

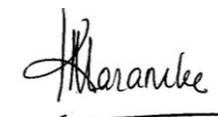
Foundation in Pathology -End of Year 2 Semester II
(including Foundation in Clinical Pathology -Year 3 Semester I)
2010/11 Batch

Web Copy

Final document - 15th August, 2013

Duration: **Foundation in Pathology - 4 Weeks**
Foundation in Clinical Pathology – 3 Weeks

Topic & Concepts	Objectives	Dept.	T/L activity
	At the end of the module, the student should be able,		
2010-3/PATH-SBM-1/01			
Introduction to Pathology	to understand the purpose of the module and the basis for the design of the module	Pathology	Introductory session
2010-3/PATH-SBM-1/02			
Acute inflammation and suppuration	1. to define the process of acute inflammation. 2.to describe in detail* the various steps, controlling factors, sequale, complications and clinicopathological effects of acute inflammation. (includes suppuration)	Pathology	Lectures + Museum Class
2010-/PATH-SBM-1/03			
Chronic inflammation	1.to define the process of chronic inflammation 2. to describe in detail* the non-specific and specific types of chronic inflammation, its sequele and complications		
2010-3/PATH-SBM-1/04			
Wound healing	1. to describe the process of healing in injured tissue and its complications 2. to describe in detail* the process of healing in different types of tissue and surgical wounds. 3. to describe in detail* the formation of the organ of repair-namely granulation tissue.	Pathology	Lectures + Museum Class
2010-3/PATH-SBM-1/05			
Necrosis and apoptosis	1. to describe in detail* the morphological changes that occur in irreversibly injured cells and the clinico-pathological effects of such necrosis 2. to outline the non reversible types of cell injury. 3. to describe in detail* the pathogenesis and pathology of different types of necrosis 4. to outline the clinicopathological effects and recognition of necrosis 5. to define the term reperfusion injury and describe the process	Pathology	Lectures + Museum class



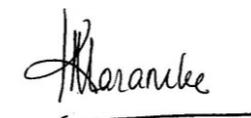
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	6. to define the term apoptosis and discuss the clinicopathological significance		
	7. to name the steps in apoptosis and the controlling factors		
	8. to differentiate apoptosis from necrosis		
2010-3/PATH-SBM-1/06			
Tuberculosis	1. to describe the pathogenesis of tuberculosis	Pathology	Lectures
	2. to understand the concepts of primary and postprimary tuberculosis		
	3. to describe the complications of the tuberculosis		
	4. to explain pathological basis of the clinical effects		
2010-3/PATH-SBM-1/07			
Disorders of Growth and differentiation	1. to outline the ways in which different cell types react to increased work demand and chronic irritation.	Pathology	Lectures + Museum Class
	2. to describe in detail* the process of hypertrophy, hyperplasia, atrophy and metaplasia, and the pathology of these processes.		
	3. to give examples and also to state the clinico pathological effects of the processes mentioned above.		
2010-3/PATH-SBM-1/08			
Thrombosis	1. to list the main factors which predispose to thrombosis.	Pathology	Lectures + Museum class
	2. to describe in detail* the pathogenesis and sequelae of thrombosis in different types of blood vessels and the heart, and the fate of thrombi		
	3. to mention the clinicopathological features of thrombosis in the different types of blood vessels.		
2010-3/PATH-SBM-1/09			
Embolism	1. to define the process of embolism.	Pathology	Lectures + Practical
	2. to describe in detail* formation of different types of emboli and describe the outcome of the different types of embolism including the clinicopathological effects.		
2010-3/PATH-SBM-1/10			
congestion, oedema and infarction	1. to describe the effects in tissue, when the vascular blood supply alters, and the venous return is hampered.	Pathology	Lectures + Museum class
	2. to define the processes hyperaemia(active and passive), oedema and infarction		
	3. to describe in detail* the pathogenesis of these processes.		
	4. to list the processes that injure lymphatics and the clinicopathological outcome due to injured lymphatics.		
2010-3/PATH-SBM-1/11			
Amyloidosis	1. to define the process of amyloidosis.	Pathology	Lectures & Case discussions
	2. to describe in detail* the pathogenesis, types and clinical effects and methods of diagnosis of of amyloidosis.		



