Intravenous line, blood products, urine, emesis, Nasogastric tube drainage

- ☐ Prevent nosocomial infections by washing your hands before and after working with each patient. Maintain aseptic technique for incisional wound care and turn the patient frequently to prevent respiratory infections.
- Observe for and report any feeling/movement of the patient if he has had a spinal anesthetic
- □Observe and document the recovery room patient's level of consciousness:
- a) Alert -- The patient will be able to give appropriate response to stimuli.
- b) Drowsy -- The patient is half asleep and sluggish.
- c) (c) Stupor -- The patient is lethargic and unresponsive, unaware of surroundings.
- d) Comatose -- The patient is unconscious and unresponsive to stimuli

- □ Provide emotional support to the patient and family.
- □When the patient is cleared by the surgeon, call the receiving nursing unit and give the report include the following information :
- a) Patient's name
- b) Type of surgery.
- c) Mental alertness.
- d) Time of vital signs and results
- e) Presence, type, and functioning of drainage tubes, IV, etc.
- f) If patient has voided or not.

Oral / nasal suctioning to the recovery room patient

Oral/nasal suctioning is suctioning of the upper airway passages of the nose, mouth, and pharynx. This procedure is used to assist the patient in eliminating secretions before he has regained full consciousness and cannot spit out secretions. The catheter used should be soft. When employ suctioning, must prevent the introduction of pathogens into the lower airways. Clean technique and thorough handwashing are essential for pharyngeal suctioning of the oral and nasal cavities, but aseptic technique is mandatory for deep suctioning in the tracheobronchial tree and for the intubated patient.

- Oral / nasal suctioning procedure is done as following :
- a) Identify the patient. If the patient is conscious, explain the suctioning procedure to him and that it may stimulate the cough reflex.
- b) Observe the patient for evidence of airway obstruction due to secretions.
- c) Position the patient on one side
- d) Moisten the suction catheter tip in the cup of water to reduce friction.
- e) Insert the catheter tip gently into the patient's nose or mouth.
- f) Advance the catheter to the posterior oral/nasal pharynx.
- g) Begin suctioning

- h) Suction all secretions from the area, Suction for no more than 15 seconds
- i) Rinse the catheter in the cup of water after each insertion.
- j) Repeat the suctioning procedure as necessary until the patient's airway is clear.
- k) Reobserve the patient for evidence of airway obstruction due to secretions.
- Assist the patient to a comfortable position while maintaining a patent airway.

Endotracheal suctioning to the recovery room patient

□ Endotracheal suctioning can be done through an endotracheal tube that the physician inserts through the patient's mouth and into the trachea.



Nursing

Lecture 5

Post-operative nursing care

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Post-operative nursing care

- Postoperative care in simple terms is the care a person receives after having undergone a surgical procedure. Postoperative care is given immediately during the Postoperative period. As such the post operative care begins in the operating room itself and is followed into the post anesthesia care unit (PACU) and even continues at the patient's home up until the period the surgical wound is healed.
- ☐ The post operative period begins from the time the patient leaves the operating room and ends with the follow up visit by the surgeon.

□ Purposes of the post-operative care :

- 1) To enable a successful and faster recovery of the patient post operatively.
- 2) To reduce post operative mortality rate.
- 3) To reduce the length of hospital stay of the patient.
- 4) To provide quality care service.
- 5) To reduce hospital and patient cost during post operative period.

Post-operative Nursing Care

□ Airway :

- > Keep airway in place until the patient is fully awake and tries to eject it. The airway is allowed to remain in place while the client is unconscious to keep the passage open and prevents the tongue from falling back.
- > Suction secretions as needed.
- □ Breathing:
- ➤ Bilateral lung auscultation frequently.

- ➤ Rest and place the patient in a lateral position with the neck extended, if not contraindicated, this position promotes chest expansion and facilitates breathing and ventilation.
- > Humidified oxygen administration.

Circulation :

- ➤ Obtain patient's vital signs as ordered and report any abnormalities.
- Monitor intake and output .
- > Recognize early symptoms of shock or hemorrhage such as cold extremities, decreased urine output (less than 30 ml/hour), decreasing blood pressure,

increased heart rate.

■ <u>Assessment of vital signs</u>: (blood pressure, pulse rate, respiratory rate, SpO2, body temperature

☐ Thermoregulation:

- ➤ Hourly temperature assessment to detect hypothermia or hyperthermia
- > Report temperature abnormalities to the physician.
- Monitor the patient for post-anesthesia shivering

☐ Fluid volume :

- Assess and evaluate patient's skin color and turgor, mental status and body temperature.
- Monitor and recognize evidence of fluid and electrolyte imbalances such as nausea and vomiting and body weakness.

Recognize signs of fluid imbalances. Hypovolemia: decreased blood pressure, decreased urine output, increased pulse rate, increased respiration rate, Hypervolemia: increased blood pressure, changes in lung sounds om auscultation such as presence of crackles in the base of both lungs.

☐ Gasrointestinal function and nutrition:

- ▶ If in place, maintain nasogastric tube and monitor patency and drainage.
- > Provide symptomatic therapy, including antiemetic medications for nausea and

Assist patient to return to normal dietary intake gradually (liquids first, then soft foods, then solid food).

□<u>Drainage :</u>

> Presence of drainage , presence and condition of dressings

□ Skin Integrity:

- > Record the amount and type of wound drainage
- > Regularly inspect dressings and reinforce them if necessary.
- Proper wound care as needed.
- Perform hand washing before and after contact with the patient.
- > Turn the patient to sides every 1 to 2 hours.

☐ Encouraging activity:

- Encourage most surgical patients to move as soon as possible.
- > Remind patient of the importance of early mobility in preventing complications
- Assist patient to change position gradually. If patient get dizziness, return to supine position and delay getting out of bed for several hours.
- Encourage frequent position changes early in the postoperative period to stimulate circulation.
- □ Pain management : by administering analgesia

Transfer of the patient to the surgical unit

- ☐ The patient is transferred from the recovery room to the surgical unit when:
- 1) Uncompromised cardiopulmonary status
- 2) Stable vital signs
- 3) Adequate urine output at least 30 ml/ hour
- 4) Orientation to time, date and place
- 5) Satisfactory response to commands
- 6) Minimal pain

- 7) Absence or controlled nausea and vomiting
- 8) Pulse oximetry readings of adequate oxygen saturation
- 9) Movement of extremities after spinal anesthesia

Handover

- ■When the patients care is transferred from the recovery room staff to the surgical ward staff it is important to have handover to be able to continue further recovery management :
- 1) Patient's name and age

- 2) Past medical history
- 3) Allergy to any medication
- 4) Details of anesthesia and surgery
- 5) Fluid/blood loss and replacement
- 6) Analgesia given during surgery
- 7) Completed drug chart for required post-op analgesia, anti-emetics and IV fluids and other relevant drugs
- 8) Details of drains and wounds

- 9) When can patient eat and drink
- 10)Baseline vital signs and observations
- 11)Specific postoperative plan

Post-operative complications

- 1) <u>Fever:</u> fever is managed by administering anti-pyretic medication as paracetamol
- 2) Nausea and vomiting: are treated with anti-emetic medication

- Abdominal Distension and Paralytic ileus: anesthesia can slow or stop the peristaltic action of the intestines resulting in abdominal distension. The patient will complain of abdominal pain and be unable to pass flatus.
- 4) <u>Pneumonia</u>: can occur postoperatively because of aspiration, infection, depressed cough reflex, immobilization, dehydration, or increased secretions from anesthesia. Signs and symptoms common to pneumonia are an elevated temperature, cough producing purulent sputum, dyspnea, and chest pain.

