JHARKHAND
Rai University
UGC RECOGNISED UNIVERSITY
ACCREDITED BY NAAC

PRACTICAL LAB MANUAL

PHARMACOTHERAPEUTICS

D. Pharm IInd Year

LIST OF EXPERIMENTS

Experiment no-01

Aim: To study the preparation & discussion of (SOAP) notes for Hypertension (HTN).

INTRODUCTION

HYPERTENSION: - It is also known as high blood Pressure (HBP), it is long term medical condition in which blood pressure in arteries is persistently elevated. Systolic blood pressure (SBP) will be more than or equal to 140mmHg & Diastolic blood pressure (DBP) will be more than or equal to 90mmHg.

Types:-

Pre hypertension: SBP 120-139mmHg

DBP 80-89mmHg

Hypertension Stage I: SBP 140-159mmHg

DBP 90-99mmHg

Hypertension Stage II: SBP more or equal to the 160mmHg

DBP more or equal to the 100mmHg

Pregnancy induced HTN: because of increased Production of hormones & enzymes during pregnancy.

ETIOLOGY

Primary HTN: it is elevation in BP without an identified cause.

Secondary HTN: it is an elevation in BP with an exact causes. This type is account for 5-10% of total cases.

Causes of Secondary HTN includes:

- Congenital narrowing of Aorta.
- Renal disease.
- Endocrine disorder like Cushing's syndrome.
- Sleep apnea.
- Medication like oral contraceptive Pills, NSAIDs.
- Cirrhosis of Liver.

Risk Factor:

- Age: chance of CAD after 50 years of age.
- Alcohol, Smoking & DM.
- Excessive dietary intake of sodium.

- Gender.
- Obesity.
- Stress.
- Family history.
- Sedentary life style.

PATHOPHYSIOLOGY

Normal BP maintained by four mechanisms

- Symptomatic nervous system.
- Activities of vascular endothelium.
- Activities of renal system.
- Activities of endocrine system

SYMPTOMS

Sometimes HBP does not cause any symptoms, so that it also called Silent Killer disease.

In some Patient's the symptoms will be developed like as

- Severe Headache.
- Blurred vision.
- Dizziness.
- Nausea.
- Vomiting.
- Fatigue.
- Confusion epistaxis.
- Shortness of breath.
- Irregular heartbeat.

DIAGNOSIS

History collection & physical evaluation.

- Medical history of Diabetes mellitus.
- Complete blood count.
- Chest X-ray.
- ECG.

MANAGEMENT

Management of HTN is possible by two ways which incudes

Pharmacological Therapy

In the pharmacological therapy various group of drugs are used for treatment of hypertension, collectively these groups are called anti-hypertensive drug which includes.

Diuretics: it help in Kidney to inhibit the sodium reabsorption in distal convoluted tubules, ascending limb & loop of Henle. e.g.: chlorothiazide.

Beta blocker: it reduces the workload of heart & blood vessel & causing heart to beat slowly & with less force. e.g.: atenolol, propranolol.

Alpha blocker: it causes peripheral vasodilation of blood vessels.

Vasodilator: it acts directly on muscles in wall of arteries & preventing muscles tightening.

ACE Inhibitors: helpful to regulate BP include acupuncture, relaxation techniques & diversional therapies.

PROCEDURE

Procedure for SOAP note on Hypertension

(A) Subjective
- Personal details: Name, age, sex, weight of the Patient.
- Chief complaint
- Past medical history
- Social history
- Family history
- Medical history
- Allergies
- Review of system(symptom)

(B) Objective
- Whether any test or functional data are collected they should be recorded along with subjective information for more analysis of patient.

(C) Assessment
- Diagnosis of disease.
- Differential diagnosis.

(D) Plan
- Testing
- Medication prescribed.
- Psychoeducation if needed.

(E) Result:……
……

Experiment no-02

Aim: To study the preparation & discussion of (SOAP) notes for Angina Pectoris.

INTRODUCTION

ANGINA PECTORIS: - It is sudden attack of pain, tightness or discomfort in the chest that occurs when an area of the heart muscle receives less blood oxygen than usual. The pain often also spread to the shoulders, arms, jaw, neck & back. It usually happens when one or more arteries supplying the heart become hardened & narrowed but it is not a disease. It is a symptoms of an underlying heart problem, usually coronary heart disease (CHD).

Types:-

Stable angina: occurs when the heart is working harder than usual (exercise). Has a regular pattern which can be reversed by rest & medication. It is chronic & happen over months or even years.

Unstable angina (Crescendo): occur when at rest, less common & more serious. It does not follow a regular pattern. Rest & medication do not relieve it. A signal a future heart attack within a short time.

Variant angina (Prinz mental/microvascular): very rare & can occur at rest without any underlying coronary artery disease. Abnormal narrowing or relaxation of the blood vessels, reducing blood flow to the heart produce pain & relieved by drugs.

ETIOLOGY

Coronary artery disease is thought to begin with damage or injury to the inner layer of a coronary artery, sometimes as early as childhood. The damage may be caused by various factors, including

- Smoking
- High BP
- High cholesterol
- Diabetes or insulin resistance
- Sedentary lifestyle

Risk Factor:

- Unhealthy cholesterol level.
- High BP
- Smoking
- Diabetes (Type I & II)
- Overweight
- Metabolic syndrome
- Inactivity
- Unhealthy diet

- Older age
- Family history

SYMPTOMS

Angina is usually felt in the chest region as

- Squeezing
- Pressure
- Heaviness
- Tightening
- Burning or aching across the chest, usually starting behind the breastbone. This pain often spreads to the neck, jaw, arms, shoulders, throat, back, or even the teeth.

Other Symptoms

- Indigestion
- Heartburn
- Weakness
- Sweating
- Nausea
- Cramping
- Shortness of breath

PATHOPHYSIOLOGY

Cardiovascular Angina Pectoris: it is sensation of chest Pain, pressure or squeezing often due to insufficient blood flow to the heart muscle as a result of obstruction.

Ischemia: It is a restriction in blood supply to tissues, causing a shortage of oxygen that is needed for cellular, low cardiac output.

Chest Pain: It occurs suddenly, severe immobilizing chest pain that not relieved by rest position change & medication, decreases pulse rate, B may be elevated because of sympathetic stimulation or decreased BP because of decreased contractility, development if cardiogenic shock.

Myocardial Infraction: when the blood flow decreases or stop to apart of the heart, causing damage to the heart muscle.

DIAGNOSIS

- Physical examination.
- History collection.
- Stress test.
- Chest X-ray
- ECG
- Echocardiogram

- Cardiac catheterization (angiogram)

COMLICATIONS

- Heart attack
- Heart failure
- Abnormal heart rhythm (arrhythmia)

MANAGEMENT

- Quit smoking
- Increasing physical activity
- Monitoring & controlling health conditions like BP, cholesterol diabetes etc.
- Reducing stress level.
- Limit alcohol consumption
- Get annual flu shot to avoid heart complication from the viruses.

MEDICAL MANAGEMENT

- Various drug can be used to treat coronary artery disease including vasodilators. e.g.: nitrates
- Beta blockers. e.g.: Propranolol 20-40mg
- Calcium channel blockers. e.g.: Nifedipine, verapamil
- Anticoagulant drugs. e.g.: heparin
- Opiate analgesic (to reduce pain) morphine sulphate thrombolytic drug. e.g.: streptokinase, urokinase

SURGICAL MANAGEMENT

Angioplasty & stent Placement (percutaneous coronary revascularization)

PROCEDURE

Procedure for SOAP note on Angina Pectoris.

(A) Subjective

- Personal details: Name, age, sex, weight of the Patient.
- Chief complaint
- Past medical history
- Social history
- Family history
- Medical history
- Allergies
- Review of system(symptom)

(B) Objective

- Whether any test or functional data are collected they should be recorded along with subjective information for more analysis of patient.

(C) Assessment

- Diagnosis of disease.
- Differential diagnosis.

(D) Plan

- Testing
- Medication prescribed.
- Psychoeducation if needed.

(E) Result:……
……

Experiment no-03

Aim: To study the preparation & discussion of (SOAP) notes for Myocardial Infraction.

INTRODUCTION

MYOCARDIAL INFRACTION: - It is a diseased condition which is caused by reduced blood flow in coronary artery due to atherosclerosis & occlusion of an artery by an embolus or thrombus. MI or heart attack is the irreversible damage of myocardial tissue caused by prolonged ischemia & hypoxia.