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2010-3/PATH-SBM-1/12			
Other accumulations	1. to describe the process of pathological calcification and to state clinical examples.	Pathology	Lectures
	2. to enumerate the types of abnormal pigments in the living persons and their pathogenesis and clinical importance.		
2010-3/PATH-CLM-1/01			
Abnormal constituents in urine	to perform inward tests for urinary protein, sugar, bile and ketone bodies	Biochemistry	Practical
2010-3/PATH-SBM-1/13			
Atherosclerosis	1. to describe the risk factors of atherosclerosis	Pathology	Lectures
	2. to describe the pathogenesis and pathological processes involved in atherosclerosis		
	3. to describe the complications and clinicopathological effects of atherosclerosis.		
2010-3/PATH-SBM-1/14			
Neoplasia and Carcinogenesis			
a. Introduction to neoplasia and oncogenesis	1. to describe the fact that DNA alteration in a cell can lead to tumours and dysplasia.	Pathology	Lectures + Museum class
	2. to describe in detail* the process of carcinogenesis and concepts of dysplastic and premalignant lesions.		
	3. to describe in detail* the different types of tumours and their pathogenesis and morphology and differences in behaviour.		
b. Spread of tumours	4. to describe in detail* the modes of spread of malignant tumours and the clinicopathological effects.	Pathology	Lectures + Museum class
2010-3/PATH-SBM-1/15			
Applied general pathology	1. to define and explain the pathogenesis of erosions, ulcers, strictures and stenosis, blisters and bullae, fistula, sinus, polyps, adhesions, scars, fungating mass, organomegally, macule, papule, purpura, ecchymosis, naevi & warts and papillomata & application of these in systems	Pathology	Lecture demonstration
2010-3/PATH-SBM-1/16			
Introduction to Haematology	1. recall the cellular components in blood and haemopoiesis	Pathology	Lectures
	2. outline the common types of non malignant and malignant diseases of blood		
2010-3/PATH-SBM-1/17			
Introduction to Clinical Pathology	1. outline the applications of serological and haematological investigations in patient management	Pathology	Lecture

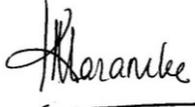


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Foundation in Clinical Pathology (Year 3 Semester 1)
2010/11 Batch

Duration: 3 weeks

Topic & Concepts	Objectives	Dept.	T/L activity
	At the end of the learning session the student should be able:		
2010-3/PATH-SBM-1/18			
Cont. Neoplasia and Carcinogenesis			
a. Introduction to Neoplasia and oncogenesis	1. to describe the fact that DNA alteration in a cell can lead to the occurrence of tumours and dysplasia 2. to describe in detail* the process of carcinogenesis 3. describe the concepts of dysplastic and premalignant lesions 4. describe in detail* the different types of tumours and their pathogenesis and morphology and differences in behaviour	Pathology	Lectures & Museum class
b. Clinical features of tumours	5. to describe in detail* the mechanisms of clinicopathological features associated with benign and malignant tumours.(including local effects and paraneoplastic syndromes)	Pathology	SGL
c. Early diagnosis and screening of tumours	6. to describe the methods of diagnosis and screening of tumours.	Pathology	Lecture
d. Clinicopathological correlation of tumours of important sites	7. to explain the clinical effects caused by physical presence of tumours in important sites. Eg: brain, lungs, GIT, liver, etc.	Pathology	SGD
2010-3/PATH-SBM-1/19			
Haematology and clinical pathology			
a. Identification of specimen collection and laboratory errors	1.To identify the laboratory errors in the reports issued (problems in collection of the specimen (collection into the incorrect container, haemolized sample, delayed separation of plasma, exposure of the sample to sunlight, specimen collection from drip arm, etc.	Pathology	Tutorial
b. Interpreting haematological investigations	2.List the tests included in a full blood count 3. List the commonly requested haematological investigations 4. State the physiological changes of haemoglobin value in neonate, infant, childhood, adult male & female& in pregnancy 5. State the changes in the red cell count (e.g. polycythaemia, anaemia) 6. to know the definition of anaemia and classification of anaemia according to the morphology and red cell indices	Pathology	Lectures

