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III Conceptual Revision (LMR)

Last Minute Revision with High-Yielding One-Liners, IBQs and NORCET Recalls (9.0 to 1.0)

Subjects Covered

- Applied Anatomy and Physiology
- Nursing Foundations
- Applied Biochemistry and Nutrition
- Applied Microbiology and Infection Control
- Pharmacology
- Pathology and Genetics
- Adult Health Nursing
- Pediatric Nursing
- Mental Health Nursing
- Community Health Nursing
- Midwifery/Obstetrical and Gynecology Nursing
- Nursing Research and Statistics
- Nursing Education
- Nursing Management and Leadership
- Forensic Nursing and Indian Laws

Second Edition

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Published by

NNL EduHub

NNL ONE

NNL ACADEMY

A Unit of Nursing Next Exam Prep Pvt Ltd

2nd Floor, AMCO Tower, A-5,6,7, Amaltash Marg, A-Block Sector 9, Noida, Uttar Pradesh 201301

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Applied Anatomy and Physiology

- The average length of the adult human heart from is approximately **5 in, 8 cm (3.5 in) wide, 6 cm (2.5 in) thick**. *[NORCET 8.O]*
- **Weight of adult heart:** The adult heart weighs around **230–280 g** looks like close fist in females and **280–340 g** in males, **N- 250–350 g (9–12 ounces)**. *[NORCET 8.O]*
- **Size of adult kidney:** Each kidney is about **11 cm long**, **6 cm wide**, and **3 cm thick**. *[NORCET 8.O]*
- **Diameter of trachea:** The adult trachea has a diameter of about **2–2.5 cm** and is **10–12 cm** long.
- **Liver size:** The adult liver measures about **15–17 cm in length** (midclavicular line). *[NORCET 8.O]*
- **Thickness of skin:** The average skin thickness is about **1.5–2 mm**, thickest on palms/soles, thinnest on eyelids. *[NORCET 8.O]*
- **Length of small intestine:** The **small intestine** is approximately **6 meters (20 feet)** long in adults.
- **Diameter of aorta:** The thoracic aorta has an average diameter of **2.5–3.5 cm** in adults. *[NORCET 8.O]*
- The **anatomical snuff** box is a triangular depression located on the radial aspect of the dorsum (back) of the hand. It is formed by the tendons of the **extensor pollicis longus** and **extensor pollicis brevis muscles**.
- **Estrogen** is a hormone produced primarily in the **ovaries** in **females** and in smaller amounts in the **testes** in **males**. Its functions include promoting the **development of secondary sexual characteristics**, regulating the menstrual cycle and maintaining bone health in females.
- The onset of **puberty** is regulated by a complex interplay of hormones, including gonadotropin-releasing hormone (**GnRH**), luteinizing hormone (**LH**), follicle-stimulating hormone (**FSH**) and sex steroids such as **estrogen** and **testosterone**.
- The **adrenal cortex**, part of the adrenal glands, secretes **cortisol**. Cortisol is released in response to **stress** and **helps regulate metabolism**, blood sugar levels and the immune response. It follows a **diurnal rhythm**, with levels peaking in the morning and tapering off throughout the day.
- The **adrenal medulla** produces the **catecholamines epinephrine** (adrenaline) and **norepinephrine**, which are released in response to stress as part of the "**fight or flight"** response. It does not produce cortisol.
- The **thyroid gland** secretes **thyroxine (T4)** and **triiodothyronine (T3)** in response to thyroid-stimulating hormone (TSH) to regulate metabolism, as well as calcitonin to lower high calcium levels in the blood.

- The **semicircular canals** are part of the vestibular system in the inner ear and are directly responsible for **balance** and **equilibrium**.
- The **cochlea** is the organ responsible for **hearing**. It is a spiral-shaped structure within the inner ear that converts sound vibrations into nerve impulses, which the brain interprets as sound.
- The **organ of Corti**, located inside the cochlea, is the sensory receptor for hearing. Its tiny hair cells respond to different sound frequencies (pitches).
- The **ossicular chain** comprises three tiny bones in the middle ear: the **malleus, incus a**nd **stapes**. These bones amplify and transmit sound waves from the eardrum to the oval window of the cochlea.
- The **Eustachian tube** connects the middle ear to the nasopharynx (throat) and helps maintain equal air pressure on both sides of the eardrum.
- **PCT Vs DCT**

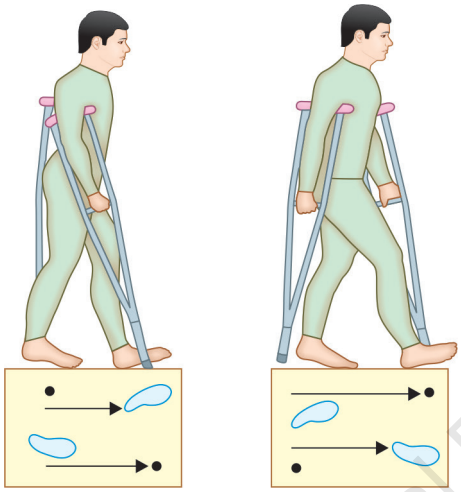
PCT	DCT
Brush border present in the apical membrane	No brush border
Cytoplasmic carbonic anhydrase (type 2 and type 4) present	Cytoplasmic carbonic anhydrase (type 2 only)
Has leaky' tight junctions	Has 'tight' tight junctions
Paracellular transport is possible via leaky tight junctions	No paracellular transport

- **Differences between cortical and juxtamedullary nephron**

Features	Cortical nephron	Juxtamedullary nephron
Location of glomerulus	Upper region of cortex	Near junction of cortex and medulla
% of total nephrons	85%	15%
Size of glomeruli	Small	Larger
Loop of Henle	Short extend up to outer layer of medulla	Long extend deep into the medulla
Efferent arterioles	Large diameter break into peritubular capillaries	Small diameter continue as vasa recta
Rate of filtration	Slow	High
Major function	Excretion of waste products in the urine	Concentration of urine by countercurrent mechanism