- 5) <u>Urinary retention</u>: inability to completely or partially empty the bladder. Can caused by pain and certain anesthetic agent
- 6) <u>Hypovolemic shock</u>: is the type most commonly seen in the postoperative patient. Hypovolemic shock occurs when there is a decrease in blood volume. Signs and symptoms are hypotension, cold skin, weak and rapid pulse, deep and rapid respirations, decreased urine output, thirst and restlessness.
- 7) <u>Hemorrhage:</u> is excessive blood loss, either internally or externally. Hemorrhage may lead to hypovolemic shock.

- 8) Thrombophlebitis and deep vein thrombosis: is inflammation of a vein associated with thrombus (blood clot) formation. Thrombophlebitis is more commonly seen in the legs of a postoperative patient. Signs and symptoms are elevated temperature, pain and cramping in the calf or thigh of the involved extremity, redness and swelling in the affected area
- 9) <u>Wound infection</u>: The wound edges should be clean and well approximated. If infection is present, the wound is slightly swollen, reddened, and feels hot. Hand washing is the most frequently used medical aseptic method and the single most effective way to prevent the spread of microorganisms that cause wound infections.

- 10) wound dehiscence: is the separation of wound edges without the protrusion of organs. Factors that can result in wound dehiscence are:
- a) Infection
- b) Malnutrition
- c) Defective suturing
- d) Unusual strain on the wound from severe vomiting, coughing, or sneezing
- e) Obesity



Nursing

Lecture 6

Management of cardiovascular surgery patient

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Cardiac surgery

□Surgical approach to the heart: The heart is approached mainly by a median sternotomy. An incision is made from the jugular or suprasternal notch to the lower end of the xiphisternum.

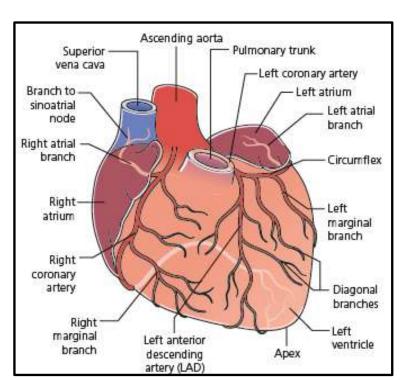
Coronary artery bypass grafting (CABG)

This involves isolating an artery from the patient's arm or chest wall, or vein from the leg, and using it to bypass a narrowed or blocked coronary artery. Patients are usually placed on a cardiopulmonary bypass (CPB) machine, which temporarily takes over the functions of the heart and lungs while allowing the surgeon to work on a still heart.

Coronary artery anatomy

- ☐ The coronary arteries are branches of the ascending aorta it gives rise to:
- 1. <u>Left coronary artery</u> which arises from the aortic root and has 2 branches:
- A. <u>Left anterior descending artery</u> is the most Frequently diseased coronary artery and most often bypassed during CABG surgery.
- B. <u>Circumflex artery</u>
- 2. Right coronary artery gives rise to

Posterior descending artery



<u>Ischemic heart disease (IHD)</u>

□ <u>Ischemic heart disease</u> describes a group of clinical syndromes characterized by myocardial ischemia, an imbalance between myocardial blood supply and demand.

□ Risk factors for IHD:

- 1. Advancing age
- 2. Male gender
- 3. Hyperlipidemia
- 4. Diabetes mellitus
- 5. Hypertension
- 6. Smoking
- 7. Family history of IHD
- 8. Obesity
- 9. Reduced physical activity

- ☐Signs and symptoms:
- 1. Chest pain
- 2. Dyspnea
- 3. Fatigue
- 4. Palpitation
- ☐ Investigations:
- 1. Electrocardiography (ECG)
- 2. Troponin and cardiac enzymes
- 3. Echocardiography
- 4. Invasive method like coronary angiography

□ Indication for surgery:

- 1. >50 % stenosis of the left coronary artery
- 2. >50 % stenosis of the proximal left anterior descending artery artery
- 3. Two or three main coronary arteries diseased
- 4. Poor ventricular function associated with multi-vessel disease

Chronic stable angina

☐ Treated surgically with percutaneous coronary intervention (PCI) or coronary artery bypass grafting (CABG)

Pre-operative Preparation for surgery (CABG)

- □ Before CABG, the severity and stability of the patient's IHD, the presence of significant valvular disease and the status of left ventricular function should be properly evaluated.
- ☐ Attention is paid to the presence of carotid artery disease, peripheral vascular disease, respiratory status, preoperative diabetic control and presence of associated diabetic complications, significant renal dysfunction or coagulopathy.
- All medications taken by the patient are noted. Ideally, some should be stopped before surgery, in particular any anti-platelet agents, including aspirin and anticoagulants, as well as oral hypoglycemics. Others drugs, such as diuretics and angiotensin-converting enzyme (ACE) inhibitors, are stopped on the discretion of the surgeon. However, apart from the exceptions noted, as a general rule all

cardiac and antihypertensive medicati 7 should be taken preoperatively.

□ Selection of conduit:

- 1. <u>Venous graft</u>: The long saphenous vein is the most common vein used as a conduit
- 2. <u>Arterial graft</u>: The left internal mammary artery or internal thoracic artery has become the conduit of choice for the Left anterior descending artery (LAD), the radial artery as a second or alternative arterial bypass graft can be used too.

Intraoperative phase of CABG

Intraoperative monitoring includes monitoring of continuous central venous pressure and blood pressure (via a central line in the internal jugular or subclavian vein and radial artery line, respectively), urine output via a urinary catheter, temperature, and the ECG.