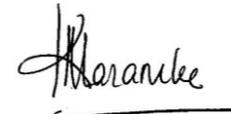

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	<p>7. Describe the physiological changes of WBC/DC in a neonate, infant, child below 6 yrs, adult & pregnancy</p> <p>8. Describe the clinical significance and common causes of leucopenia, neutropenia, neutrophil leucocytosis, lymphocytosis (absolute and relative)</p> <p>9. Describe the clinical significance of platelet count and causes of abnormally high and low platelet counts</p> <p>10. Describe the clinical significance of erythrocyte sedimentation rate (ESR) and causes of high ESR</p> <p>11. List the tests included in a coagulation profile i.e. bleeding time (BT), clotting time (CT), prothrombin time(PT), activated partial thromboplastin time (APTT) & platelet count</p> <p>12. State the importance of reticulocyte count</p> <p>13. List the basic laboratory tests necessary for investigation of haemolytic anaemia</p>		
c. Clinical Enzymology	<p>1. Explain the enzyme kinetics, isoenzymes and causes of increased enzyme levels</p> <p>2. Describe the use of enzymes in the diagnosis of various diseases</p>	Pathology	Lectures
d. Interpreting urine laboratory reports	<p>1. to know the commonly requested urine tests (urine sugar, urine albumin, urine deposit, urine full report, creatinine clearance, urine for specific gravity, 24 hour urinary protein excretion, creatinine clearance, urine for micro albuminuria)</p> <p>2. State the advice given to the patients and importance of preparation of the patients for these investigations</p> <p>3. Describe the basic procedure for performing urine ward tests</p> <p>4. Describe the importance of abnormalities of urine deposit (different types of cells and casts)</p> <p>5. Describe how to relate the urine biochemical tests with the urine deposit and the causes for likely incompatibilities</p> <p>6. Describe the common special urine tests (urine for Bence Jones proteins, urine for haemosiderinuria, urinary protein electrophoresis)</p>	Pathology	Lectures
e. CSF Examination	<p>1. Describe the normal function and composition of CSF</p> <p>2. Describe the alteration in CSF in different clinical conditions</p> <p>3. Describe how to send CSF specimens to the laboratory for CSF analysis</p>	Pathology	Lectures



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f. Specimen collection and transport in Histology, Cytology and Frozen section	1. Describe the proper collection and transport method specimen for histological, cytological and frozen section investigations	Pathology	Lecture
g. Spleen	1. to describe the causes of splenomegaly	Pathology	Lecture
h. Lymphnode	1. describe the causes of lymphadenopathy	Pathology	Lecture



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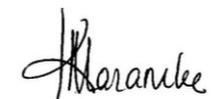
Foundation in Pharmacology 1 & 2 (End of Year 2 Semester II & Year 3 Semester I)

Topic	Objectives	Dept.	T/L activity
	At the end of the module, the student should be able to		
2010-3/PHARM-SBM-1/01			
Introduction to Pharmacology a. Definitions of basic concepts in Pharmacology b. Sources of drug information	1. define the following terms- Drug, Medicine, Pharmacology, Therapeutics, Clinical Pharmacology, Pharmacokinetics, Pharmacodynamics, Generic name, Brand name 2. list the different sources of drug information	Pharmacology	Lecture
2010-3/PHARM-SBM-1/02			
Drug action – Pharmacodynamics a. Modes of action of drugs at different levels: molecular, cellular, tissue/organ & overall individuals b. Receptor as target for drug action c. Drug-target interaction	1. list the mechanisms by which drugs exert chemical influences at cellular level to produce a pharmacological response 2. define <ul style="list-style-type: none"> • receptor • drug binding sites • ligand • agonist • antagonist • partial agonist • inverse agonist • receptor affinity • receptor occupancy • spare receptors • efficacy • potency 1. classify receptors based on their structure and function 2. briefly explain the signaling mechanisms by which receptor activation is coupled to cellular effector systems Explain <ol style="list-style-type: none"> 1. competitive antagonism 2. non competitive antagonism 3. physiological antagonism 4. tolerance, tachyphylaxis 5. placebo and placebo effect 	Pharmacology	Lecture SGD