Types:-

According to anatomic region of left ventricle involved

- Anterior Posterior
- Lateral
- Septal
- Circumferential combination
- Anterolateral
- Posterolateral
- Anteroseptal

According to degree of thickness of ventricular wall involved

- Transmural (full thickness)
- Laminar (subendocardial)

According to age of infarcts

- Newly formed (acute, recent, fresh)
- Advanced infracts(old, healed, organized)

ETIOLOGY

- Coronary artery disease(atherosclerosis)
- Blood clot
- Coronary artery spasm

Risk Factor:

Modifiable risk factors:

- Tobacco use
- High blood cholesterol or triglyceride levels
- Lack of exercise
- Obesity

- Stress

Non modifiable risk factors:

- Family history of heart disease
- Older age
- Diabetes
- High BP
- Pathology

SYMPTOMS

Cardiovascular:

- Ischemia
- Low cardiac output
- Chest pain
- Severity
- Duration
- Radiation (pain radiated to nose, jaw, shoulder & upper left arm & downward 4^{th} & 5^{th} finger)
- Decrease pulse rate
- Bradycardia (decreased pulse rate)
- Hypertension
- Myocardial infraction
- Excessive sweating
- ECG changes (ST segment & T wave changes also show tachycardia, bradycardia)

Respiratory

- Shortness of breath
- Pulmonary edema
- Chest heaviness
- Dyspnea (difficulty in breathing)
- fatigue

Genitourinary

Decreased urinary output may indicate cardiogenic shock

Gastrointestinal

Nausea & vomiting

Skin

Cool clammy Diaphoretic & pale

DIAGNOSIS

- Physical examination
- History collection
- Stress test
- Chest X-ray
- ECG
- Echocardiogram
- Cardiac catheterization
- TROPONIN-TEST

MEDICAL MANAGEMENT

Various drug can be used to treat coronary artery disease including

- vasodilators.(blood vessel dilator) e.g.: nitrates
- Beta blockers.(decrease work load in heart) e.g.: Propranolol 20-40mg
- Calcium channel blockers.(improve coronary blood flow) e.g.: Nifedipine, verapamil
- Anticoagulant drugs. e.g.: heparin
- Opiate analgesic (to reduce pain) morphine sulphate
- Thrombolytic drug. e.g.: streptokinase, urokinase

ANTIHYPERTENSIVE MEDICINES

- Methyldopa
- Sodium nitroprusside
- Amlodipine

SURGICAL MANAGEMENT

- Angioplasty & stent placement
- Coronary artery bypass surgery

PREVENTION

- quit smoking
- controlling BP , cholesterol & diabetes
- stay physical active
- manage stress
- low salt & fat food

PROCEDURE

Procedure for SOAP note on Myocardial Infraction.

(A) Subjective

- Personal details: Name, age, sex, weight of the Patient.
- Chief complaint
- Past medical history
- Social history
- Family history
- Medical history
- Allergies
- Review of system(symptom)

(B) Objective

- Whether any test or functional data are collected they should be recorded along with subjective information for more analysis of patient.

(C) Assessment

- Diagnosis of disease.
- Differential diagnosis.

(D) Plan

- Testing
- Medication prescribed.
- Psychoeducation if needed.

(E) Result:……
……

Experiment no-04

Aim: To study the preparation & discussion of (SOAP) notes for Hyperlipidemia.

INTRODUCTION

HYPERLIPIDAEMIA: - It is also called hyper lipo proteinemia, is a common disorder in developed countries & is the major cause of coronary heart disease. It results from abnormalities in lipid metabolism or plasma lipid transport or a disorder in the synthesis & degradation of plasma lipoproteins. Cholesterol is carried through blood, attached to proteins. This combination of protein & cholesterol is called a lipoproteins.

There are different types of cholesterol, based on what the lipoprotein carries. They are as follows:-

Low density lipoprotein (LDL):-LDL, the "bad" cholesterol transports cholesterol particles throughout your body. LDL cholesterol builds up in the wall of arteries, making them hard & narrow.

High density lipoprotein (HDL):- HDL, the "good" cholesterol picks up excess cholesterol & takes it back to your liver.

Risk Factor:

Poor diet:- eating too much saturated fat or trans fats results in unhealthy cholesterol levels. Saturated fats are found in fatty cuts of meat & full-fat dairy products. Trans fats often found in packaged snacks or desserts.

Obesity: - having a body mass index (BMI) of 30 or greater puts risk of high cholesterol.

Lack of exercise: - Exercise helps boost body's HDL, the "good", cholesterol

Smoking: - cigarette smoking may lower the level of HDL, the "good", cholesterol.

Alcohol: - drinking too much alcohol increase total cholesterol level.

Age: - even young children can have unhealthy cholesterol, but it's common in people over 40. As you age, liver becomes less able to remove LDL cholesterol.

CAUSES

A lipid profile also typically measures triglycerides, a type of fat in the blood. Having a high triglycerides level also can increase risk of heart disease. Factors that control such as inactivity, obesity & an unhealthy diet contribute to harmful cholesterol & triglyceride level. Factors beyond control play a role, too for example, genetic makeup make it more difficult for body to remove LDL cholesterol from blood or break it down in the liver.

Medical condition that causes unhealthy cholesterol levels includes

- Chronic Kidney disease
- Diabetes
- HIV/AIDS

- Hypothyroidism
- Lupus

Cholesterol levels can also be worsened by some type of medication that taking for other health problems such as,

- Acne
- Cancer
- High BP
- HIV/AIDS
- Irregular heart rhythms
- Organ transplants.

COMLICATIONS

High cholesterol can cause a dangerous accumulation of cholesterol & other deposits on the walls of arteries (atherosclerosis). These deposits (plaque) can reduce blood flow through arteries, which cause complication such as,

- Chest Pain
- Heart attack
- Stroke

DIAGNOSIS

A blood test to check cholesterol levels called a lipid panel or lipid profile typically reports

- Total cholesterol
- LDL cholesterol
- HDL cholesterol
- Triglycerides

Generally required to fast, consuming no food or liquids other than water, for 9 to 12 hours before test. Some cholesterol tests don't require fasting so follow doctor's instruction.

Interpreting the numbers

In US, cholesterol levels are measured in milligrams (mg) of cholesterol per deciliter (dL) of blood. In Canada & many European Countries, cholesterol levels are measured in millimoles per litre (mmol/L). To interpret test results, use these general guidelines.

PREVENTION

The same heart healthy lifestyle changes that lower cholesterol, helps to prevent from having high cholesterol on the first place. To help prevent high cholesterol….

- Eat low salt diet
- Limit amount of animal fats & use good fats.
- Lose extra pounds

- Quit smoking
- Exercise for at least 30 minutes
- Manage stress.

MANAGEMENT

- **Statins:** It bocks a substance liver needs to make cholesterol. This causes liver to remove cholesterol from blood. e.g.: atorvastatin, fluvastatin, lovastatin, pitavastatin etc.
- **Cholesterol absorption inhibitors:** small intestine absorbs the cholesterol from diet & releases it into bloodstream. The drug ezetimibe helps to reduce blood cholesterol by limiting the absorption of dietary cholesterol.
- **Bempedoic acid:** this newer drug works in much the same way as statins but it is less likely to cause muscle pain. Adding bempedoic acid (nexletol) to a maximum statin dosage can help lower LDL significantly. A combination pill containing both bempedoic acid & ezetimibe (nexlizet) also available.
- **Bile acid binding resins:** liver uses cholesterol to make bile acids, a substance needed for digestion. The medication cholestyramine (prevalite), colesevelam & colestipol lower cholesterol indirectly by binding to bile acids. This prompts liver to use excess cholesterol to make more bile acids, which reduces the level of cholesterol in blood.
- **PCSK9 inhibitors:** these drugs help the live absorb more LDL cholesterol, which lowers the amount of cholesterol circulating in blood. Alirocumab used for people who have genetic condition that causes very high level of LDL or in people with history of coronary diseases who have intolerance to statins or other cholesterol medication. They are injected under the skin every few weeks & are expensive.

Medication for high triglycerides

- **Fibrates:** reduces liver's production of very low density lipoproteins (VLDL) cholesterol & speed the removal of triglycerides from blood. VLDL cholesterol contains mostly triglycerides using fibrates with a statin increase the risk of statin side effects.
- **Niacin**: limits liver's ability to produce LDL & VLDL cholesterol. But niacin doesn't provide additional benefits over statins. Niacin has also linked to liver damage & strokes, so most doctors recommend it only foe people who can't take statins.
- **Omega-3 fatty acid supplements:** This helps to reduce triglycerides. They are available by prescription or over -the -counter.