Post-operative recovery

 The majority of patients are extubated a few hours after returning from surgery and remain in the ICU for 24 hours

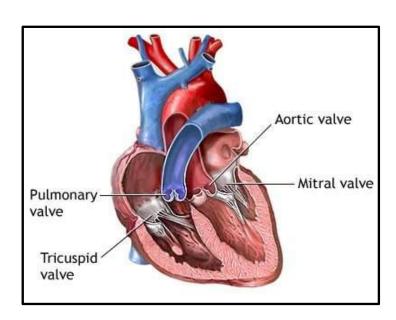
Post-operative complications

- Bleeding
- 2. **Arrhythmia**: The most common postoperative arrhythmia is sinus tachycardia, closely followed by atrial fibrillation (AF). It occurs in around 30 per cent of patients undergoing CABG and often spontaneously reverts to sinus rhythm. Treatment includes correction of potassium (>4.5 mmol/L), the use of amiodarone or digoxin.
- 3. Wound infection

Valvular heart diseases

surgical anatomy

- ☐ Heart valves function to maintain pressure gradients between cardiac chambers and so ensure unidirectional flow of blood without reflux through the heart.
- ■There are four valves in the heart :
- 1. Mitral valve
- 2. Tricuspid valve
- 3. Aortic valve
- 4. Pulmonary valve



Surgical options for heart valve disease

- 1. Valve repair
- 2. Valve replacement

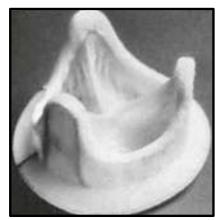
Types of prosthetic valve

1. <u>Mechanical valve</u>: can be used in any age group to replace any valve. The components of the valve are thrombogenic and therefore the patient requires systemic anticoagulation, usually with warfarin.



Mechanical valve

2. <u>Biological valve</u>: most commonly is heterograft prepared from animal tissues.



Heterograft valve

Prosthetic valve complications

- 1. Structural valve failure
- 2. Paravalvular leak
- 3. Thrombosis and thromboembolism
- 4. Prosthetic valve endocarditis

Post-operative (valvular surgery) management

- ☐ Antibiotic prophylaxis
- Anti-thrombotic therapy: All patients with mechanical valves require warfarin, usually started on the second postoperative day.

Indication for surgery for mitral valve regurgitation

- 1. Severe symptoms as fatigue and dyspnea
- A progressive increase in left ventricular volume leading to ventricular dysfunction
- 3. Uncontrolled endocarditis
- 4. Severe acute mitral regurgitation

<u>Indication for surgery for mitral valve stenosis</u>

- 1. Severe symptoms
- 2. Left ventricular dysfunction
- Severe mitral stenosis

<u>Indication for surgery for aortic stenosis</u>

□left ventricular dysfunction, concomitant coronary artery disease, in patients over 60–65 years, severe left ventricular hypertrophy, arrhythmias and silent ischemia.

<u>Indication for surgery for aortic regurgitation</u>

Progressive left ventricular dilatation

Indication for surgery for thoracic aorta aneurysm

- Aneurysm is a localized dilatation of a blood vessel involving all layers of the vessel.
- ☐ Surgery is indicated in case of the presence of progressive aortic valve insufficiency and in case of a diameter of 5-6 cm

Aortic dissection

☐ This occurs when there is a defect in the intima of the aorta, resulting in blood tracking into the aortic tissues splitting the medial layer and creating a false lumen. It most commonly occurs in the ascending aorta



Nursing

Lecture 7+8

Management of patient with neurological

Dysfunction (unconscious patient)

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2022-2023

Meningitis

- ☐ Meningitis: is the Inflammation of the meninges of the brain and spinal cord, most commonly and most seriously due to bacterial infection.
- □ Bacterial meningitis typically presents with fever, meningism (headache, neck stiffness and photophobia) and deterioration in conscious level.
- □ Empirical intravenous antibiotic therapy should be commenced as soon as the diagnosis is suspected. Urgent lumbar puncture is required to confirm the diagnosis and ultimately to guide treatment.
- ☐ The common organisms responsible for spontaneous bacterial meningitis are

 Streptococcus pneumonia, Haemophilus influenza and Neisseria meningitides.

 Neonates are susceptible to group B streptococcus, Escherichia coli and Listeria.

Stroke

- ☐Stroke encompasses any disease process that results in decrease the normal blood flow to the brain
- ☐ Signs and symptoms:
 - 1.numbness or weakness in the arm, face, and leg, especially on one side of the body
- 2. Slurred speech
- 3. Mouth deviation
- 4. Face dropping
- 5. Difficulty swallowing
- 6. Headache, dizziness, vertigo and blurry vision

- 6. Confusion , disorientation, or lack of responsiveness
- 7. Loss of consciousness

□ Risk factors for stroke:

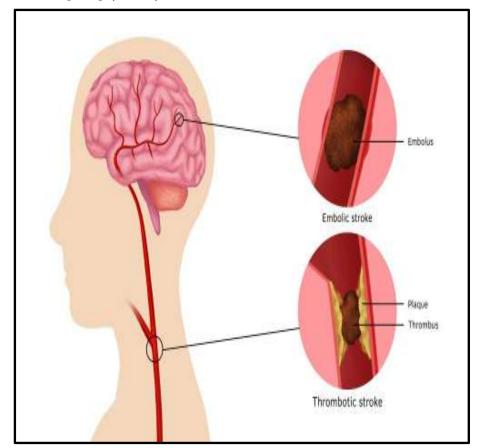
- 1. Unbalanced diet
- 2. Physical inactivity and lack of exercise
- 3. Smoking
- 4. Heavy alcohol use
- 5. Advanced age
- 6. Family history
- 7. History of Hypertension, Diabetes mellitus, Hyperlipidemia, cardiac arrhythmia as atrial fibrillation and previous stroke or ischemic heart disease.

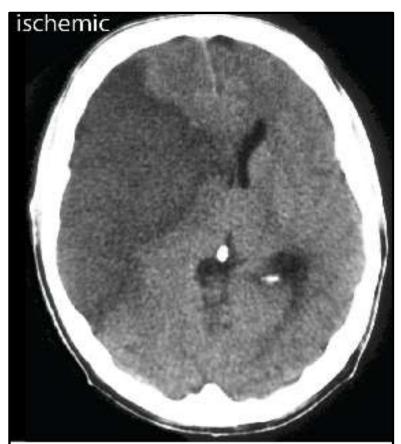
☐ There are 2 types of stroke:

1. <u>Ischemic stroke</u>

- Ischemic stroke is more common than hemorrhagic stroke
- ischemic stroke happens when blood flow through the artery that supplies oxygen-rich blood to the brain becomes blocked. Blood clots or plaque often cause the blockages that lead to ischemic strokes.
- □ Blockage of the cerebral arteries that lead to ischemic stroke can come from a thrombus or an emboli (which is a blood clot that is formed in another part of the body (heart) and moves through the bloodstream and ends up blocking one of the cerebral arteries.