- According to **Einthoven law**, with three limb leads, the **sum of the electric potentials recorded in lead I and lead III** will be equal to the electric potential recorded in **lead II.** This can be represented as **Lead I + Lead III (sum) = Lead II**. Therefore, Lead I – Lead II + Lead III = 0.
- **Surfactant** is produced by type II alveolar cells (pneumocytes) composed of dipalmitoylphosphatidylcholine. that lowers surface tension, reducing the force needed to expand the lungs during breathing and preventing alveolar collapse, especially during exhalation.
- The **carina** is the point where the trachea branches into the right and left bronchi.
- **Empyema** is the presence of pus in the pleural cavity due to infection.
- The **thoracic cage**, composed of ribs and muscles, protects the lungs and other vital organs in the chest.

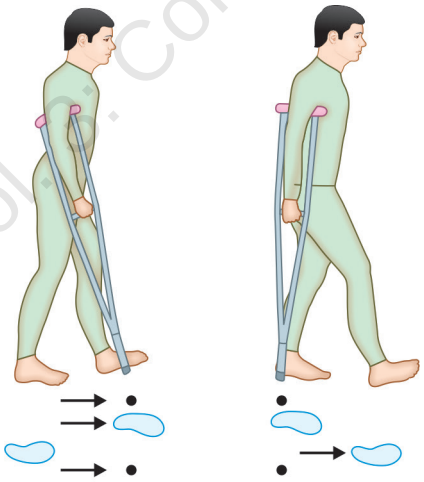
1. Left crutch (affected side) + right leg
2. Right crutch + left leg (affected)



Touch down with partial weight bearing

Walking Patterns

3 point: This gait pattern is used when one side lower extremity (LE) is unable to bear weight (due to fracture, amputation, joint replacement, etc.).

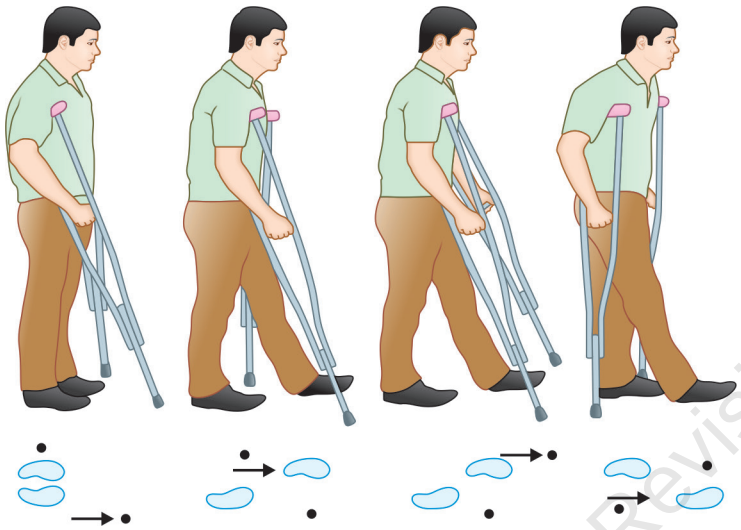


Three-point gait

3 point = 2 crutch + affected leg

No touch down with non-weight bearing

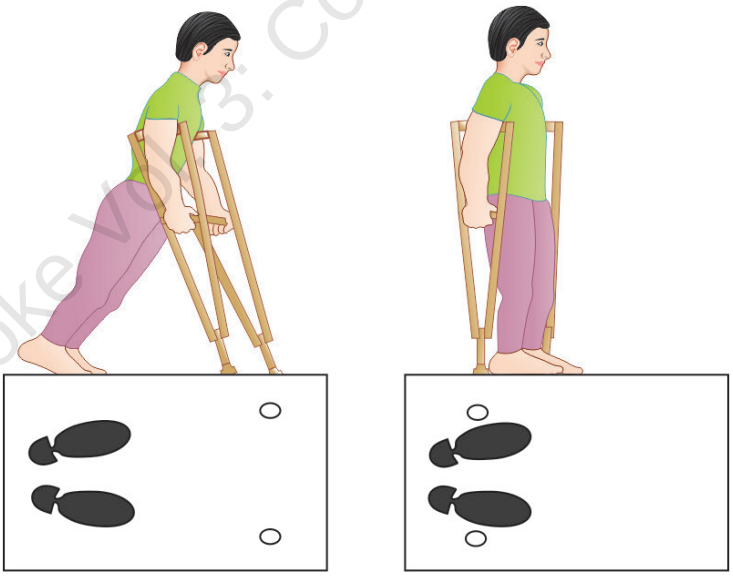
4 point: This gait pattern is used when there is a lack of coordination, poor balance and muscle weakness in both legs.



1. Left crutch (affected side)
2. Right leg (unaffected leg)
3. Right crutch
4. Left leg (affected leg)

Full weight bearing

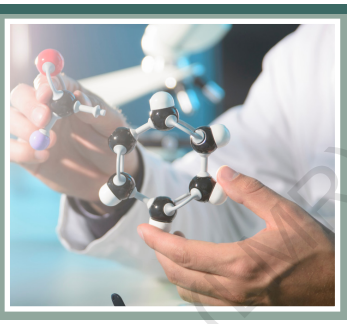
Swing-to-Gait



- **Swing-to-gait:** The patient will move both crutches forward and then swing both legs forward to the same point as the crutches.
- **Swing-through-gait**: The patient will move both crutches forward and then swing both legs forward, past the crutches.