Lifestyle & Home Remedies

- Lose extra pounds
- Eat heart healthy diet
- Exercise regularly.
- Don't smoke

PROCEDURE

Procedure for SOAP note on Myocardial Infraction.

(A) Subjective

- Personal details: Name, age, sex, weight of the Patient.
- Chief complaint
- Past medical history
- Social history
- Family history
- Medical history
- Allergies
- Review of system(symptom)

(B) Objective

- Whether any test or functional data are collected they should be recorded along with subjective information for more analysis of patient.

(C) Assessment

- Diagnosis of disease.
- Differential diagnosis.

(D) Plan

- Testing
- Medication prescribed.
- Psychoeducation if needed.

(E) Result:……
……

Experiment no-05

Aim: To study the preparation & discussion of (SOAP) notes on Rheumatoid Arthritis.

INTRODUCTION

Rheumatoid Arthritis:- It is a chronic & progressive inflammatory disorder of unknown etiology characterized by polyarticular symmetrical joint involvement & systemic manifestation. RA is a chronic, systemic autoimmune disease that involves inflammation in the membrane lining of the joints & often affects internal organs. Most patients exhibit a chronic fluctuating course of disease that results in progressive joint destruction, deformity& disability.

Types of Rheumatoid Arthritis:

- Morning stiffness
- Arthritis of three or more joints areas
- Arthritis of hand joints
- Symmetric arthritis
- Rheumatoid nodules
- Serum rheumatoid factors
- Radiographic changes

ETIOLOGY

It is consider an autoimmune disease in which the body loses its ability to distinguish between synovial & foreign tissue. Other factors are:

- Environmental influences such as infection or trauma
- Genetic markers
- Antigen dependent activation of T lymphocytes leads to proliferation of synovial lining, activation of proinflammatory cells from the bone marrow, cytokine & protease secretion auto-antibody production.
- Anticitrullinated proteins & peptides are high specific for RA
- Tumors necrosis factor, IL-1, IL-6, IL-8 & growth factors propagate the inflammatory process.

Predisposing factors

- Gender
- Familial

PATHOPHYSIOLOGY

Chronic inflammation of the synovial tissue lining the joint capsule results in the proliferation of this tissue. The inflamed, proliferating synovium characteristic of RA is called pannus. This pannus invades the cartilage & the bone surface, producing erosions of bone & cartilage & leading to destruction of the joints.

SYMPTOMS

- Fatigue
- Stiffness
- Not relieved by pain
- Low grade fever, weakness
- Muscle pain
- Symmetrical, affects joints on both sides of the body.
- Rheumatoid nodules
- Deformity of joints over time
- Raynaud phenomenon
- Pain

DIAGNOSIS

- Laboratory Assessment
- Anticyclic citrullinated peptide antibodies (ACPA)
- Erythrocyte sedimentation rate & C-reactive protein (CRP)
- Radiographic examination.

MANAGEMENT

There is no cure for RA aim to delay the progression of the disease, alleviate symptoms and reduce functional limitation. Supportive & palliative.

Medication

- **NSAIDs**: Ibuprofen, indomethacin, COX-2 inhibitor like celecoxib.
- **Analgesics**: morphine & acetaminophen.
- **Glucocorticoids or prednisolone**: prescribed in a small dose to slow joint damage caused by inflammation.

Surgery:

- Synovectomy
- Arthroscopic surgery
- Osteotomy
- Joint replacement surgery or arthroplasty
- Arthrodesis or fusion

COMLICATIONS

- Fixed deformities
- Muscle weakness
- Infection
- Spinal cord compression
- Systemic vasculitis

- Amyloidosis renal failure
- Don’t smoke

PROCEDURE

Procedure for SOAP note on Myocardial Infraction.

(A) Subjective
- Personal details: Name, age, sex, weight of the Patient.
- Chief complaint
- Past medical history
- Social history
- Family history
- Medical history
- Allergies
- Review of system(symptom)

(B) Objective
- Whether any test or functional data are collected they should be recorded along with subjective information for more analysis of patient.

(C) Assessment
- Diagnosis of disease.
- Differential diagnosis.

(D) Plan
- Testing
- Medication prescribed.
- Psychoeducation if needed.

(E) Result:……
……

Experiment no-06

Aim: To study the preparation & discussion of (SOAP) notes for Asthma.

INTRODUCTION

Asthma:- A reversible chronic inflammatory airway disease that characterized by bronchial hyper-responsiveness of the airways to various stimuli, leading to widespread bronchoconstriction, airflow limitation & inflammation of the bronchi causing symptoms of cough, wheeze, chest tightness .

Types of Asthma:

- **Atopic asthma**-classical type-1, IgE mediated hypersensitivity, allergen sensitization, seen from childhood, family history, and skin test positive.
- **Non-atopic asthma-** no allergen sensitization
- **Drug induced asthma-**sensitive to certain drugs like aspirin etc.
- **Occupational asthma-**stimulants such as fumes, organic & chemical dust, gas, penicillin products etc.
- **Exercise induced asthma-** begins after exercise & stops after 30minutes, worsen in cold & dry climate.

ETIOLOGY

- Tobacco smoke
- Infections such as colds, flu, or pneumonia
- Allergens such as food, pollen, mold, dust mites, and pet dander
- Exercise
- Air pollution and toxins Weather, especially extreme changes in temperature
- Drugs (such as aspirin, NSAID, and beta-blockers)
- Food additives Emotional stress and anxiety
- Singing, laughing, or crying
- Smoking, perfumes, or sprays
- Acid reflux.

SYMPTOMS

Asthma symptoms vary from person to person. You may have infrequent asthma attacks, have symptoms only at certain times such as when exercising or have symptoms all the time. Asthma signs and symptoms include

- Shortness of breath.
- Chest tightness or pain.
- Wheezing when exhaling, which is a common sign of asthma in children.
- Trouble sleeping caused by shortness of breath, coughing or wheezing

- Coughing or wheezing attacks that are worsened by a respiratory virus, such as a cold or the flu.

CAUSES

It isn't clear why some people get asthma and others don't, but it's probably due to a combination of environmental and inherited (genetic) factors.

PATHOPHYSIOLOGY

Airflow limitation in asthma is recurrent and caused by a variety of changes in the airway. These include

Bronchoconstriction: In asthma, the dominant physiological event leading to clinical symptoms i airway narrowing and a subsequent interference with airflow. In acute exacerbations of asthma, bronchial smooth muscle contraction (bronchoconstriction) occurs quickly to narrow the airways in response to exposure to a variety of stimuli including allergens or irritants. Allergen-induced acute bronchoconstriction results from an IgE-dependent release of mediators from mast cells that includes histamine, tryptase, leukotrienes, and prostaglandins that directly contract airway smooth muscles Aspirin and other nonsteroidal anti-inflammatory drugs can also cause acute airflow obstruction in some patients, and evidence indicates that this non-IgE-dependent response also involves mediator release from airway cells. In addition, other stimuli (including exercise, cold air, and irritants) can cause acute airflow obstruction. The mechanisms regulating the airway response to these factors are less well defined, but the intensity of the response appears related to underlying airway inflammation. Stress may also play a role in precipitating asthma exacerbations. The mechanisms involved have yet to be established and may include enhanced generation of pro-inflammatory cytokines.

Airway edema: As the disease becomes more persistent and inflammation more progressive, other factors further limit airflow. These include edema, inflammation, mucus hypersecretion and the formation of inspissated mucus plugs, as well as structural changes including hypertrophy and hyperplasia of the airway smooth muscle. These latter changes may not respond to usual treatment.

DIAGNOSIS

- **Physical examination**: Your doctor will perform a physical exam to rule out other possible conditions, such as a respiratory infection or chronic obstructive pulmonary disease (COPD). Your doctor will also ask you questions about your signs and symptoms and about any other health problems.
- **Tests to measure lung function:** You may be given lung function tests to determine how much air moves in and out as you breathe These tests may include..
- **Spirometry:** This test estimates the narrowing of your bronchial tubes by checking how much air you can exhale after a deep breath and how fast you can breathe out.
- **Peak flow:** A peak flow meter is a simple device that measures how hard you can breathe out. Lower than usual peak flow readings are a sign that your lungs may not be working as well and that your asthma may be getting worse. Your doctor will give you instructions on how to track and deal with low peak flow readings.