□ Diagnosis is done by Compute tomography(CT scan)and magnetic resonance imaging(MRI)





☐ Treatment of ischemic stroke:

- 1. Assess and stabilize any airway, breathing, and circulation abnormalities, establish IV access, obtain rapid bedside glucose testing, and place on cardiac monitoring and pulse oximetry. Supplemental oxygen is recommended only when patients are hypoxic to keep pulse oxygenation >94%.
- Once the patient's clinical condition is stabilized, immediately obtain a noncontrasted brain CT scan and appropriate laboratory testing, including coagulation studies.
- 3. Patient's blood pressure should be managed to achieve a target blood pressure of Systolic Blood pressure ≤185 mm Hg and Diastolic Blood Pressure ≤110 mm Hg using labetalol 10 to 20 mg IV over 1 to 2 minutes .
- 4. Antiplatelet medications are used such as Aspirin 325mg and Clopidogrel 75mg

7

- When the blood pressure is controlled so the patient is candidate for thrombolytic therapy, start the use of IV recombinant tissue plasminogen activator (rtPA) (Alteplase) 0.9 mg/kg for patients with acute ischemic stroke ≤3 hours duration since symptom onset. Although patients should not receive any antiplatelet medications in the first 24 hours after rtPA.
- 6. All patients with stroke should receive appropriate supportive care in the Emergency Department, including aspiration prevention, normalization of glucose level and treatment for other diseases.

□ Complications of ischemic stroke:

- 1. Hemorrhagic transformation
- 2. Brain edema

2. <u>Hemorrhagic stroke</u>

- ☐ Hemorrhagic stroke is caused by a bleeding in the brain and it accounts for 13% of the cases .
- ☐ There are 2 types of hemorrhagic stroke:
- 1. <u>Intracerebral hemorrhage</u> occurs from weakened arterioles
- 2. Subarachnoid hemorrhage occurs due to rupture berry aneurysm
- □ Patient with subarachnoid hemorrhage presents with sudden severe headache.

 There may be also loss of consciousness, seizure, vomiting, weakness or numbness in the face or limbs, and altered mental status.
- □ Diagnosis is done by non contrasted CT scan of the brain.





Treatment of hemorrhagic stroke:

- Assess and stabilize any airway, breathing, and circulation abnormalities, establish IV access, obtain rapid bedside glucose testing, and place on cardiac monitoring and pulse oximetry. Supplemental oxygen is recommended only when patients are hypoxic to keep pulse oxygenation >94%.
- Once the patient's clinical condition is stabilized, immediately obtain a noncontrasted brain CT scan and appropriate laboratory testing, including coagulation studies.
- 3. Blood pressure control at a patient's prehemorrhage blood pressure or a MAP <140 mm Hg if the baseline blood pressure is unknown. If blood pressure management is necessary, administer an IV antihypertensive such as labetalol 10 to 20 mg IV bolus over 1 to 2 minutes .

- 4. Administer Nimodipine 60 mg PO every 4 hours
- 5. Patients with intracerebral hemorrhage should be admitted to a monitored critical care area for treatment with antiepileptic medications if seizures occur, management of hyperglycemia, blood pressure management, and treatment of coagulopathy with vitamin K, fresh frozen plasma. Patients with evidence of increased intracranial pressure (ICP) should be treated with head elevation to 30°, analgesia, and sedation.

3. <u>Transient ischemic attack (TIA)</u>

□ A transient ischemic attack (TIA) is a transient episode of neurological dysfunction caused by ischemia but without an acute infarction of brain tissue.

TIA episodes typically lasts less than 1 to 2 hours, but duration of symptoms alone can be unreliable in discriminating between TIA and stroke

Brain tumor

- □ Signs and symptoms:
- 1. Seizure
- 2. Headache, accompanied by nausea and vomiting
- ☐ Types of brain tumors

1. <u>Cerebral metastases</u>

□ Cerebral metastasis are the most common intracranial tumors, and affect about one-quarter of cases

2. Glioma

- This tumor originates from glia cells.
- Diagnosed by histological examination and MRI
- ☐ Steroids and antiepileptic medications are used in this case
- ☐ Active treatment consists of maximal resection, radiation therapy, and chemotherapy.

3. Meningioma

- Meningiomas are usually benign lesions.
- They arise from the meninges
- ☐ Treated with surgical operation and radiotherapy
- ☐ These are generally slow-growing smaller lesions, perhaps detected incidentally in an elderly patient



Management of unconscious patient

- Unconsciousness is a state in which the patient is unaware and unable to respond to external stimuli .
- Differential diagnosis in unconscious patient :
- 1) Hypoglycemia
- 2) ischemic stroke
- 3) Intracerebral hemorrhage
- 4) Subarachnoid hemorrhage
- 5) Subdural hematoma
- 6) Brain tumor

- 7) Cerebral edema or abscess
- 8) Hydrocephalos
- 9) Central nervous system infection
- 10) Diabetic ketoacidosis
- 11) Hyponatremia and hypernatremia
- 12) Seizure
- management of unconscious patient:
- Assessment of Airway, breathing and circulation (ABC)
- Assessment of level of consciousness by using Glasgow coma scale

Investigation as: complete blood count, blood glucose, blood urea, serum electrolyte, liver function test, clotting screen, arterial blood gases and blood culture.

Treatment of the cause that led to loss of consciousness



Nursing

Lecture 9

Management of patient with musculo-Skeletal dysfunction ,trauma and fracture Dr. Ibrahim Hayder

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2022-2023

Musculoskeletal dysfunction

- Musculoskeletal dysfunctions are conditions that can affect the muscles, bones, and joints.
- Musculoskeletal disorders include :
 - 1. Carpal tunnel syndrome (CTS)
- □ <u>Carpal tunnel syndrome</u> is a condition which occurs due to a compression on the median nerve
- □ Symptoms of CTS include :
- 1. Numbness and Tingling
- 2. Pain
- 3. Weakness in the affected hand

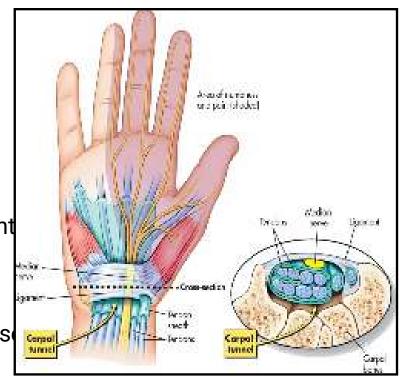
□ Diagnosis by :

- 1. Nerve conduction system
- 2. Electromyogram
- Ultrasound and MRI

□ Treatment :

- ✓ Non surgical treatment include brace and splint drugs as Ibuprofen , steroids injections .
- ✓ Surgical treatment include carpal tunnel release

To release the compression on the median nerve

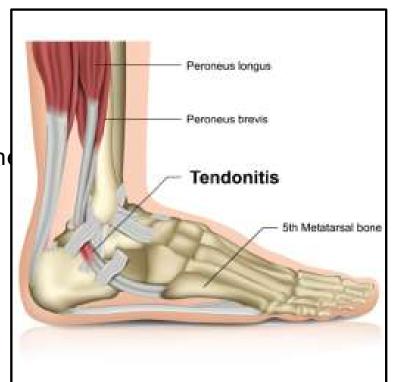


2. <u>Tendinitis</u>

- ☐ Tendinitis is the inflammation of the tendon
- □ Signs and symptoms include pain,

Tenderness and swelling.