3

Applied Biochemistry and Nutrition



- The most likely deficiency in an alcoholic patient with neurological symptoms is **thiamine (vitamin B1) deficiency.**
- Chronic alcohol consumption can lead to decreased absorption and increased excretion of thiamine, which can result in **Wernicke-Korsakoff syndrome, a neurological disorder characterized by confusion, ataxia** and **memory loss**.
- **Cheilosis is a condition that can occur due to vitamin B2 (riboflavin**) deficiency. It is a type of inflammation and cracking of the corners of the mouth, which can cause pain and discomfort
- **Infantile beriberi** occurs in **breastfed infants of thiamine-deficient mothers**, wherein the mother may be asymptomatic but the child presents with the symptoms and signs of **cyanosis, dyspnea, aphonia** and **cardiomegaly.** Untreated infantile beriberi may be **fatal** within a few weeks. Thiamine deficiency causes **beriberi,** commonly seen in low socio-economic status where **polished rice** which is thiamine deficient, is consumed. The condition may present in three varieties:
- **Dry beriberi** is associated with neurological deficits such as peripheral neuropathy, optic atrophy, ataxia and irritability. Complications include **lactic acidosis** and Wernicke encephalopathy in adults.
- **Wet beriberi** results due to cardiac and renal dysfunction which leads to fluid accumulation. It is associated with tachycardia, cardiomegaly, cardiac failure and edema.
- **Pyridoxine** (vitamin B6) deficiency can cause **neurological symptoms, anemia** and **dermatitis** but is not associated with pedal edema, cardiomegaly and cheilosis.
- **Vitamin A supplementation:**

Target group	6 to 11 months age	12 to 59 months of age (1yr to 5yr)
Dose	100,000 IU (oral)	200,000 IU (oral)
Frequency	Once	Every 4-6 months

Note: A total dose of **17 lakh IU** given as per the following schedule:

- 100,000 IU is given with measles vaccine at 9 months
- 200,000 IU is given with DPT booster at 15–18 months
- 200,000 IU is given every 6 months (till 5 years of age)0
- **Treatment of vitamin A deficiency**

Age	<6 months	6–12 months	>1 Year
Dose	50,000 IU	100,000 IU	200,000 IU

- If it is not treated properly, it can lead to a severe condition called "watering can perineum".
- If the infection spreads to the peritoneum, it can lead to pelvic inflammatory disease which is specifically called Fitz-Hugh-Curtis syndrome.

Vibrio Cholerae

- It is a gram-negative curved bacillus and is also known as comma bacillus.
- It has darting or shooting star motility.
- It is alkaliphile and thus easily grows in an alkaline medium.
- It releases a potent toxin called cholera toxin which leads to severe watery diarrhea with effortless vomiting.
- Due to severe diarrhea, the patient develops dehydration in which hands and feet of the patient give "washerman's hands and feet appearance".
- Diarrhea in cholera is also called rice watery stools.
- Under the microscope, the bacteria show "fish in stream appearance".
- Treatment of cholera includes mainly fluid and electrolyte replacement and administration of doxycycline.

Pseudomonas Aeruginosa

- It is a gram-negative bacillus which produces a specific blue-green pigment called pyocyanin.
- It is a normal saprophyte in moist conditions thus it can be present in antiseptic solutions, respirators, ventilators and contact lens solutions.
- It is the most common cause of burn infections.
- It is the most common cause of corneal ulcers in contact lens users.
- It also causes ventilator-associated pneumonia in the patients on ventilators.
- It has multidrug resistance.

Enterobacteriaceae

E. coli

- It is normally present in gastrointestinal tract of humans.
- It is the most common cause of urinary tract infections.
- It is most commonly associated with neonatal meningitis and neonatal sepsis.
- This bacterium causes different types of diarrhea in which enterotoxigenic type of *E. coli* is most commonly associated with traveler's diarrhea in the world.

Salmonella

- This bacterium causes Enteric fever. The enteric fever is of two types:
  1. **Typhoid:** Caused by *Salmonella typhi.*
  2. **Paratyphoid:** Caused by *Salmonella paratyphi* A, B and C.
     - Step ladder pattern fever is seen in enteric fever. The patient also manifests with rose spots and pea soup stools.

- For the diagnosis of enteric fever, a serological test is done to detect the antibodies which is called Widal test, it is a type of tube agglutination test.
- Blood culture can also be done which is more sensitive than Widal test with the help of castaneda medium.

- **Spirochetes**
  - These are gram-negative bacteria and they are spiral-shaped and slender.
  - Silver-impregnated staining needs to be done to demonstrate these bacteria.

Treponema Pallidum

- It has corkscrew motility.
- It causes a sexually transmitted disease called syphilis or French disease.
- The primary stage of syphilis manifests with hard or Hunterian chancre which is painless indurated genital ulcer.
- The second stage of syphilis includes condyloma lata which manifests in anogenital and axillary areas.
- Territory state of syphilis includes gummas, neurosyphilis.
- The drug of choice for syphilis is penicillin.

Leptospira

- The reservoir for the Leptospira is rats.
- Mainly this bacterium is excreted through the urine of the rats and if it comes into contact with a human, it leads to a disease called Weil's disease/Icterohemorrhagic fever.

Borrelia

- These bacteria cause different types of infections like—
  - Relapsing fever is both louse-borne and soft tick-borne.
  - Lyme disease is caused by hard tick.
  - Vincent's angina is also known as trench mouth.

Gram-Negative Coccobacilli

- **Chlamydia**
  - Vertical transmission of this infection from mother to baby can lead to ophthalmia neonatorum.
  - It also causes a condition associated with painless genital ulcers called lymphogranuloma venereum.
- **Rickettsia**
  - It is a gram-negative coccobacillus and it is non-culturable on cell free media.
  - This bacterium causes epidemic typhus, endemic typhus, scrub typhus and Q Fever
- **Bordetella pertusis**
  - It is a gram-negative coccobacillus showing mercury drop colony appearance or bisected pearl colony appearance. On staining, it has a specific appearance called thumbprint appearance.