- Lung function tests often are done before and after taking a medication to open your airways called a bronchodilator), such as albuterol. If your lung function improves with use of a bronchodilator.
- **Additional tests** Other tests to diagnose asthma include
- **Methacholine challenge**: Methacholine is a known asthma trigger. When inhaled, it will cause your airways to narrow slightly. If you react to the methacholine, you likely have asthma. This test may be used even if your initial lung function test is normal.
- **Imaging tests.** A chest X-ray can help identify any structural abnormalities or diseases (such as infection) that can cause or aggravate breathing problems.
- **Allergy testing.** Allergy tests can be performed by a skin test or blood test. They tell you if you're allergic to pets, dust, mold or pollen. If allergy triggers are identified, your doctor may recommend allergy shots.
- **Nitric oxide test.** This test measures the amount of the gas nitric oxide in your breath. When your airways are inflamed a sign of asthma, you may have higher than normal nitric oxide levels: This test isn't widely available.
- **Sputum eosinophils**. This test looks for certain white blood cells (eosinophils) in the mixture of saliva and mucus (sputum) you discharge during coughing. Eosinophils are present when symptoms develop and become visible when stained with a rose-coloured dye.
- **Provocative testing for exercise and cold-induced asthma**. In these tests, your doctor measures your airway obstruction before and after you perform vigorous physical activity or take several breaths of cold air

MANAGEMENT

Prevention and long-term control are key to stopping asthma attacks before they start. Treatment usually involves learning to recognize your triggers, taking steps to avoid triggers and tracking your breathing to make sure your medications are keeping symptoms under control. In case of an asthma flare-up, you may need to use a quick-relief inhalers.

Medications

The right medications for you depend on a number of things your age, symptoms, asthma triggers and what works best to keep your asthma under control.

Preventive, long-term control medications reduce the swelling (inflammation) in your airways that leads to symptoms. Quick-relief inhalers (bronchodilators) quickly open swollen airways that are limiting breathing. In some cases, allergy medications are necessary.

Long-term asthma control medications, generally taken daily, are the cornerstone of asthma treatment. These medications keep asthma under control on a day-to-day basis and make it less likely you'll have an asthma attack.

Types of long-term control medications include

Inhaled corticosteroids: These medications include fluticasone propionate (Flovent HPA, Flovent Dakus, Xhance), budesonide (Tulmicort Flexhaler, Pulmicon Respules, Rhinocort), ciclesonide Alvoscol, beclomethasone (Qvar Redihaler), mometasone (Asmanes HFA, Asmanex Twisthaler) and fluticasone faroste (Armuity Ellipta). You may need to use these medications for several days to weeks before they reach their maximum benefit. Unlike oral corticosteroids, inhaled Corticosteroids have a relatively low risk of serious side effects.

Leukotriene modifier: These oral medications including montelukast (singulair), zafirlukast (Accolate) and zileuton (Zyflo) help relieve asthma symptoms.

Combination inhalers: These medications such as fluticasone-salmeterol (Advair HFA. Airduo Digihaler, others), budesonide-formoterol Symbicort), formoterol mometasone (Dulers) and fluticasone furoate-vilanterol (Dees Ellipta) contain a long-acting beta agonist along with corticosteroid.

Theophylline: Theophylline (Theo-24. Elixophyllin, Theochron) is a daily pill that helps keep the airways open by relaxing the muscles around the airways. It's not used as often as other asthma medications and requires regular blood tests.

Quick-relief (rescue medications are used as needed for raped, short-term symptom relief during an asthma attack. They may also be used before exercise if your doctor recommends it.

Types of quick relief medications include

Short-acting beta agonists: These inhaled, quick-relief bronchodilators act within minutes to rapidly case symptoms during an asthma attack. They include albuterol (ProAir HEA. Ventolin HFA, others) and levalbuterol , Xopenex HFA)

Short-acting beta agonists can be taken using a portable, hand-held inhaler or a nebulizer, a machine that converts asthma medications to a fine mist. They're inhaled through a face mask or mouthpiece

Anticholinergic agents: Like other bronchodilators, ipratropium (Atrovent HPA) and tiotropium (Spiriva, Spiriva Respimat) act quickly to immediately relax your airways, making it easier to breathe. They're mostly used for emphysema and chronic bronchitis, but can be used to treat asthma.

Oral and intravenous corticosteroids: These medications which include prednisone (Prednisone Intensol. Rayos) and methylprednisolone (Medrol, Depo-Medrol, Solu-Medrol relieve airway inflammation caused by severe asthma. They can cause serious side effects when used long term, so these drugs are used only on a short-term basis to treat severe asthma symptoms. If you have an asthma flare-up, a quick-relief inhaler can ease your symptoms right away. But you shouldn't need to use your quick-relief inhaler very often if your long term control medications are working properly. Keep a record of how many puffs you use each week. If you need to use your quick-relief inhaler more often than your doctor recommends, see your doctor. You probably need to

adjust your long-term control medication. Allergy medications may help if your asthma is triggered or worsened by allergies. These include

Allergy shots (immunotherapy): Over time, allergy shots gradually reduce your immune system reaction to specific allergens. You generally receive shots once a week for a few months, then once a month for a period of three to five years.

Biologics: These medications which include omalizumab (Xolair), mepolizumab (Nucala). dupilumab (Dupixent), reslizumab (Cinqair) and benralizumab (Fasenra) - -are specifically for people who have severe asthma.

Bronchial Thermoplasty: This treatment is used for severe asthma that doesn't improve with inhaled corticosteroids or other long-term asthma medications. It isn't widely available nor right for everyone. During bronchial thermoplasty, your doctor heats the insides of the airways in the lungs with an electrode. The heat reduces the smooth muscle inside the airways. This limits the ability of the airways to tighter, making breathing easier and possibly reducing asthma attacks. The therapy is generally done over three outpatient visits.

PROCEDURE

Procedure for SOAP note on Myocardial Infraction.

(A) Subjective
- Personal details: Name, age, sex, weight of the Patient.
- Chief complaint
- Past medical history
- Social history
- Family history
- Medical history
- Allergies
- Review of system(symptom)

(B) Objective
- Whether any test or functional data are collected they should be recorded along with subjective information for more analysis of patient.

(C) Assessment
- Diagnosis of disease.
- Differential diagnosis.

(D) Plan
- Testing
- Medication prescribed.
- Psychoeducation if needed.

(E) Result:……
……

Experiment no-07

Aim: To study the preparation & discussion of (SOAP) notes for COPD.

INTRODUCTION

COPD:- Chronic obstructive pulmonary disease (COPD) is a chronic inflammatory lung disease that causes obstructed airflow from the lungs. Symptoms include breathing difficulty, cough, mucus (sputum) production and wheezing. It's typically caused by long-term exposure to irritating gases or particulate matter, most often from cigarette smoke. People with COPD are at increased risk of developing heart disease, lung cancer and a variety of other conditions.

Emphysema and chronic bronchitis are the two most common conditions that contribute to COPD. These two conditions usually occur together and can vary in severity among individuals with COPD Chronic bronchitis is inflammation of the lining of the bronchial tubes, which carry air to and from the air sacs (alveoli) of the lungs. It's characterized by daily cough and mucus (sputum) production

ETIOLOGY

The main cause of COPD in developed countries is tobacco smoking In the developing world. COPD often occurs in people exposed to fumes from burning fuel for cooking and heating in poorly ventilated homes. Only some chronic smokers develop clinically apparent COPD. Although many smokers with long smoking histories may develop reduced lung function. Some smokers develop less common lung conditions. They may be misdiagnosed as having COPD until a more thorough evaluation is performed.

CAUSES OF AIRWAY OBSTRUCTION

Causes of airway obstruction include

Emphysema: This lung disease causes destruction of the fragile walls and elastic fibers of the alveoli. Small airways collapse when you exhale, impairing airflow out of your lungs

Chronic bronchitis: In this condition, your bronchial tubes become inflamed and narrowed and your lungs produce more mucus, which can further block the narrowed tubes. You develop a chronic cough trying to clear your airways**.**

Cigarette smoke and other irritants: the vast majority of people with COPD, the lung damage that leads to COPD is caused by long-term cigarette smoking. But there are likely other factors at play in the development of COPD, such as a genetic susceptibility to the disease, because not all smokers develop COPD, Other irritants can cause COPD, including cigar smoke, second-hand smoke, pipe smoke, air pollution, and workplace exposure to dust, smoke or fumes.

Alpha-1-antitrypsin deficiency: In about 1% of people with COPD, the disease results from a genetic disorder that causes low levels of a protein called alpha-1-antitrypsin (AAt). AAt is made

in the liver and secreted into the bloodstream to help protect the lungs. Alpha-1-antitrypsin deficiency can cause liver disease, lung disease or both.

RISK FACTOR

Exposure to tobacco smoke: The most significant risk factor for COPD is long-term cigarette smoking. The more years you smoke and the more packs you smoke, the greater your risk. Pipe smokers, cigar smokers and marijuana smokers also may be at risk, as well as people exposed to large amounts of second-hand smoke.