- □ <u>Causes</u>: sudden injury, repetitive sport movem
- ☐ Treatment :
- ✓ Analgesia such as ibuprofen
- ✓ Corticosteroids
- √ Physical therapy



3. Osteoarthritis

- Osteoarthritis is the most common form of arthritis.
- □ Signs and symptoms:
- 1. Pain and tenderness
- 2. Joint stiffness
- 3. Swelling
- 4. Loss of flexibility
- □ Risk factors :
- 1. Advance age
- 2. Obesity

- 3. Joint injuries
- 4. Repeated stress on joint
- □ <u>Diagnosis</u>:
- ✓ X-ray
- ✓ MRI
- ☐<u>Treatment</u>:
- √ NSAIDs such as Ibuprofen
- ✓ Physical therapy
- ✓ Cortisone injection
- ✓ Joint replacement

4. Rheumatoid arthritis

Rheumatoid arthritis is an autoimmune inflammatory disease that affects the joints

□ Signs and symptoms:

- 1. Joint pain
- 2. Joint swelling and warmth
- 3. Morning stiffness: joint stiffness in the early morning
- □ Diagnosis:
- ✓ X-ray
- ✓ Complete blood count
- Erythrocyte sedimentation rate (ESR)

- ✓ C-reactive protein (CRP)
- ✓ Rheumatoid factor
- ☐ Treatment :
- ✓ Analgesia
- ✓ NSAIDs such as Ibuprofen
- ✓ Corticosteroids



Nursing

Lecture 10

Management of patient with musculo-Skeletal dysfunction ,trauma and fracture (2) Dr. Ibrahim Hayder

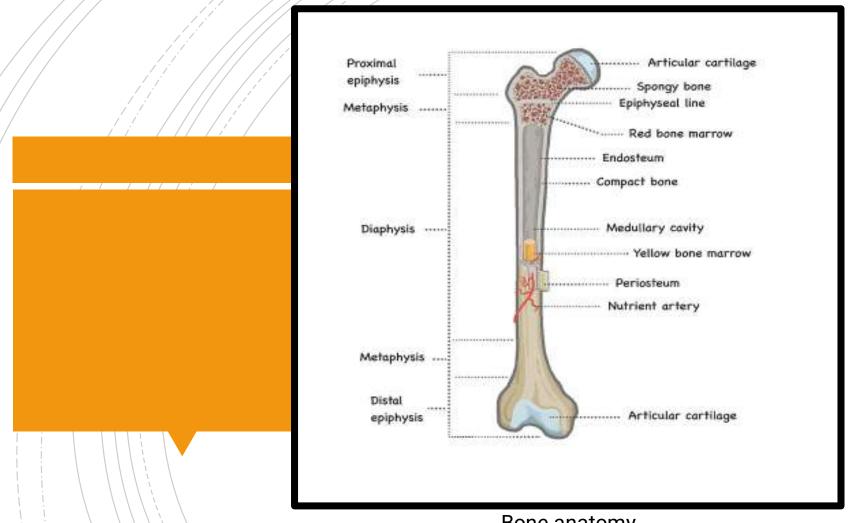
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Bone anatomy

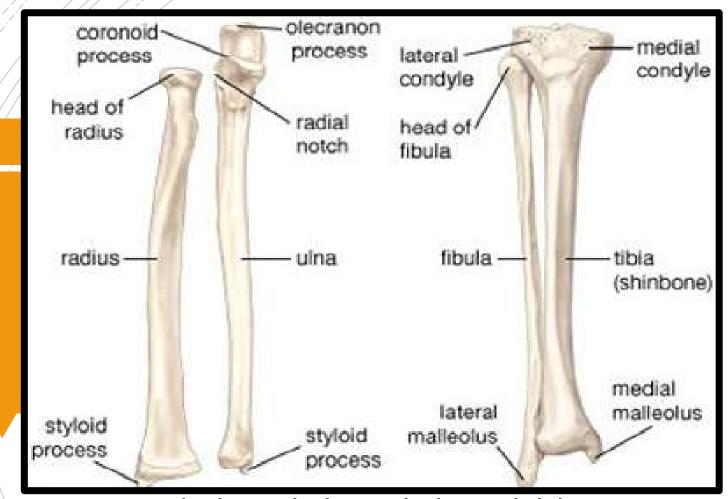
☐ Bone is a rigid organ that made up of dense connective tissue. Consists of 30-40 % of

body weight.

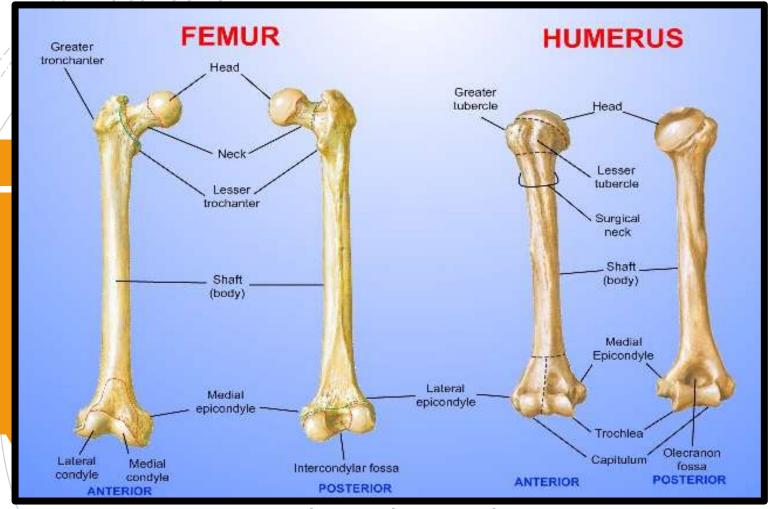
- ☐ Bone functions:
- 1. <u>Support:</u> Bones provide a framework for the attachment of muscles and other tissues.
- 2. <u>Protection:</u> Bones such as the skull and rib cage protect internal organs from injury.
- 3. <u>Movement:</u> Bones enable body movements by acting as levers and points of attachment for muscles.
- 4. <u>Mineral storage:</u> Bones serve as a reservoir for calcium and phosphorus, essential minerals for various cellular activities throughout the body.
- 5. <u>Blood cell production</u>: The production of blood cells, or hematopoiesis, occurs in the red marrow found within the cavities of certain bones.
- 6. <u>Energy storage:</u> Lipids, such as fats, serve as an energy reservoir.