- Types of graft are:

Auto graft	Isograft	Homograft (Allograft)	Heterograft (Xenograft)
Tissue transplanted from one site to another on the same patient	Transplant from a genetically identical donor, such as an identical twin	Transplant from individual of same species	Transplant from another species

- Graft-versus-host disease (GVHD) is a systemic disorder that occurs when the graft's immune cells recognize the host as foreign and attack the recipient's body cells.
- Acute GVHD presents within 100 days of transplantation.
- Classic chronic GVHD presents after 100 days of transplant.
- Chronic GVHD resembles collagen vascular disorders and systemic sclerosis.
- Leukemias are a group of hematological malignancies involving abnormal overproduction of leukocytes, usually at an immature stage, in the bone marrow.
- Hodgkin's disease is a malignancy of the lymph nodes that originates in a single lymph node or a chain of nodes.
- Hodgkin's disease is characterized by the presence of Reed-Sternberg cells in nodes.
- Multiple myeloma is a **malignant plasma cell dyscrasia** involving clonal proliferation of plasma cells. **Bone pain** is the most common symptom of multiple myeloma.
- Tumor cells release **osteoclast-activating factors (OAFs)**, causing **bone destruction** and **hypercalcemia**. Bone lysis occurs due to increased **osteoclast activity** and suppressed **osteoblast activity**. **Hypercalcemia** in multiple myeloma results from **bone lysis**.
- Multiple myeloma causes **diffuse hypogammaglobulinemia**, leading to **increased susceptibility to infections**.
- Common features of multiple myeloma: **Renal failure**, **anemia**, **hyperviscosity syndrome**, and **elevated erythrocyte sedimentation rate (ESR)**. **Alkaline phosphatase remains normal** in multiple myeloma due to suppressed osteoblast activity. **Serum protein electrophoresis** shows **monoclonal protein**. **Bence-Jones proteins** (free kappa and lambda light chains) are seen in **urine**.
- **Clonal bone marrow plasma cells ≥10%** or biopsy-proven **plasmacytoma** is diagnostic. **Clonal plasma cells ≥60%** on bone marrow biopsy indicates malignancy. **Serum free light-chain ratio ≥100** is a marker of multiple myeloma. **>1 focal lesion on MRI** is a diagnostic biomarker of multiple myeloma
- The client with multiple myeloma is at risk of pathological fractures.
- The CRAB criteria consist of end-organ damage with hypercalcemia, renal dysfunction, anemia and bone involvement. **CRAB features** indicate myeloma-defining events.
- **C (Hypercalcemia):** Serum calcium >11 mg/dL or >1 mg/dL above normal.
- **R (Renal insufficiency):** Serum creatinine >2 mg/dL.
- **A (Anemia):** Hb <10 g/dL or >2 g/dL below normal.
- **B (Bone lesions):** ≥1 **osteolytic lesion** on X-ray, CT, or PET scan.
- Testicular cancer most often occurs between the age of 15 and 40 years.
- Cervical cancer is caused by infection due to human papillomavirus (HPV).
- Long-term use of oral contraceptives increases the risk of breast and cervical cancers.

- Oral contraceptive pills (OCPs) have been found to protect against ovarian and endometrial cancers.
- Peau d'orange describes the characteristic appearance of skin overlying a breast carcinoma.
- Peau d'orange is the edema of the overlying breast skin due to invasion of the axillary lymphatics by tumor cells.
- A breast fibroadenoma is a painless, unilateral, benign tumor that presents as a solid lump.
- Breast fibroadenoma commonly occurs in women between the age of 14–35 years.
- Fibrocystic breast changes are a common benign (noncancerous) condition involving thickening, lumps and cysts in the breast.
- Lymphedema is a chronic disease marked by an increased collection of lymphatic fluid in the body, causing swelling, which can lead to skin and tissue changes.
- Patient after the breast reconstructive surgery should be positioned in a semi-Fowler's position toward the unaffected side, with the affected arm elevated above the level of the heart to promote drainage.
- A modified radical mastectomy is a procedure in which the entire breast is removed, including the skin, areola, nipple, and most axillary lymph nodes, but the pectoralis major muscle is spared.
- Avoid IVs, injections, BP measurement, and venipunctures in the arm on the side of the mastectomy.
- Esophageal cancer is a malignancy found in the esophageal mucosa, formed by squamous cell carcinoma (SCC) or adenocarcinoma.
- Stoma having dark blue, purple, or black appearance indicates compromised circulation.
- Lung cancers are generally divided into two main categories: Small cell lung cancer (SCLC) and nonsmall cell lung cancer (NSCLC).
- Small cell carcinoma is a type of highly malignant cancer that most commonly arises within the lung.
- Small cell lung cancer (SCLC) is also known as oat cell lung cancer.
- Tumor lysis syndrome occurs when large quantities of tumor cells are destroyed rapidly and intracellular components such as potassium and uric acid are released into the bloodstream. **Tumor lysis syndrome is characterized by:**
  - Hyperkalemia (Potassium is a major intracellular cation)
  - Hyperphosphatemia due to release of intracellular phosphate pools
  - Hypocalcemia due to reciprocal depression
  - Hyperuricemia (Can lead to urate nephropathy)

In laboratory tumor lysis syndrome, two or more metabolic abnormalities must be present during the same 24-hour period within 3 days before the start of therapy or up to 7 days afterward. Clinical tumor lysis syndrome requires the presence of laboratory tumor lysis syndrome plus an increased creatinine level, seizures, cardiac dysrhythmia or death.