People with asthma: Asthma, a chronic inflammatory airway disease, may be a risk factor for developing COPD. The combination of asthma and smoking increases the risk of COPD even more.

Occupational exposure to dusts and chemicals: Long-term exposure to chemical fumes, vapor and dusts in the workplace can irritate and inflame your lungs.

Exposure to fumes from burning fuel: In the developing world, people exposed to fumes from burning fuel for cooking and heating in poorly ventilated homes are at higher risk of developing COPD.

Genetics: The uncommon genetic disorder alpha-1-antitrypsin deficiency is the cause of some cases of COPD. Other genetic factors likely make certain smokers more susceptible to the disease.

PATHOPHYSIOLOGY

COPD results from the combined processes of peripheral airway inflammation and narrowing of the airways. This leads to airflow limitation and the destruction and loss of alveoli, terminal bronchioles and surrounding capillary vessels and tissues, which adds to airflow limitation and leads to decreased gas transfer capacity. The extent of airflow limitation is determined by the severity of inflammation, development of fibrosis within the airway and presence of secretions or exudates. Reduced airflow on exhalation leads to air trapping, resulting in reduced inspiratory capacity, which may cause breathlessness (also known as dyspnoea) on exertion and reduced exercise capacity.

SYMPTOMS

COPD symptoms often don't appear until significant lung damage has occurred, and they usually worsen over time, particularly if smoking exposure continues. Signs and symptoms of COPD may include

- Shortness of breath, especially during physical activities.
- Wheezing.
- Chest tightness.
- A chronic cough that may produce mucus (sputum) that may be clear, white, yellow or greenish.
- Frequent respiratory infections.
- Lack of energy.

- Unintended weight loss (in later stages).
- Swelling in ankles, feet or legs.

People with COPD are also likely to experience episodes called exacerbations, during which their symptoms become worse than the usual day-to-day variation and persist for at least several days

EVALUATION

COPD is commonly misdiagnosed. Many people who have COPD may not be diagnosed until the disease is advanced. To diagnose your condition, your doctor will review your signs and symptoms, discuss your family and medical history, and discuss any exposure you've had to lung irritants especially cigarette smoke. Your doctor may order several tests to diagnose your condition.

Tests may include

Lung (pulmonary) function tests: These tests measure the amount of air you can inhale and exhale, and whether your lungs deliver enough oxygen to your blood. During the most common test, called spirometry, you blow into a large tube connected to a small machine to measure how much all your lungs can hold and how fast you can blow the air out of your lungs. Other tests include measurement of lung volumes and diffusing capacity, six-minute walk test, and pulse oximetry.

Chest X-ray: A chest X-ray can show emphysema, one of the main causes of COPD. An X-ray can also rule out other lung problems or heart failure.

CT scan: A CT scan of your lungs can help detect emphysema and help determine if you might benefit from surgery for COPD CT scans can also be used to screen for lung cancer.

Arterial blood gas analysis: This blood test measures how well your lungs are bringing oxygen into your blood and removing carbon dioxide

Laboratory tests: Lab tests aren't used to diagnose COPD, but they may be used to determine the cause of your symptoms or rule out other conditions. For example, lab tests may be used to determine if you have the genetic disorder alpha-1-antitrypsin deficiency, which may be the cause of COPD in some people. This test may be done if you have a family history of COPD and develop COPD at a young age.

COMPLICATION

COPD can cause many complications, including

Respiratory infections: People with COPD are more likely to catch colds, the flu and pneumonia. Any respiratory infection can make it much more difficult to breathe and could cause further damage to lung tissue.

Heart problems: For reasons that aren't fully understood, COPD can increase your risk of heart disease, including heart attack.

Lung cancer: People with COPD have a higher risk of developing lung cancer.

High blood pressure in lung arteries. COPD may cause high blood pressure in the arteries that bring blood to your lungs (pulmonary hypertension).

Depression: Difficulty breathing can keep you from doing activities that you enjoy. And dealing with serious illness can contribute to the development of depression.

MANAGEMENT

Many people with COPD have mild forms of the disease for which little therapy is needed other than smoking cessation. Even for more advanced stages of disease, effective therapy is available that can control symptoms, slow progression, reduce your risk of complications and exacerbations, and improve your ability to lead an active life.

Quitting smoking: The most essential step in any treatment plan for COPD is to quit all smoking.

MEDICATION

Several kinds of medications are used to treat the symptoms and complications of COPD. You may take some medications on a regular basis and others as needed.

Bronchodilators. .

- Albuterol (Pro Air HFA, Ventolin HFA, others)
- Ipratropium (Atrovent HFA).
- Levalbuterol

long-acting bronchodilators include:

- Aclidinium
- Formoterol (Preformist),
- Indacaterol.
- Tiotropium (Spiriva).
- Salmeterol (Serevent),
- Umeclidinium.

Inhaled steroids

- Fluticasone (Flovent HFA).
- Budesonide.

Combination inhalers

Some medications combine bronchodilators and inhaled steroids.

- Fluticasone and vilanterol.
- Fluticasone, umeclidinium and vilanterol.
- Formoterol and budesonide (Symbicort)
- Salmeterol and fluticasone (Advair HFA, Air Duo Digi Inhaler, others)

Oral steroids

- Phosphodiesterase--inhibitors.
- Theophylline.
- Antibiotics.

Lung therapies.

Oxygen therapy

Pulmonary rehabilitation program,

SURGERY

Surgery is an option for some people with some forms of severe emphysema who aren't helped sufficiently by medications alone. Surgical options include the following

Lung volume reduction surgery: In this surgery, your surgeon removes small wedges of damaged lung tissue from the upper lungs. This creates extra space in your chest cavity so that the remaining healthier lung tissue con expand and the diaphragm can work more efficiently. In some people, this surgery can improve quality of life and prolong survival.

Endoscopic lung volume reduction: a minimally invasive procedure has recently been approved by the US Food and Drug Administration to treat people with COPD. A tiny one-way endobronchial valve is placed in the lung, allowing the most damaged lobe to shrink so that the healthier part of the lung has more space to expand and function

Lung transplant: Lung transplantation may be an option for certain people who meet specific criteria. Transplantation can improve your ability to breathe and to be active. However, it's major operation that has significant risks, such as organ rejection, and need to take lifelong immune-suppressing medications.

Bullectomy: Large air spaces (bullae) form in the lungs when the walls of the air sacs (alveoli) are destroyed. These bullae can become very large and cause breathing problems. In a bullectomy, doctors remove bullae from the lungs to help improve air flow.

PROCEDURE

Procedure for SOAP note on Myocardial Infraction.

(A) Subjective

- Personal details: Name, age, sex, weight of the Patient.
- Chief complaint
- Past medical history
- Social history
- Family history
- Medical history

- Allergies
- Review of system(symptom)

(B) Objective

- Whether any test or functional data are collected they should be recorded along with subjective information for more analysis of patient.

(C) Assessment

- Diagnosis of disease.
- Differential diagnosis.

(D) Plan

- Testing
- Medication prescribed.
- Psychoeducation if needed.

(E) Result:……
……

Experiment no-08

Aim: To study the preparation & discussion of (SOAP) notes for Diabetes.

INTRODUCTION

Diabetes:- Diabetes mellitus (DM) is defined as a heterogeneous metabolic disorder characterized by common feature of chronic hyperglycaemia with disturbance of carbohydrate, fat and protein metabolism.

The older classification systems dividing DM into

1. Primary (idiopathic) and secondary types
2. Juvenile-onset and maturity onset types.
3. Insulin-dependent (IDDM) and non-insulin dependent (NIDDM)

Insulin-dependent Results from the pancreas's failure to produce enough insulin. This form was previously referred to as "insulin-dependent diabetes mellitus (IDDM) or juvenile diabetes. The cause is unknown.

Non-insulin dependent (NIDDM) Begins with insulin resistance, a condition in which cells fail to respond to insulin properly. This form was previously referred to as "noninsulin- dependent diabetes mellitus" (NIDDM) or "adult-onset diabetes. The primary cause is excessive body weight and not enough exercise.

ETIOLOGY

Different causes are associated with each type of diabetes.

Type 1 diabetes

Doctors don't know exactly what causes type 1 diabetes. For some reason, the immune system mistakenly attacks and destroys insulin-producing beta cells in the pancreas. Genes may play a role in some people. It's also possible that a virus sets off the immune system attack

Type 2 diabetes

Type 2 diabetes stems from a combination of genetics and lifestyle factors. Being overweight or obese increases your risk too. Carrying extra weight, especially in your belly, makes your cells more resistant to the effects of insulin on your blood sugar. This condition runs in families. Family members share genes that make them more likely to get type 2 diabetes and to be overweight

RISK FACTOR

Type 1 diabetes

You're more likely to get type 1 diabetes if you're a child or teenager, you have parent or sibling with the condition, or you carry certain genes that are linked to the disease.