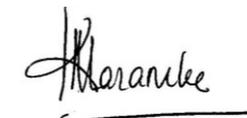
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<p>d. Dose-response relationship</p>	<p>Draw the concentration-effect curves for the relationship of the effect against,</p> <ul style="list-style-type: none"> • full agonist concentration • logarithm of full agonist concentration • log partial agonist concentration • log full agonist concentration in the presence of a fixed/increasing amounts of competitive antagonist • log full agonist concentration in the presence of a non-competitive antagonist • log full agonist concentration in the presence of a partial agonist • log inverse agonist 	<p>Pharmacology</p>	
<p>2010-3/PHARM-SBM-1/03</p>			
<p>Pharmacokinetics</p> <p>a. Transport across cell membrane:</p> <p>b. Absorption</p> <p>c. Routes of administration</p> <p>d. Distribution in tissues, body compartments and across barriers</p> <p>e. Metabolism (Biotransformation)</p> <p>f. Elimination</p>	<p>Describe the mechanisms of transport of drug molecules across the cell membrane and the factors that influence such mechanisms</p> <p>1. explain how drugs are absorbed into blood after administration</p> <p>2. list the factors that influence the absorption of drugs</p> <p>1. list different routes of administration of drugs</p> <p>2. list the different types of dosage forms/special drug delivery systems</p> <p>3. explain the advantages and disadvantages of different routes of administration</p> <p>1. list the different compartments of the body into which drugs are distributed</p> <p>2. describe the factors which influence the distribution of drugs into different compartments</p> <p>3. explain the concept of redistribution of drugs</p> <p>4. explain the concept of barriers across tissues for transport of drugs</p> <p>1. explain the basic mechanisms by which drugs undergo biotransformation in the body</p> <p>2. list the common drugs which induce/inhibit the cytochrome P 450 enzyme system</p> <p>1. define elimination of drugs</p> <p>2. list the physiological processes of different organ-systems that are involved in drug elimination</p> <p>3. describe the mechanisms by which drugs are eliminated from the body</p>	<p>Pharmacology</p>	<p>Lectures SGD</p>



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<p>g. Pharmacokinetic parameters</p> <p>h. Drug concentration vs time curve in different dosing regimes</p> <p>i. First-order & Zero-order kinetics</p> <p>j. Clinical application of pharmacokinetic parameters</p>	<p>1. define the following</p> <ul style="list-style-type: none"> • bioavailability • bioequivalence • first pass effect • area under the Concentrate-time curve (AUC) • (apparent) volume of distribution • clearance • half life • steady state concentration • loading dose • maintenance dose • dosage regimen <p>2. explain the principles of calculating the bioavailability, volume of distribution, clearance, loading dose & maintenance dose</p> <p>draw the concentration-time curves for</p> <ul style="list-style-type: none"> • single intravenous bolus injection • intermittent intravenous bolus injection • continuous intravenous infusion • single intramuscular injection • single subcutaneous injection • single-dose oral administration • intermittent oral administration • modified-release formulations <p>explain first order kinetics and zero order kinetics</p> <p>explain the clinical significance of pharmacokinetic principles</p>		
2010-3/PHARM-SBM-1/04			
<p>Adverse and Toxic effects</p> <p>a. Basis of adverse/toxic effects</p>	<p>1. define adverse effects and toxic effects of drugs</p> <p>2. describe the mechanisms of adverse effects of drugs</p> <p>3. classify adverse effects based on their mechanisms briefly explain teratogenicity, mutagenicity and carcinogenicity</p> <p>5. explain how these reactions could be minimized/prevented.</p> <p>6. define therapeutic index</p> <p>7. explain the clinical significance of therapeutic index</p>	Pharmacology	Lecture
<p>b. Drug interactions</p>	<p>1. classify drug interactions (eg. Drug-drug, drug-food and drug-herb)</p> <p>2. describe mechanisms of drug interactions</p> <p>3. explain the clinical significance of drug interactions</p>		