Metabolic abnormality	Criteria for classification of laboratory tumor lysis syndrome
Hyperuricemia	Uric acid >8.0 mg/dL (475.8 µmol/L) in adults or above the upper limit of the normal range for age in children
Hyperphosphatemia	Phosphorus >4.5 mg/dL (1.5 mmol/L) in adults or >6.5 mg/dL (2.1 mmol/L) in children

Contd...

Metabolic abnormality	Criteria for classification of laboratory tumor lysis syndrome
Hyperkalemia	Potassium >6.0 mmol/L
Hypocalcemia	Corrected calcium <7.0 mg/dL (1.75 mmol/L) or ionized calcium <1.12 (0.3 mmol/L)
Acute kidney injury	Not applicable

- The time that the nurse spends in the room of a client with an internal radiation implant is 30 minutes per 8-hour shift.
- Hodgkin's disease is a chronic progressive neoplastic disorder of lymphoid tissue characterized by the painless enlargement of lymph nodes with progression to the spleen and liver.
- A benign tumor lacks the ability to invade neighboring tissue or metastasize.
- Malignant tumor grows in an uncontrolled way and can spread to other parts of the body through the blood and lymph system.
- Electrosurgery uses electricity to cause thermal destruction of tissues through dehydration, coagulation or vaporization.
- Cryosurgery is a treatment that uses extreme cold produced by liquid nitrogen or argon gas to destroy cancer cells and abnormal tissues.
- Metastatic breast cancer may spread to any part of the body. It most often spreads to the bones, liver, lungs and brain.
- Bone, *lung* and liver are the *most frequent sites* of distant *prostate cancer metastases.*
- The most common places for *cervical cancer* to spread are the lymph nodes, liver, lungs and bones.
- Liver is the most common site of metastases for colorectal cancer.
- Prostate-specific antigen (PSA) is a protein produced by normal as well as malignant cells of the prostate gland.
- CA-125 is a protein that may be found in high amount in the blood of patients with ovarian cancer.
- Carcinoembryonic antigen (CEA), cancer antigen 125 (CA125) and cancer antigen 15–3 (CA15–3) are the most widely used serum tumor markers for breast cancer.
- An incisional biopsy is when a small cut (incision) is made into an area of abnormal tissue and a small piece of it is removed from the body.
- Tumor-suppressor genes are regulators that control the expression of other genes.
- Many cancers are the result of a defect in the *p53* tumor suppressor gene.
- Proto-oncogenes are a group of genes that cause normal cells to become cancerous when they are mutated.
- Dysplasia indicates an abnormal arrangement of cells, usually arising from a disturbance in their normal growth behavior.
- Anaplasia refers to the cytologic features of cells considered to be characteristic of malignant neoplasms.
- Retinoblastoma is the most common primary intraocular malignancy of childhood.
- Carcinoma in situ of the skin, also called Bowen's disease, is the accumulation of dysplastic epidermal cells within the epidermis only, that has failed to penetrate into the deeper dermis.

- The SCOFF (**S**ick, **C**ontrol, **O**ne, **F**at, **F**ood) questionnaire is a **screening tool** for **anorexia nervosa** and **bulimia nervosa**.
- Events occurring during **NREM stages 3 and 4**

Events	Description
Somnambulism	• Sleepwalking • Awakens with a scream or intense anxiety. Has increased autonomic disturbances.
Sleep terror or Night terror	• They do not have a memory of this when they wake up. • Runs in families and seen more frequently in childhood and boys. • Treatment with benzodiazepines is rarely required.
Nocturnal enuresis	• Behavioral therapy is the mainstay. • Drugs like desmopressin and imipramine are used.

- Events occurring in **REM sleep:**

Events	Description
Nightmares	• Fearful sleep without autonomic disturbances that are well remembered in the morning. • TCAs may be used for treatment.
Nocturnal penile tumescence	• A normal phenomenon that can be used to differentiate between psychogenic and organic impotence.
Narcolepsy	• A disorder of the REM sleep characterized by disturbed sleep in the night, leading to excessive sleep in the morning. • Associated with symptoms such as cataplexy, hypnogogic and hypnopompic hallucination and sleep paralysis.

*__Hypnogogic hallucinations__ are those that occur at the start of sleep and **hypnopompic hallucinations** are those that occur at the end of sleep.

- **Other Sleep Disorders**

Events	Description
Bruxism (teeth grinding)	Occurs in stage 2 NREM sleep.
Frontal lobe epilepsy	Occurs in stage 2 NREM sleep.
Sleep talking	• Occurs in all stages of sleep and may accompany night terrors and sleepwalking. • Common in children. • No treatment is necessary.

- Pharmacological treatment is considered the first line for treatment of ADHD. CNS **stimulants** like **Methylphenidate, Dexamphetamine, Lisdexamphetamine** are the **first-choice** agents for **ADHD,** FDA approved for use in children above 6 years of age as they have shown the greatest efficacy with mild tolerable side effects.
- **Paraphilic disorders:**

DSM-5 includes eight specific paraphilic disorders:

Disorder	Description
Exhibitionistic disorder	Sexual arousal from exposing their genitals to a stranger
Pedophilic disorder	Sexual arousal to a prepubescent individual, generally 13 years of age or younger

Contd...

- **Generation time:** The interval of time between receipt of infection by a host and a maximal infectivity of the host (Generation time = Incubation period)
- **Serial interval:** The gap in time between the onset of the primary case and the secondary case is called serial interval.
- **Communicable period:** Time during which an infectious agent may be transferred directly or indirectly from an infected person to another person, from an infected animal to a person or vice versa including arthropods.
- **Latent period:** The period from disease initiation to disease detection.