Risk for type 2 diabetes increases if you

- Are overweight.
- Are age 45 or older
- Have a parent or sibling with the condition.
- Aren't physically active
- Have gestational diabetes.
- Have prediabetes.
- Have high blood pressure, high cholesterol, or high triglycerides.

COMPLICATION

Complications associated with diabetes include:

- Heart disease, heart attack, and stroke.
- Neuropathy
- Nephropathy.
- Retinopathy and vision loss.
- Hearing loss.
- Foot damage such as infections and sores that don't heal.
- Skin conditions such as bacterial and fungal infections.
- Depression.
- Dementia.

PATHOPHYSIOLOG

PATHOPHYSIOLOGY OF TYPE 1

Type 1 diabetes is characterized by destruction of the pancreatic beta cells. Most likely cause of these conditions is combined genetic, immunologic and possibly environmental (eg, viral) factors contribute to cell destruction. This is abnormal response of the body in which the antibodies are direct against the normal tissues as if they were foreign and eventually can damage Islet of Langerhans, specific area of the pancreas that produce insulin, reducing the production of insulin or totally no production of insulin.

PATHOPHYSIOLOGY OF TYPE 2

Type 2 Diabetes Mellitus is an adult onset, and non-insulin dependent. There are 2 main problems related to insulin in type 2 diabetes, first one is insulin resistance (insulin do not bind with the special receptor on cell surface) and impaired insulin secretion (insulin secreting glands release irregular amount of insulin).

SYMPTOMS

General symptoms are

- Increased hunger.
- Increased thirst.

- Weight loss.
- Frequent urination.
- Blurry vision
- Extreme fatigue.
- Sores that don't heal

Symptoms of type 1 diabetes can include

- Extreme hunger.
- Increased thirst
- Unintentional weight loss
- frequent urination
- Blurry vision
- Tiredness

Symptoms of type 2 diabetes can include

- Increased hunger.
- Increased thirst.
- Increased urination
- Blurry vision.
- Tiredness
- Sores that are slow to heal.

EVALUATION

- Fasting blood sugar.
- Post prandial blood sugar
- HbAIC
- Lipid Profile: To diagnose dyslipidemia.

Complete physical examination

1. Weight/waist: Body Mass Index (BMI), Waist circumference.

2. Cardiovascular system: Blood pressure, ideally lying and standing Peripheral, neck and abdominal vessels.

3. Eyes: Visual acuity (with correction), Cataracts Retinopathy (examine with pupil dilation).

4. Feet: Sensation and circulation, Skin condition, Pressure areas. Interdigital problems. Abnormal bone disorder.

5. Peripheral nerves Tendon reflexes, Sensation: touch vibration.

6. Urinalysis Albumin, Ketones, Nitrites and/or leucocyte

MANAGEMENT

The major components of the treatment of diabetes are

- Diet and Exercise
- Oral hypoglycaemic therapy BC.
- Insulin Therapy.

Diet: is a basic part of management in every case. Treatment cannot be effective unless adequate attention is given to ensuring appropriate nutrition. Dietary treatment should aim at ensuring appropriate nutrition. Dietary treatment should aim at ensuring. Weight control providing nutritional requirements allowing good glycaemic control with blood glucose levels as close to normal as possible correcting any associated blood lipid abnormalities.

Exercise: Physical activity promotes weight reduction and improves insulin sensitivity, thus lowering blood glucose levels. Together with dietary treatment, a programme of regular physical activity and exercise should be considered for each person. Such a programme must be tailored to the individual's health status and fitness. People should, however, be educated about the potential risk of hypoglycaemia and how to avoid it.

Nutritional Management for Type 1 Diabetes

- Consistency and timing of meats
- Timing of insulin.
- Monitor blood glucose regularly.

Nutritional Management for Type II Diabetes

- Weight loss.
- Smaller meals and snacks.
- Physical activity. Monitor blood glucose and medications.

MANAGEMENT FOR TYPE 2 DIABETES

ORAL MEDICATIONS 5 Classes

- Sulfonylureas.
- Biguanides.
- Thiazolidinediones
- Alpha-glycosidase inhibitors:
- Meglitimides

Type 1 diabetes

Insulin is the main treatment for type 1 diabetes. It replaces the hormone your body isn't able to produce. There are four types of insulin that are most commonly used. They're differentiated how quickly they start to work, and how long their effects last.

- Rapid-acting insulin starts to work within 15 minutes and its effects last for 3 to 4 hours

- Short-acting insulin starts to work within 30 minutes and lasts 6 to 8 hours:
- Intermediate-acting insulin starts to work within 1 to 2 hours and lasts 12 to 18 hours.
- Long-acting insulin starts to work a few hours after injection and lasts 24 hours or longer.

PROCEDURE

Procedure for SOAP note on Myocardial Infraction.

(A) Subjective
- Personal details: Name, age, sex, weight of the Patient.
- Chief complaint
- Past medical history
- Social history
- Family history
- Medical history
- Allergies
- Review of system(symptom)

(B) Objective
- Whether any test or functional data are collected they should be recorded along with subjective information for more analysis of patient.

(C) Assessment
- Diagnosis of disease.
- Differential diagnosis.

(D) Plan
- Testing
- Medication prescribed.
- Psychoeducation if needed.

Result:……

Experiment no-09

Aim: To study the preparation & discussion of (SOAP) notes for epilepsy.

INTRODUCTION

Epilepsy:- Epilepsy is a common neurological condition characterized by recurrent seizures (that usually occur unpredictably), loss of consciousness with or without body movements. It is derived from a (Greek word Epi-upon, Leptos-seizures). It is also known as seizure disorder Seizure is a phenomenon characterized by an excessive, hypersynchronous discharge of cortical neuronal activity (measured by EEG), featured by disturbances in consciousness, sensory motor systems, subjective well-being and objective behavior.

Types of Epilepsy

Based on International League against Epilepsy (LAI), they are classified into

- Partial seizures (local seizures)
- Generalized seizures

Partial/Focal Seizures (SEIZURES BEGIN LOCALLY)

It is the most common type of seizures, localized to a neuronal system, limited to part of one cerebral hemisphere. Types of partial seizures include a)

(A) **Simple partial seizures** (without impairment of consciousness): It is not associated with loss of consciousness. It is associated with motor signs (convulsive jerking, lip smacking), sensory and somatosensory signs (paraesthesia's, auras), autonomic signs (sweating, flushing, behavioral manifestations (dysphasia, structured hallucinations)

(B) **Complex partial seizures** (with impairment of consciousness): It is associated with impaired consciousness, impairment proceeds/follows seizures. It is also associated with purposeless behavior, glassy stare, aimless walking hallucinations (visual, auditory), aggressive behavior.

(C) **Secondary generalized seizures:** Partial orset evolving to generalized tonic-clonic seizures

2. Generalised Seizures

a) **Absence seizures**: It is also known as 'petit mal' seizure. It happens exclusively in childhoodand early adolescence. It is associated with alterations of consciousness, staring with occasional eye-blinking, and enuresis. These attacks last only for few seconds and often go unrecognized

b) **Myoclonic seizures**: It is also known as bilateral massive epileptic myoclonus. It is associated with involuntary, rhythmic jerking of facial, limb/trunk muscles

c) **Clonic seizures**: It is associated with sustained muscle contractions, altering with relaxation

d**) Tonic seizures:** It is associated with sustained muscle contractions (stiffening).

e) Generalized tonic. It is also known as 'grand mal' seizure. It leads to sudden loss of conscious, the individual becomes rigid and falls to the ground. It is associated with interrupted respirations, extended legs, rapid bilateral muscle jerking, heavy salivation, tongue biting, headache, confusion. It lasts for one minute. In some cases, grand mal seizure occurs repeatedly with no recovery of consciousness between attacks, leading to state known as 'status epilepticus". **f) Atonic seizures:** It is also known as 'drop attack. It occurs mainly in children. It is associated with sudden loss of postural tone and the individual falls to the ground.

ETIOLOGY

In 20% cases cause can be determined, rest 72% are idiopathic (of unknown cause).