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c. Pharmacogenetics	describe the influence of genetic variation on response to drug therapy		
d. Drug therapy in special populations	describe the principles underlying the precautions that should be taken during drug therapy in special situations such as pregnancy, breast feeding, renal and hepatic dysfunction, extremes of age		
e. Measurement & monitoring of drug effect	<ol style="list-style-type: none"> 1. describe the methods by which the effects of drug therapy could be measured 2. describe how the measurement of plasma drug concentrations helps in monitoring drug therapy 		
2010-3/PHARM-SBM-1/05			
Autonomic Nervous System	<ol style="list-style-type: none"> 1. recall the anatomical and functional organization of autonomic nervous system 2. recall the anatomy and the physiology of the cholinergic and the noradrenergic junctions 3. recall the types of autonomic receptors with examples of typical sites 4. describe the mechanisms of action and clinical uses of drugs acting on autonomic nervous system 	Pharmacology	Lecture SGD
2010-3/PHARM-SBM-1/06			
Pain Control			
a. Physiology of pain	<ol style="list-style-type: none"> 1. recall the definition of pain and briefly explain theories of pain 2. list the types of pain 3. recall physiology of pain perception (stimuli, receptors, pathways and central connection) 4. list methods of pain relief 5. classify pharmacological agents used in pain relief (with main indications) 6. explain the basis of neuropathic pain 		
b. Opioid Analgesics	<ol style="list-style-type: none"> 1. classify the agents acting on opioid receptors 2. describe the mechanisms of action of opioid analgesics. 3. describe the pharmacokinetics of the drugs acting on opioid receptors. 4. describe the adverse effects of opioid analgesics. 5. list the clinical uses of opioid receptor antagonists 	Pharmacology	Lecture SGD
c. Non-steroidal anti-inflammatory drugs (NSAIDs)	<ol style="list-style-type: none"> 1. describe the physiological/pathological roles of cyclooxygenase-1 (COX-1) and COX-2 enzymes. 2. describe the pharmacokinetics, clinical uses, important adverse effects and drug interactions of NSAIDs (including COX-2 inhibitors). 3. list the commonly used NSAIDs 		



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2010-3/PHARM-SBM-1/07			
Drug therapy in neoplastic disease	<ol style="list-style-type: none"> 1. state how neoplastic cells/tissues differ from normal cells/tissues with respect to potential targets for drug therapy in neoplastic disease 2. explain the basis of <ul style="list-style-type: none"> • combination chemotherapy • resistance to chemotherapy • adverse effects of chemotherapy 3. classify antineoplastic drugs based on the mechanism of action 	Pharmacology	Lecture
2010-3/PHARM-SBM-1/08			
Drug Information			
a. Sources, Reliability and Interpretation	<ol style="list-style-type: none"> 1. identify different sources of drug information 2. differentiate unbiased information from promotional material. 3. critically analyse the information in a given source of drug information. 4. carry out a literature search on drug information 	Pharmacology	Lecture
b. Drug Discovery and Development	<ol style="list-style-type: none"> 1. state the history of drug discovery 2. list the sources from which new drugs are developed 3. describe the different stages of the development of a new drug 	Pharmacology	Lecture
2010-3/PHARM-SBM-1/09			
Antimicrobial agents	<ol style="list-style-type: none"> 1. define an “antimicrobial agent” 2. classify antimicrobial agents based on their chemical structure/mechanism of action with examples 3. describe the mechanism of action, pharmacokinetics, clinical uses, adverse effects, interactions and limitations for the use of commonly used antimicrobial drugs 4. explain the basis of chemoprophylaxis in infections 5. explain the principles underlying the selection of appropriate antimicrobial agents in infectious diseases 	Pharmacology	Lecture SGD


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