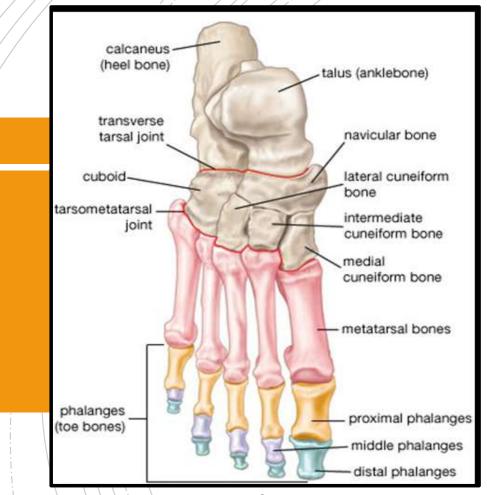
Bone anatomy



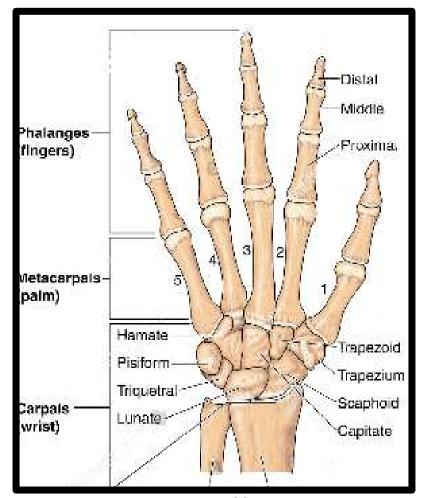
Radius bone, Ulna bone, Tibia bone, Fibula bone



Femur bone and Humerus bone



Foot bones



Hand bones

Bone fracture

□ Bone fracture: It is a medical condition in which there is a partial or complete break in the

continuity of the bone.

Causes of bone fracture :

- 1. Trauma, such as a fall from height, sport injuries and vehicle accidents.
- 2. Osteoporosis and some types of cancer can causes bone to break easily.

■ Mechanism of bone fracture :

- 1. Direct mechanism
- 2. Indirect mechanism

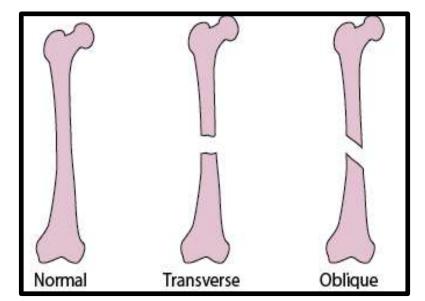
Symptoms of bone fracture:

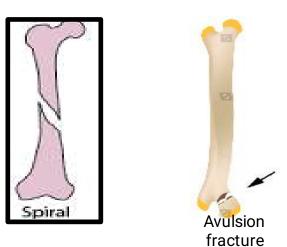
- 1. Intense pain
- 2. Swelling
- 3. Bruising
- 4. Limited mobility or inability to move
- 5. Deformity of an arm or leg
- 6. In open fractures, bone protruding from the skin
- ☐ Types of bone fracture:
- According to the direction of fractured bone :
- 1. Transverse fracture

2. Oblique fracture

3. Spiral fracture

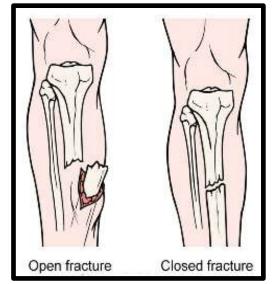
4. Avulsion fracture

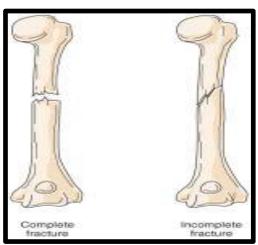




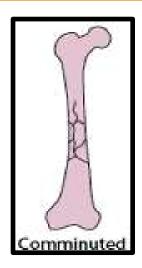
According to the Soft tissue involvement :

- 1. <u>Closed fracture</u>: the broken bone has not penetrate the skin.
- 2. <u>Open fracture</u>: the broken bone has penetrate the skin . The bone may or may not be visible in the wound .
- According to the extent :
- Incomplete fracture: is the fracture
 In which the bone does not break completely
- 2. <u>Complete fracture</u>: is the fracture In which the bone breaks completely.

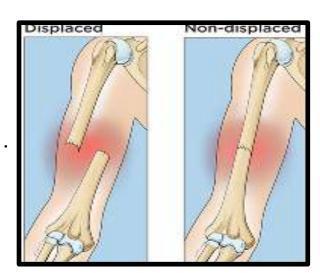




- 3. <u>Comminuted fracture</u>: is a fracture in which the bone is broken into several pieces (more than 2 pieces).
- 4. <u>Greenstick fracture</u>: is a fracture in which the bone bends and cracks on one side, this fracture occurs most commonly in children.
- According to the displacement :
- 1. Non displaced fracture: in which the bone breaks into pieces that stay in their normal alignment.
- 2. <u>Displaced fracture</u>: in which the bone breaks into pieces that move out of their normal alignment







Factors affecting fracture healing:

- 1. Age , bone fracture in Children heal more quickly than adults .
- 2. Chronic diseases such as diabetes mellitus
- 3. Anemia and hypoxia
- 4. Systemic infection
- 5. Malnutrition and smoking
- 6. Generalized atherosclerosis
- 7. Soft tissue injury
- 8. Degree of the local trauma
- 9. Degree of bone loss

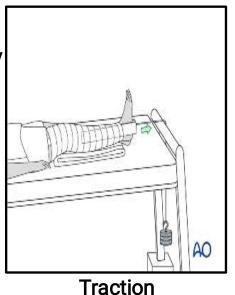
Diagnosis of bone fracture :

- ✓ Inspection (looking) of the injured area , to find out if there is swelling , bruising and deformity .
- ✓ Palpation (feeling) of the injured area, to find out if there is localized tenderness.
- ✓ Movement of the injured area , to find out if there is crepitus or abnormal movement .
- ✓ Radiography such as X-ray
- ✓ Computer tomography (CT) and Magnetic resonance imaging (MRI) can be used sometimes .
- ☐ Treatment of bone fracture :
- ✓ Drugs for pain control

- <u>Immobilized cast</u>: a plaster or cast will be placed around the fracture once the bone has been aligned. The bone cannot move in this type of cast, which promotes proper healing.
- Brace: This type of cast allows for limited but controlled movement, and is only applicable to minor fractures.
- ✓ <u>Traction</u>: This treatment uses weights to gently realign a broken bone. Traction is typically used as a temporary measure



cast





Brace

✓ External fixation: insertion of screws

and wires into the bone, which then attach to

a metal bar on the outside of the skin.

This device stabilizes the bone while it heals.