- Inherited/genetic causes: Single gene mutation (<2%), multiple genes, environmental factors, genetic disorders, >200genes have the capability of causing epilepsy.
- Acquired causes: Head trauma, neurosurgery, cerebrovascular disease, infections (meningitis, influenza, toxoplasmosis, mumps, measles, and syphilis), metabolic disorders (such as hypoglycaemia and hypocalcaemia), and intracranial neoplasms.
- Congenital causes inborn error of metabolism.
- Withdrawal of drugs Alcohol, benzodiazepines, barbiturates, antiepileptics
- Drugs that induce seizures. Some of the antibiotic, antidiabetics, anesthetics, antimalarials, antispastics, antidepressants, antipsychotics, mood stabilizers.

RISK FACTORS

- Sleep deprivation
- Missed doses of anti-epileptic drugs (AEDs) in treated patients.
- Alcohol withdrawals, recreational drug misuse.
- Physical and mental exhaustion.
- Flickering lights (includes TV, computer screens: comes under generalized epilepsy syndrome). Intercurrent infections.
- Metabolic disturbances
- Uncommon reasons like loud noises, very hot baths etc.

CAUSES

- High fever, especially in infants. Drug use, alcohol withdrawal.
- Metabolic disturbances.
- Head trauma
- Brain tumor infection
- Stroke.
- Brain tumour.
- Brain infection.
- Past head injury.

SYMPTOMS

- Temporary confusion.
- A staring spell.
- Uncontrollable jerking movements of the arms and legs.
- Loss of consciousness or awareness
- Psychic symptoms such as fear, anxiety

Symptoms vary depending on the type of seizure. In most cases, a person with epilepsy will tend to have the same type of seizure each time, so the symptoms will be similar from episode to episode.

PATHOPHYSIOLOGY

Neurons are inter-connected in a complex network. Each individual neuron is linked with hundreds of other neurons via synapses. Neurons discharge electrical current and neurotransmitters are released at synaptic levels and permits inter-communication. Neurotransmitters are of two types: Inhibitory neurotransmitters (INT) and Excitatory neurotransmitters (ENT).

Inhibitory neurotransmitters (GABA): GABA (Gamma amino butyric acid) acts on ion channels and increases chloride outflow & decreases chances of action potential formation. **Excitatory neurotransmitters (aspartate, glutamate):** Aspartate and glutamate allows sodium and calcium influx which passes way for action potential formation.

In this manner, information is conveyed, transmitted and processed throughout the CNS. Seizures occur due to the imbalance between the above inhibition and excitation. A normal neuron discharges repetitively at low baseline frequencies. If neurons are damaged, injured/suffer a chemical/metabolic insult, the changes in discharge pattern develops. During epilepsy, regular low frequency discharges are replaced by bursts of high frequency discharges followed by periods) of inactivity. A single neuron discharging in an abnormal manner is usually not clinically significant. But when a whole population of neurons discharge synchronously in an abnormal manner, epileptic seizure is precipitated. This abnormal discharge may remain localized or it may spread to adjacent areas, recruiting more neurons as it expands Abnormalities in ion channel (Na+, K+, Ca+2) or decreased INT activity/inactivation of INT activity Increased ENT activity Rhythmic & repetitive hypersynchronous discharge of neurons Seizures focus Seizures Repetitive seizures Epilepsy.

DIAGNOSIS

- Neurological examination/neuropsychological tests.
- Doctor tests for behavior, motor abilities, mental function and other symptoms
- Medical history.
- Genetic testing.
- Electroencephalogram (EEG). Tracks electrical signals from the brain.
- CT scan, MRI scan: Used to detect abnormalities in brain (tumors, bleeding, cysts).
- MRI: Used to measure the changes in blood flow.
- PET (Positron Emission Tomography): Used to visualize active areas of brain and detect abnormalities.

- SPECT (Single Photon Emission Computerized Tomography): Used when MRI and ECG did not pinpoint the location in brain where the seizures are originating.
- SISCOM (Subtraction Ictal SPECT Categorized to MRI): A form of SPECT test which may provide even more detailed results.

TREATMENT

- Goals of treatment.
- To control and reduce seizure frequency.
- To focus on minimum possible dosage of AEDS
- To minimize ADRs associated with therapy.
- To ensure patient medication compliance.
- To ensure that the person lives a normal life as far as possible.
- To reduce morbidity and mortality, to improve quality of life.

NON-PHARMACOLOGICAL TREATMENT

1) Ketogenic diet: Ketogenic diet containing high content of fats, followed by proteins, carbohydrates were found to reduce seizures in some children. Side effects: Constipation, slow growth because of nutritional deficiencies, build-up of uric acid in blood, kidney stones.

2) Surgeries: Medications can control seizures in most people with epilepsy, but they don't work for everyone. About 30% of people taking the drugs can't tolerate the side effects. In such cases, brain surgery may be an option.

i) Lobe resection: The lobe within which seizures focus is located is cut off. Extemporal resection involves brain tissue from areas outside of the temporal lobe.

ii) Lesionectomy: This surgery removes brain lesions, areas of injury or defect like a tumour or malformed blood vessel that cause seizures, Seizures usually stop once the lesion is removed.

iii) Split-brain surgery: Corpus callosum is a band of nerve fibres connecting the two halves (called hemispheres) of the brain. In this operation, corpus callosum is cut off and the communication between hemispheres is prevented, no spread of seizures from one side to other side. It works best for people with extreme forms of uncontrollable epilepsy who have intense seizures that can lead to violent falls and serious injury.

iv) Functional hemispherectomy: Entire hemisphere or half of the brain is removed. It is mostly used for children younger than 13 who have one hemisphere that doesn't work like it.

PHARMACOLOGICAL TREATMENT

- Barbiturates: Phenobarbitone.
- Hydantoins' Phenytoin
- Succinimide: Ethosuximide.
- Benzodiazepines: Clonazepam, Diazepam, Lorazepam, Clobazam
- Deoxy barbiturate: Primidone.

- Iminostilbenes: Carbamazepine, oxcarbazepine.
- Aliphatic carboxylic acid: Valproic acid (valproate sodium), Divalproex
- Phenyl triazine Lamotrigine.
- Cyclic GABA analogues: Gabapentin, Pregabalin.
- Newer drugs. Topiramate, Zonisamide, Levetiracetam, Vigabatrin, Tiagabine, lacosamide.

PROCEDURE

Procedure for SOAP note on Myocardial Infraction.

(A) Subjective
- Personal details: Name, age, sex, weight of the Patient.
- Chief complaint
- Past medical history
- Social history
- Family history
- Medical history
- Allergies
- Review of system(symptom)

(B) Objective
- Whether any test or functional data are collected they should be recorded along with subjective information for more analysis of patient.

(C) Assessment
- Diagnosis of disease.
- Differential diagnosis.

(D) Plan
- Testing
- Medication prescribed.
- Psychoeducation if needed.

Result:……

Experiment no-10

Aim: To study the preparation & discussion of (SOAP) notes for Stroke.

INTRODUCTION

Stroke:- A stroke occurs when the blood supply to part of your brain is interrupted or reduced, preventing brain tissue from getting oxygen and nutrients. Brain cells begin to die in minutes. A stroke is a medical emergency, and prompt treatment is crucial. Early action can reduce brain damage and other complications. The good news is that many fewer Americans die of stroke now than in the past. Effective treatments can also help prevent disability from stroke

Type of stroke

- Ischemic strokes
- Haemorrhagic stroke
- Transient ischemic attacks (TIAs)

ETIOLOGY

A stroke occurs when the blood supply to your brain is interrupted or reduced. This reduce supply to your brain of oxygen and nutrients, which can cause your brain cells to die. A stroke may be caused by a blocked artery (ischemic stroke) or a leaking or burst blood vessel (haemorrhagic stroke), Some people may experience a temporary disruption of blood flow through their brain (transient ischemic attack, or TLA).

- Hypertension.
- Smoking.
- Heart disease-atrial fibrillation.
- Tumour.
- Infection

RISK FACTOR

Lifestyle risk factors

- Being overweight or obese.
- Physical inactivity.
- Heavy or binge drinking
- Use of illegal drugs such as cocaine and methamphetamine.

Medical risk factors

- High blood pressure.
- Cigarette smoking or second-hand smoke exposure.
- High cholesterol.

- Diabetes.
- Obstructive sleep apnoea.
- Cardiovascular disease, including heart failure, heart defects, heart infection or abnormal heart rhythm, such as atrial fibrillation.

Personal or family history of stroke, heart attack or transient ischemic attack. Other factors associated with a higher risk of stroke include

Age: People age 55 or older have a higher risk of stroke than do younger people.

Race: African Americans have a higher risk of stroke than do people of other races.

Sex: Men have a higher risk of stroke than women. Women are usually older when they have strokes, and they're more likely to die of strokes than are men.