- The time interval between the invasion by an infectious agent and the appearance of the first sign of disease is called incubation.
  - **QUARANTINE** is defined as **a limitation of freedom of movement of well person or domestic animals who are exposed to a communicable disease for a longer period of time, not longer than the longest usual incubation period of the disease.** This effectively prevents contact with those who are not exposed, thereby reducing the chances of possible transmission.
  - **ISOLATION** is separation for the period of communicability of an infected person or animals from others in order to reduce direct or indirect transmission.
  - **Epidemiological investigations:** Identification of the source of infection and factors influencing its spread in the community.
  - **Notification:** Notification of an infectious disease to local health authority to put control measures on it.
- Methods employed in **case of detection of STDs** are:
  - **Screening** is done by testing healthy volunteers from the general population. This helps in early detection of disease.
  - **Contact tracing** refers to identifying and locating sexual partners of diagnosed patients in order to investigate and treat them.
  - **Cluster testing** is done by asking the patients to name other persons of either sex who are part of the same sociosexual environment.
- Median incubation period means time for 50% of cases to occur.
  - **Interruption** in the **transmission** of a disease is called **elimination**. It is a step toward eradication.
  - **Elimination** is a **reduction** in the number of **new cases** of an infectious disease **to zero** (or a very low defined target rate) in a defined geographical area as a result of deliberate efforts. Continued measures to prevent re-establishment of transmission are required.
  - **Eradication** is a complete and **permanent worldwide reduction** to **zero new cases** of an infectious disease through deliberate efforts. No further control measures are required.
  - **Surveillance** is the **continuous scrutiny** of factors that determine the occurrence and distribution of disease and ill health.
  - **Control** aims at **decreasing** the **incidence, duration** and **transmission** of the disease. It also aims at decreasing the physical and psychological **complications** of a disease.
- Indicators of mortality are crude death rate, case fertility rate and proportional mortality rate.
  - Case fertility rate (CFR) represents 'killing power of a disease'. It is closely related to virulence of organisms.

- **Studdiford's** criteria used for the diagnosis of **primary abdominal** pregnancy include the presence of normal bilateral tubes and pregnancy related to the peritoneal surface.
- **Rubin's** criteria used for the diagnosis of **cervical** pregnancy includes presence of soft, enlarged cervix and closed internal os and partially opened external os.
- The dose of anti-D in a surgically treated case of ectopic is **50 µg** if gestation **<12 weeks**. If the gestation is **>12 weeks, 300 µg** of anti-D is given intramuscularly. Anti-D is not given when the ectopic is treated with medical methods.
- Definition of **Preterm labor**:

Timing of delivery	Terminology
<33 weeks	Early preterm
34 to 36 weeks	Late preterm
37 to 38 weeks	Early term
39 to 40 weeks	Full term

- The **nitrazine paper test** is used to detect **premature rupture of membranes**. The nitrazine paper test detects the **pH** of the secretions from the **vaginal pool**. It turns **blue** at **pH >6**. **Amniotic fluid** is slightly alkaline with a pH of 7.1-7.3 and vaginal secretions have a pH of 4.5-6.0.
- **Spontaneous rupture** of membranes **before** the onset of **labor between 28 to 37 weeks** is called preterm premature rupture of membranes. If **PPROM** occurs **between 28 to 34 weeks,** prophylactic antibiotics (**erythromycin**) and **corticosteroids** are given to the patient.
- Magnesium sulphate can be used for neuroprotection in **preterm labor** when the pregnancy is **<32 weeks**. The dose is **4 g IV over 20 mins** followed by an **infusion of 1 g/hr**.
- ACOG defines **post-term** pregnancy as a pregnancy continuing **beyond 42** completed weeks of gestation.
- **Indications of Amniotic Fluid Color**

Amniotic fluid colour	Inference
Colourless	Early pregnancy
Straw yellow	Term pregnancy (exfoliated lanugo, epidermal cells from fetal skin)
Meconium stained (green)	Fetal distress (other than breech/transverse)
Golden	Rh incompatibility (excess hemolysis of fetal RBC, excess bilirubin)
Greenish yellow (saffron)	Post maturity
Dark red	Concealed accidental hemorrhage (contaminated of blood)
Dark brown (Tabaco juice)	Intrauterine death (presence of old HbA)

- Molar pregnancy is of 2 types complete mole and partial mole.

Feature	Partial mole	Complete mole
Karyotype	69 XYY or 69 XXY	46 XX or 46 XY
Diagnosis	Missed abortion	Molar gestation
Uterus size	Small for date	Large for date
Theca-lutein cysts	Rare	25-30% of canes
Initial hCG levels	<1 lakh mIU/mL	>1 lakh mIU/mL
Medical complications	Rare	Uncommon

Contd...

Feature	Partial mole	Complete mole
Rate of subsequent GTN	1-5%	15-20%
Embryo-fetus	Often present	Absent
Amnion, fetal erythrocytes	Often present	Absent
Villous edema	Focal	Widespread
Trophoblastic proliferation	Focal, slight to moderate	Slight to severe
Trophoblast atypia	Mild	Marked
p57KIP2 immunostaining	Positive	Negative

- USG showing **snowstorm appearance** is suggestive of a **complete mole**.
- The **drug of choice** for PPH in normal patients is **oxytocin.**
- PPH in a patient with **pre-eclampsia** can be treated with **misoprostol.** It is a **PGE1** analogue used as a **second line uterotonic** in the treatment of PPH.
- **Medical Management of PPH**

Drug	Dose	Side effects	Contraindications
Oxytocin	10–40 U in 1L crystalloid (never given as iv bolus)	Water intoxication	
Methergine	0.2 mg	Hypertension	Pre-eclampsia
Carboprost	0.25 mg (8 doses max)	• Diarrhoea • Hypertension • Vomiting	• Bronchial asthma • Cardiac, renal or hepatic diseases
Misoprostol	600–1000 mcg	• Fever • Tachycardia	

- Hypertension in pregnancy is defined as BP of >140/90 mmHg measured 2 times with at least a 4-hour interval.