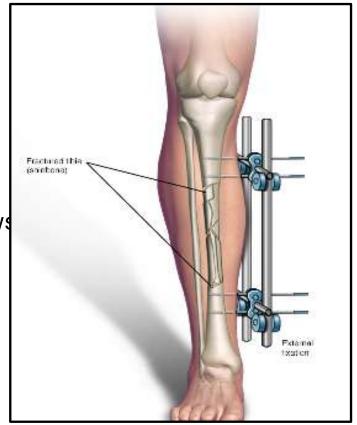
Once the fracture heals, the removal of the screws and external device can usually be done

✓ Open reduction and internal fixation:

realignment (reduction) of the broken bone

into its normal position and then attachment of

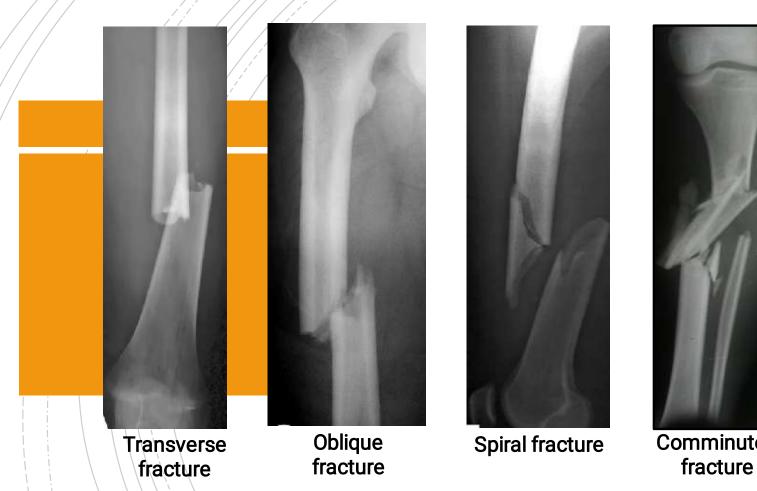
metal plates or special screws to hold it in place.



External fixation

Complications of bone fracture :

- 1. Non union and Malunion
- 2. Delayed union
- 3. Bone infection (osteomyelitis)
- Vascular injury
- 5. Skin and nerves injury
- 6. Hemarthrosis (bleeding into the joint)
- 7. Wound infection in open fracture
- 8. Shock
- 9. Thromboembolism and Fat embolism







Greenstick fracture



Non displaced fracture



Displaced fracture



Radius and ulna fracture



Humerus fracture



Proximal Femur fracture



Tibia and fibula fracture



Nursing

<u>Lecture 11+12</u>

Nursing management of intravenous therapy

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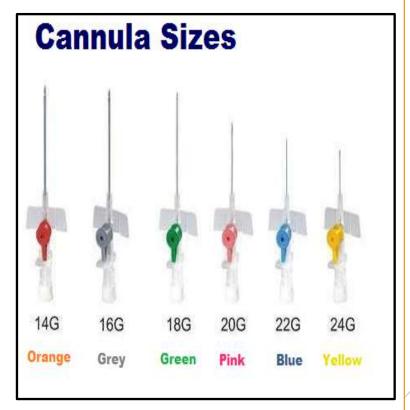
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Intravenous therapy

- □ <u>Intravenous therapy (I.V) therapy:</u> is the giving of liquid substances directly into a vein.
- □ Purposes of intravenous (I.V) therapy:
- 1) To supply fluid when patients are unable to take in an adequate volume of fluids by mouth
- 2) To provide salts and other electrolytes needed to maintain electrolyte imbalance
- 3) To provide glucose (dextrose) to the body
- 4) To provide water-soluble vitamins 2 medications

■ Needle selection :

Size	Color	Recommended use
14G	Orange	In massive trauma situations.
16G	Gray	Trauma, surgeries, or multiple large-volume infusions
18G	Green	Blood transfusion, or large volume infusions.
20G	Pink	Multi-purpose IV; for medications, hydration, and routine therapies.
22G	Blue	Most chemo infusions; patients with small veins; elderly or pediatric patients
24G	Yellow	Very fragile veins; elderly or pediatric patients



□ Insertion of catheter into vein :

- 1) Place the extremity in a dependent position (lower than the patient's heart) and identify the vein
- 2) Apply a tourniquet above the venipuncture site and recheck the vein
- 3) Massage the vein distal to the site and encourage the patient to unclench the fist.
- 4) Clean the venipuncture site with the alcohol wipe and let it dry.
- 5) Insert the needle, upwards at about 30 degrees. Advance the needle until a flashback of blood is seen in the hub at the back of the cannula

- Once the flashback of blood is seen, progress the entire cannula a further 2mm, then fix the needle, advancing the rest of the cannula into the vein.
- 7) Release the tourniquet, apply pressure to the vein at the tip of the cannula and remove the needle fully. Remove the cap from the needle and put this on the end of the cannula.

□ Complications of cannula placement :

- 1) Cellulitis 2) Phlebitis 3) Thrombophlebitis
- **Hmeatoma**
- 5) Embolism

Intravenous (I.V) fluid therapy

- Route of parenteral fluid therapy:
- 1. **Intravenous (IV) access:** The intravenous route is most commonly used for administering fluids and/or medication.
- 2. **Central venous access**: indicated in case of fluid resuscitation in patient with collapsed or difficult peripheral veins
- General indication of parenteral fluid therapy:
- 1) Fluid resuscitation (in patients with hypovolemic shock)
- 2) Replacement of free water deficit (treatment of dehydration and/or hypernatremia)
- 3) Replacement of ongoing fluid loss (in patients with burns, polyuria, surgical drainage, vomiting and diarrhea).

- 4. Maintenance fluid therapy (indicated in patients who cannot or are not allowed to take fluids orally).
- 5. Correction of electrolyte imbalances.

Types of intravenous fluid

A. Colloid solutions

- □ A colloid is a high molecular weight substance; that mostly remains confined to the intravascular compartment; and thus generates oncotic pressure to draw in fluid and increase intravascular volume .
- □ Effects of colloid solutions :
- 1) Have a greater effects on intravascular volume than crystalloid solutions
- 2) Decreased blood coagulabillity
- 3) Have anti-inflammatory effects

☐ Types of colloid solutions:

1. Albumin

is a colloid solution found naturally in the plasma and is synthesized artificially .

Indicated in management of

- a) Hypovolemia
- b) Severe burns
- c) Hypoalbuminemia (liver cirrhosis)
- d) Bacterial peritonitis.



Human albumin solution

2. <u>Dextran</u>

is a colloid solution , dextran works as a plasma volume expander used to treat hypovolemia (decreased volume of circulating blood plasma), that can result from surgery, trauma or injury, severe burns, or other causes of bleeding.



Dextran solution

3. Gelatin

is an intravenous colloid solution,

synthesized by hydrolysis of collagen.

It is known as (<u>Haemaccel</u>) . Haemaccel is indicated In the following conditions :

- a) Acute management of hemorrhagic hypovolemia
- b) Priming extracorporeal circulation during Cardio-pulmonary bypass.
- c) Volume pre-loading before regional anesthesia



Haemaccel solution (Gelatin)

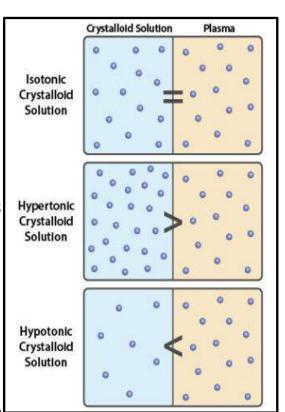
B. Crystalloid solutions

- Crystalloid solution is an aqueous solution of mineral salts and other small, water-soluble molecules.
- Crystalloid solutions contain water-soluble electrolytes including sodium and chloride .
- They are classified by tonicity, so that isotonic crystalloids contain the same amount of electrolytes as the plasma.