Hormones: Use of birth control pills or hormone therapies that include estrogen increases risk.

CAUSES

There are two main causes of stroke a blocked artery (ischemic stroke) or leaking or bursting of a blood vessel (hemorrhagic stroke).

Some people may have only a temporary disruption of blood flow to the brain, known as transient ischemic attack (TIA), that doesn't cause lasting symptoms

SYMPTOMS

Signs and symptoms of stroke include

Trouble speaking and understanding what others are saying: You may experience confusion. slur your words or have difficulty understanding speech.

Paralysis or numbness of the face, arm or leg: You may develop sudden numbness, weakness or paralysis in your face, arm or leg. This often affects just one side of your body. Try to raise both your arms over your head at the same time. If one arm begins to fall, you may be having a stroke. Also, one side of your mouth may droop when you try to smile.

Problems seeing in one or both eyes: You may suddenly have blurred or blackened vision in one or both eyes, or you may see double.

Headache: A sudden, severe headache, which may be accompanied by vomiting, dizziness or altered consciousness, may indicate that you're having a stroke.

Trouble walking: You may stumble or lose your balance. You may also have sudden dizziness or a loss of coordination.

COMPLICATION

A stroke can sometimes cause temporary or permanent disabilities, depending on brain lacks blood flow and which part was affected. Complications may include as follow how long the

Paralysis or loss of muscle movement: You may become paralyzed on one side of your body, or lose control of certain muscles, such as those on one side of your face or one arm.

Difficulty talking or swallowing: A stroke might affect control of the muscles in your mouth and throat, making it difficult for you to talk clearly, swallow or eat. You also may have difficulty with language, including speaking or understanding speech, reading, or writing **Memory loss or thinking difficulties:** Many people who have had strokes experience some memory loss. Others may have difficulty thinking, reasoning, making judgments and understanding concepts.

Emotional problems: People who have had strokes may have more difficulty controlling their emotions, or they may develop depression.

Pain: Pain, numbness or other unusual sensations may occur in the parts of the body affected by stroke. For example, if a stroke causes you to lose feeling in your left arm, you may develop an uncomfortable tingling sensation in that arm.

Changes in behavior and self-care ability. People who have had strokes may become more withdrawn. They may need help with grooming and daily chores.

PATHOPHYSIOLOGY

Hemorrhagic

Hemorrhagic strokes are classified based on their underlying pathology. Some causes of hemorrhagic stroke are hypertensive hemorrhage, ruptured aneurysm, ruptured AV fistula, transformation of prior ischemic infarction, and drug-induced bleeding. They result in tissue injury by causing compression of tissue from an expanding hematoma or hematomas. In addition, the pressure may lead to a loss of blood supply to affected tissue with resulting infarction, and the blood released by brain hemorrhage appears to have direct toxic effects on brain tissue and vasculature. Inflammation contributes to the secondary brain injury after hemorrhage.

DIAGNOSIS

A physical exam: Your doctor will do a number of tests you're familiar with, such as listening to your heart and checking your blood pressure. You'll also have a neurological exam to see how a potential stroke is affecting your nervous system.

Blood tests: You may have several blood tests, including tests to check how fast your blood clots,whether your blood sugar is too high or low, and whether you have an infection.

Computerized tomography (CT) scan: A CT scan use a series of X-rays to create a detailed image of your brain. A CT scan can show bleeding in the brain, an ischemic stroke, a tumour or other conditions. Doctors may inject a dye into your bloodstream to view your blood vessels in your neck and brain in greater detail (computerized tomography angiography).

Magnetic resonance imaging (MRI): An MRI uses powerful radio waves and magnets to create a detailed view of your brain. An MRI can detect brain tissue damaged by an ischemic stroke and brain haemorrhage. Your doctor may inject a dye into a blood vessel to view the arteries and veins and highlight blood flow (magnetic resonance angiography or magnetic resonance venography).

Carotid ultrasound: In this test, sound waves create detailed images of the inside of the carotid arteries in your neck. This test shows build-up of fatty deposits (plaques) and blood flow in your carotid arteries.

Cerebral angiogram: In this uncommonly used test, your doctor inserts a thin, flexible tube (catheter) through a small incision, usually in your groin, and guides it through your major arteries and into your carotid or vertebral artery. Then your doctor injects a dye into your blood vessels to make them visible under X-ray imaging. This procedure gives a detailed view of arteries in your brain and neck.

Echocardiogram: An echocardiogram uses sound waves to create detailed images of your heart. An echocardiogram can find a source of clots in your heart that may have travelled from your heart to your brain and caused your stroke.

PREVENTION

- Controlling high blood pressure (hypertension).
- Lowering the amount of cholesterol and saturated fat in your diet
- Quitting tobacco use.
- Managing diabetes
- Maintaining a healthy weight.
- Eating a diet rich in fruits and vegetables.
- Exercising regularly
- Drinking alcohol in moderation, if at all.
- Treating obstructive sleep apnoea (OSA)
- Avoiding illegal drugs

MANAGENEMT

Ischemic stroke

To treat an ischemic stroke, doctors must quickly restore blood flow to your brain. This may be done with, Emergency IV medication. Therapy with drugs that can break up a clot has to be given within 4.5 hours from when symptoms first started if given intravenously. The sooner these drugs are given, the better. Quick treatment not only improves your chances of survival but also may reduce complications.

Removing the clot with a stent retriever. Doctors can use a device attached to a catheter to directly remove the clot from the blocked blood vessel in your brain. This procedure is particularly beneficial for people with large clots that can't be completely dissolved with tPA. This procedure is often performed in combination with injected tPA.

Other procedures

To decrease your risk of having another stroke or transient ischemic attack, your doctor may recommend a procedure to open up an artery that's narrowed by plaque. Options vary depending on your situation, but include the following:

Carotid endarterectomy: Carotid arteries are the blood vessels that run along each side of your neck, supplying your brain (carotid arteries) with blood. This surgery removes the plaque blocking a carotid artery, and may reduce your risk of ischemic stroke. A carotid endarterectomy also involves risks, especially for people with heart disease or other medical conditions. **Angioplasty and stents:** In an angioplasty, a surgeon threads a catheter to your carotid arteries through an artery in your groin. A balloon is then inflated to expand the narrowed artery. Then a stent can be inserted to support the opened artery.

Haemorrhagic stroke: Emergency treatment of haemorrhagic stroke focuses on controlling the bleeding and reducing pressure in your brain caused by the excess fluid. Treatment options include: Emergency measures. If you take blood-thinning medications to prevent blood clots, you may be given drugs or transfusions of blood products to counteract the blood thinners' effects. You may also be given drugs to lower the pressure in your brain (intracranial pressure), lower your blood pressure, prevent spasms of your blood vessels and prevent seizures.

Surgery: If the area of bleeding is large, your doctor may perform surgery to remove the blood and relieve pressure on your brain. Surgery may also be used to repair blood vessel problems associated with hemorrhagic strokes. Your doctor may recommend one of these procedures after a stroke or if an aneurysm, arteriovenous malformation (AVM) or other type of blood vessel problem caused your hemorrhagic stroke are as follow

Surgical clipping: A surgeon places a tiny clamp at the base of the aneurysm, to stop blood flow to it. This clamp can keep the aneurysm from bursting, or it can keep an aneurysm that has recently haemorrhaged from bleeding again.

Coiling (endovascular embolization): Using a catheter inserted into an artery in your groin and guided to your brain, your surgeon will place tiny detachable coils into the aneurysm to fill it. This blocks blood flow into the aneurysm and causes blood to clot.

Surgical AVM removal: Surgeons may remove a smaller AVM if it's located in an accessible area of your brain. This eliminates the risk of rupture and lowers the risk of haemorrhagic stroke. However, it's not always possible to remove an AVM if it's located deep within the brain, it's large, or its removal would cause too much of an impact on brain function.

Stereotactic radiosurgery: Using multiple beams of highly focused radiation, stereotactic radiosurgery is an advanced minimally invasive treatment used to repair blood vessel malformations

PROCEDURE

Procedure for SOAP note on Myocardial Infraction.

(A) Subjective

- Personal details: Name, age, sex, weight of the Patient.
- Chief complaint
- Past medical history
- Social history
- Family history
- Medical history
- Allergies
- Review of system(symptom)

(B)Objective

- Whether any test or functional data are collected they should be recorded along with subjective information for more analysis of patient.

(C) Assessment

- Diagnosis of disease.
- Differential diagnosis.

(D) Plan

- Testing
- Medication prescribed.
- Psychoeducation if needed.

Result:……