	Gestational hypertension	Pre-eclampsia	Chronic hypertension in pregnancy
Rise in BP	After 20 weeks of pregnancy	After 20 weeks of pregnancy	Before 20 weeks of gestation
Proteinuria	Absent	May be present: • >300 mg in 24 hrs urine • >30 mg/dL in a random urine sample • Urine dipstick 2+	Absent
Fall in BP to normal levels	Within 12 weeks of delivery	Within 12 weeks of delivery	Does not return to normal

- $MgSO_4$ regimens for management of eclampsia and severe pre-eclampsia:

Regimen	Loading dose	Maintenance dose
Intramuscular (Pritchard)	4 g (20% solution) IV over 3-5 min followed by 10 g (50%), deep IM (5 g in each buttock)	5 g (50%) IM 4 hourly in alternate buttocks
Intravenous (Zuspan or Sibai)	4 g IV slow over 15-20 minutes	1-2 g/hr IV infusion

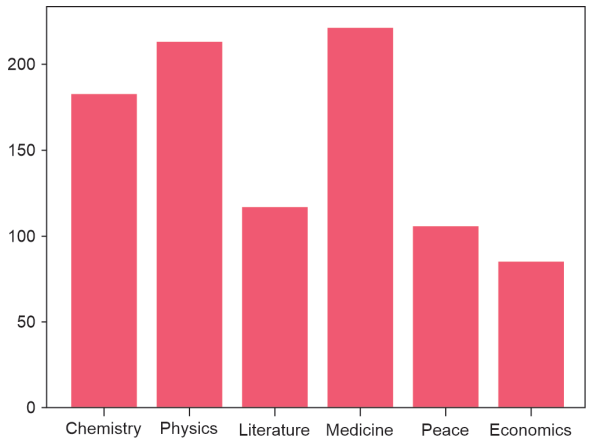


Figure: Bar graph

- Pie chart is a graphical representation that displays data in a circular shaped graph.

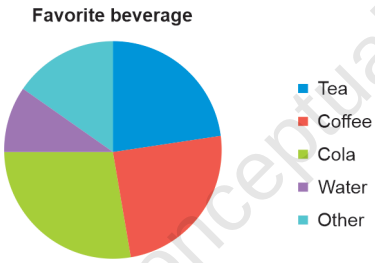


Figure: Pie chart

- Histogram is a type of chart that shows the frequency distribution of data points across a continuous range of numerical values.

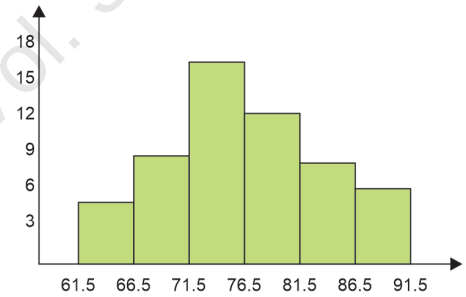


Figure: Histogram

- Frequency polygon is a line graph of class frequency plotted against class midpoint. It can be obtained by joining the midpoints of the tops of the rectangles in the histogram.

- In normative-based evaluation, performance of a student is compared with other students.
- Techniques and tools of evaluation include written exam, oral exam, practical exam, interviews, observation and anecdotal notes.
- For assessment of knowledge, essay type questions, MCQs, short answers and objective type questions can be used.
- For assessment of skills checklist, rating scale, anecdotal records, OSCE, practical exam, critical incident report and viva voce can be used.
- For assessment of attitude, Likert attitude scale and semantic differential scale can be used.
- Rating scale can be numerical rating scale or graphical rating scale.
- In OSCE, all the candidates are presented with the same test. Specific skill modalities are tested at each station like history taking, explanation, clinical examination and procedures.

CURRICULUM

- Curriculum may be considered the blueprint of an educational program. It is the base of education on which the teaching-learning process is planned and implemented.
- Phases of curriculum include selection of aim, goals and objectives, selection of learning experiences, selection of content, organization and integration of learning experiences and content and evaluation.
- As per Goodland, curriculum has three levels: societal, institutional and instructional.
- Unit planning provides sound basis for evaluation as the topics are taught on the basis of the time period allotted to a particular topic.

COMMUNICATION

- Message refers to the information in the form of an idea, thought, attitude and feeling.
- Encoding is converting a thought into a machine language.
- Seven C's of effective communication include:
  1. Clarity
  2. Completeness
  3. Conciseness
  4. Concreteness
  5. Courtesy
  6. Consideration
  7. Correctness
- Barriers of communication include physiological, environmental, psychological, social and cultural.
- Physiological barriers include hearing issues, eyesight problems, etc.
- Psychological barriers include inattention, memory problems, emotional issues, depression, etc.
- Richard Francisco's Communication Model describes 5 levels of communication that progress from low trust and low risk to high trust and high risk:
  - **Level 1** is the open conversation in which communication is done with a person whom we know personally thus sharing personal stuff.

- **Level 2** is the spontaneous conversation in which spontaneous answers are given to the question asked.
- **Level 3** includes "my ideas and judgment" in which ideas and judgments are shared between one another.
- **Level 4** includes "reporting facts" in which universally accepted facts or quotes are quoted. No further information about self or opinions are added.
- **Level 5** includes "cliché conversation" in which not even a single piece of information is shared about oneself. It includes answering questions in yes or no form.

- Principles of health education include credibility, interest, participation, motivation, comprehension, reinforcement, active participation and setting an example.