Hypertonic and hypotonic crystalloids respectively contain

more and less electrolytes than the plasma.

☐ Crystalloid fluids are the most commonly used fluids, they Increase the intravascular volume.



Types of crystalloid solutions

1) 3% sodium chloride (NaCl)

Hypertonic crystalloid solution that administere intravenously. It increases extracellular volume and decreases intracellular volume.

Indication :

- 1) used in acute severe hyponatremia.
- 2) Used to treat cerebral edema and increased intracranial pressure .
- 3) Treatment of hyponaetremic seizure.
- □ Side effects : Hypernatremia



3% sodium chloride (NaCl)

2) <u>0.45 sodium chloride (NaCl)</u>

(half normal saline)

Hypotonic crystalloid fluid of sodium chloride dissolved

in sterile water administered Intravenously,

It increases extracellular and Intracellular volume.

- ☐ Indication:
- 1) Replacing free water deficit
- 2) Maintenance fluid therapy
- 3) Treatment of hypernatremia





0.45 sodium chloride (NaCl)

3) 0.9 % sodium chloride

(normal saline)

Isotonic crystalloid fluid administered

intravenously,

□ **Indication**: Fluid resuscitation, Maintenance

fluid therapy ,Treatment of shock , metabolic

acidosis, hypercalcemia.



0.9 % sodium chloride (normal

saline)

4) Ringer's lactate solution

Isotonic crystalloid solution administered intravenously .

It increases extracellular volume.

- Indication :
- 1) Fluid resuscitation after a blood loss due to trauma or surgery
- 2) Maintenance fluid therapy
- 3) First-line fluid resuscitation for patient with burn.
- 4) Lactated Ringer's solution also is ideal for people with sepsis



Ringer lactate

5) <u>5% dextrose in water (D5W)</u>

Isotonic crystalloid solution administered intravenously .

It increases extracellular and intracellular volume. It is

Comprising water and dextrose.

- Indication :
- 1) Replacing free water deficit
- 2) Maintenance fluid therapy
- 3) Treatment of hypoglycemia
- □ Side effects: hyperglycemia in diabetic patient,

allergic reaction



5% dextrose in water (D5W)

6) Glucose saline

(dextrose in saline)

- Intravenously, composed of dextrose, sodium chloride and water. It works by restoring blood glucose levels in patients with hypoglycemia; increasing the blood volume.
- Indication: fluid and blood loss, treatment
- Of hypoglycemia due to insulin overdose.
- ☐Side effects : febrile response



Glucose saline

Intravenous fluid used in post-operative period

In the <u>first day</u> post-operatively



2 liter 5% dextrose in water

should be administered.

➤ In the <u>second day</u> post-operatively

2 liter 5% dextrose in water +

1 liter 0.9% sodium chloride (normal saline) .

In the <u>third day</u> post-operatively



2 liter 5% dextrose in water + 1

liter 0.9% sodium chloride (normal saline) + 60 meq of potassium (k+).



Nursing

Lecture 13

First aid

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First aid

- ☐ First aid is the steps taken to help a person in the first minutes of an illness or injury.
- Purposes of first aid :
- 1) Stop someone's pain or discomfort
- 2) Help them recover more quickly
- 3)Save a life

Common injuries Anaphylaxis

Anaphylaxis (or anaphylactic shock): is a severe allergic reaction that can occur after an insect sting or eating certain foods. The adverse reaction can beery fast,

occurring within seconds or minutes of coming into contact with the substance the person is allergic to (allergen). During anaphylactic shock, it may be difficult for the person to breathe, as their tongue and throat may swell, obstructing their airway.

Severe bleeding

- If someone is bleeding heavily, the main aim is to prevent further blood loss and minimize the effects of shock. Firstly, ask for help
- If you have disposable gloves, use them to reduce the risk of any infection being passed on.
- Check that there's nothing embedded in the wound. If there is, take care not to press down on the object and try not 3 emove it.

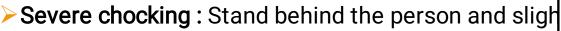
- Instead, press firmly on either side of the object and build up padding around it before bandaging to avoid putting pressure on the object itself.
- If nothing is embedded: Apply and maintain pressure to the wound with hand, using a clean pad or dressing if possible. Continue to apply pressure until the bleeding stops.
- ➤ Use a clean dressing or any clean, soft material to bandage the wound firmly.
- If bleeding continues through the pad, apply pressure to the wound until the bleeding stops, and then apply another pad over the top and bandage it in place.
 - Do not remove the original pad or dressing, but continue to check that the

Burns

- Cool the burn as quickly as possible with cool running water for at least 20 minutes, or until the pain is relieved.
- Call for medical help
- > While cooling the burn, and before the area begins to swell, carefully remove any clothi
- ➤ If you're cooling a large burnt area, particularly in babies, children and elderly people, be aware that it may cause hypothermia (it may be necessary to stop cooling the burn to avoid hypothermia).ng or jewellery, unless it's attached to the skin.
- > Do not apply creams, lotions or sprays to the burn.

Chocking

Mild chocking: Encourage the person to cough to try to clear the blockage. Ask them to try to spit out the object if it's in their mouth. Do not put your fingers in their mouth if you can't see the object, as you risk pushing it further down their mouth. If coughing doesr work, start back blows.



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to one side. Give up to 5 blows between the person's shoulder blades. If this didn't work then give up to 5 abdominal thrusts (**Heimlich maneuver**)

The DRSABCD action plan

- □ <u>D (Danger)</u>: Ensure that the patient and everyone in the area is safe. Do not put yourself or others at risk. Remove the danger or the patient.
- □ <u>R (Response)</u>: Look for a response from the patient loudly ask their name or squeeze their shoulder.
- □ <u>S (Send)</u>: If there is no response, call for help or ask another person to call. Do not leave the patient.
- □ A (Airway): Check their mouth and throat are clear. If there is foreign material, roll the patient on their side and clear their airway. If there is no foreign material, leave them in the position you found them in. Gently tilt their head back and lift their chin to clear their airway.

- <u>B (Breathing)</u>: Check if the person is breathing abnormally or not breathing at all after 10 seconds. If they are breathing normally, place them in the recovery position and stay with them. If they are not breathing normally, call an ambulance and start CPR (Cardiopulmonary resuscitaion).
- □ <u>C (Compression)</u>: Start CPR: 30 chest compressions followed by 2 breaths.

 Continue CPR until the patient starts breathing or until help arrives.
- □ <u>D (Defibrillator)</u>: As soon as possible, attach an Automated External Defibrillator (AED) to the patient. Follow the voice prompts.