SELF-DIRECTED LEARNING

- Self-directed learning refers to any improvement in knowledge, skill, accomplishment or personal development that an individual selects and brings about by his/her own efforts.
- Johari window is a tool used for self-assessment when working in a group or society.
- The main aim of Johari window is to increase an open area or arena horizontally and vertically.
- Unknown area in the Johari window can be increased by open communication.

INTERPERSONAL RELATIONSHIP

- Phases of interpersonal relationship include orientation, identification, exploration and resolution.
- First one is orientation phase in which the main purpose is to build rapport and set boundaries.
- In identification phase, the main aim of the nurse is to identify the problem of the patient.
- In exploration phase, a nurse provides resources and motivates the patient to identify his/her problem and solve it.
- Resolution phase is the phase where relationship ends.

EVIDENCE-BASED TEACHING

- Principles of instructions:
  - Begin with short revision of previous learning while giving instructions to the students.
  - Present new material in small amounts.
  - Ask many questions and observe students' response.
  - Provide models such as step-by-step demonstration.
  - Guide students by asking good questions and providing feedback.
- Emerging trends in nursing education and healthcare include global nurses, standardization, high-tech high-touch care, activity based, creative based and more scope to higher studies.

EMOTIONAL INTELLIGENCE

- Emotional intelligence (EI) is the ability to maneuver and interact with your own emotions as well as those of other people.

- EI is commonly divided into four key abilities:
  - Perceiving and identifying emotions
  - Thinking and reasoning using emotions
  - Understanding emotions and how they change
  - Regulating and managing emotions
- Learning is influenced by personal factors, environmental factors and school-related factors.

ASSESS YOURSELF

1. _____ is the development of all those capacities in the individual which will enable them to control their environment and fulfill possibilities.
2. _____ involves knowledge and the development to intellectual skills. It also includes knowledge, comprehension, application, analysis and evaluation.
3. _____ includes education that comes in between formal and informal education. Examples are correspondence course, distance learning or learning organized by NGOs
4. _____ refers to adult learning.
5. _____ was proposed by Charles Sanders Peirce, William James and John Dewey.
6. _____ is the best method to teach any clinical procedure.
7. _____ is the process of determining to what extent the educational objectives are being realized.
8. _____ is a tool used for self-assessment when working in a group or society.
9. _____ phase is the phase where relationship ends.
10. _____ is the ability to maneuver and interact with your own emotions as well as those of other people.

ANSWER KEY

1. Education
2. Cognitive domain
3. Nonformal education
4. Andragogy
5. Pragmatism
6. Demonstration
7. Evaluation
8. Johari window
9. Resolution
10. Emotional intelligence (EI)

15

Forensic Nursing and Indian Laws

DEFINITIONS

- **Thanatology:** The study of death in all its aspects.
- **Taphonomy:** The study of decomposition processes of human remains or the study of postmortem changes.
- **Necropsy:** It is the study of dead body.
- **Thoracic cavity:** It is the first site to be opened in postmortem examination (PME).

Special cases	First site to be opened in PME
Newborn	Abdomen
Poisoning	Brain
Asphyxial death	Cranium-Thoracic-Abdomen-Neck
Traumatic head Injury	Head

Indian Penal Code (IPC): IPC was implemented in 1860.

New Update

As per the recent update change done by the Ministry of Home Affairs:
- IPC has been replaced by Bharatiya Nyaya Sanhita comprising 356 sections.
- CrPC has been replaced by Bhartiya Nagarik Suraksha Sanhita.
- Indian Evidence Act has been replaced by Bharatiya Sakshya Adhiniyam.

MAINTENANCE OF MEDICAL RECORD

Condition	Time frame
Indoor patient	3 years
Routine cases	6 years after completion of treatment
After death	At least 3 years
Medicolegal cases	10 years
Copy of any of these document must be given within 72 hours	

DEATH

Somatic death or clinical death	Molecular death or cellular death
In this, there is complete and irreversible stoppage of any of Bishop's tripod of life components	It occurs within 1–2 hours after somatic death
Bishop's tripod of life components includes: • Heart – circulation • Lung – respiration • Brain function	

BICHAT'S MODE OF DEATH

- Dysfunction of respiration leads to asphyxia.
- Dysfunction of circulation leads to syncope.
- Dysfunction of brain function leads to coma.
- Asphyxia, syncope and coma are examples of Bichat's mode of death.

POSTMORTEM CHANGES

Signs of death may be immediate, early or late.

Early signs	Immediate signs	Late signs
• Eye changes • Algor mortis • Livor mortis • Rigor mortis	• 1st sign is insensibility (loss of sensation) and loss of voluntary power • There is stoppage of respiration and circulation.	• Decomposition signs • Putrefaction • Autolysis • Mummification

Early Postmortem Changes

Pallor Mortis

- Defined as '**Paleness of Death**'.
- Tone of the body
- Happens **15–20 minutes** after death
- Happens due to lack of capillary circulation in the body.
- Cannot be used to determine the time of death except if the body is found still with color.
- It indicates the posture of the body at the time of fixation and death.
- Indicates moving of the body to another position.
- Color of lividity may indicate the cause of death including poisoning.

Rigor Mortis

- A chemical change causes muscle mass to become rigid; looks like body is frozen in place (fixed).
- Due to depletion of ATP
- Rigor first appears in eyelids and proceeds from head to toe (Nysten's law).
- The **first site of** rigor mortis involvement is **myocardium**.
- The **first external site** of rigor mortis involvement **is eyelids**.
- **Sequence of Rigor mortis:** Myocardium, eyelids, neck and lower jaw, face, chest muscles, upper limb, abdomen, lower limb and lastly fingers and toes.

Algor Mortis

- After death, the heat production stops due to the inactivity of the heat regulating center after somatic death. Because of which, there is fall of core temperature of the body.
- Body core temperature is measured.

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