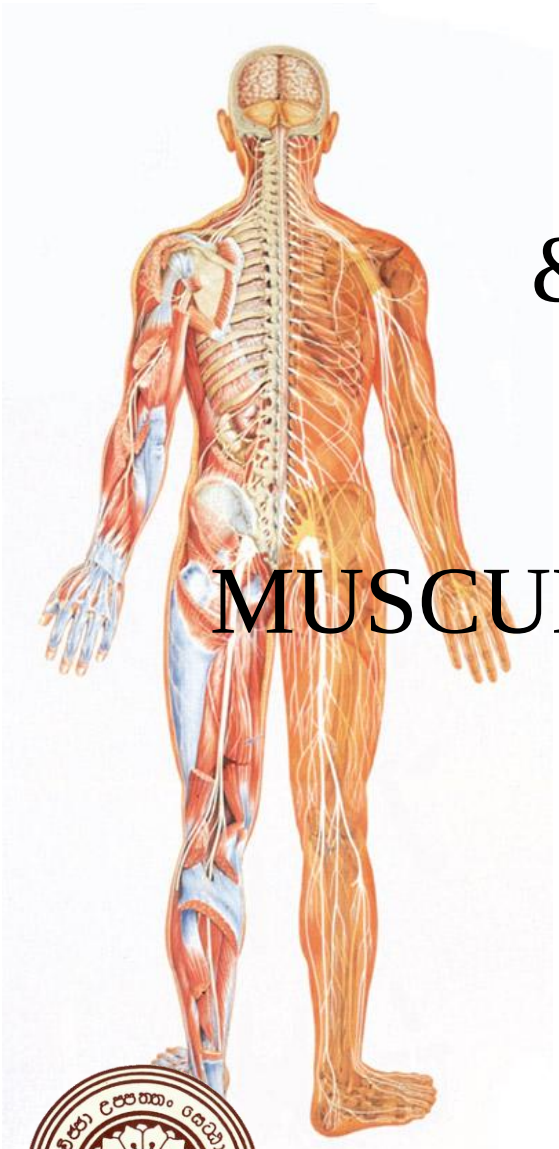
NEUROLOGY

&



MUSCULOSKELETAL

MODULE

PHASE - II

FACULTY OF MEDICAL SCIENCES
UNIVERSITY OF SRI JAYEWARDENEPURA

NEUROLOGY &

MUSCULOSKELETAL MODULE

PHASE II

FACULTY OF MEDICAL SCIENCES
UNIVERSITY OF SRI JAYAWARDENAPURA
GANGODAWILA
NUGEGODA

CONTENTS

Introduction	3
Members of the module committee	4
General objectives	5
Main content areas	6
Infections of the nervous system	7
The Unconscious Patient	8
Cerebrovascular Diseases	9
CNS Tumours and Increased ICP	10
Epilepsy	11
Movement Disorders	12
Headache and Pain syndromes	13
Neuromuscular junction diseases and Myopathies	14
Cranial Nerves and Peripheral Nerves	15
Spinal Cord disorders	16
Cerebral Palsy	17
Musculoskeletal system	18-21
Time tables	22-25
Recommended Reading	26

INTRODUCTION

The Neurology and Musculoskeletal module is a four week module that you will follow during Phase II of the medical curriculum. As you have already been taught the normal functioning of the nervous and musculoskeletal systems, you will now be able to appreciate how diseases of these systems affect the human body.

Neurology encompasses all the interesting aspects of modern medicine. Neurologic disorders are common. Clinical skills of history taking and physical examination remain fundamental to diagnosis and are backed up by sophisticated investigations. Many students and doctors regard neurology as being forbiddingly difficult. The neurological examination is often seen as excessively lengthy, hard to master and even harder to interpret. Since most neurological conditions are dealt with by non-neurologists, medical students must learn the basic principles of making a neurological diagnosis, how to alleviate neurological disability and manage common disorders such as migraine, stroke, epilepsy and Parkinson's disease and when to refer to a neurologist or a neurosurgeon. The purpose of this neurology module is to give students a working knowledge of the common clinical problems in Neurology and how to manage them as doctors. An extensive knowledge of neuroanatomy, neurophysiology and neurochemistry is not expected because in the world of the practicing doctor these things that seem to take so much time in the pre clinical curriculum are not particularly helpful. Of far more use is a little neuroanatomy, much less than we were all taught and slightly more than we actually remember, an idea of what is more likely, some clinical pharmacology and the experience of seeing a lot of patients.

During the module we will cover important neurological and musculoskeletal diseases in adults and children. However, we must emphasize that all diseases cannot be covered during such a short period of time. As such, it is imperative that a student should be involved in active learning and self study, using the module as a guide. A list of recommended reading material is annexed at the end of your module handbook and we suggest that you use the internet and other supplementary reading material, such as journals, where necessary to further your knowledge.

Methods of teaching of this module include lectures, tutorials, problem based learning, small group discussions and practicals. There will be sessions in the skills laboratory to help you to master "hands on" skills, which will be essential in the diagnosis and management of neurological and musculoskeletal emergencies and diseases.

At the end of the term you will have a formative assessment of all the modules that have been taught during the term. This will be in the form of a MCQ paper. There will also be a summative assessment at the end of the 4th year which will test the contents of all modules you would have completed that year. The general objectives of the module are listed below. At the end of the module you should check if all or most of these objectives have been achieved.

MEMBERS OF THE MODULE COMMITTEE

MODULE DEVELOPMENT STAGE

Chairperson	Dr Deepthi Samarage
Convenor	Dr Nimantha de Alwis
Convenor	Dr Mangala Bopitiya
Member	Dr Deepaka Weerasekera
Member	Dr Savithri Wimalasekara
Member	Dr Kamal Gunathunga
Member	Dr Rushika Wijesinghe
Member	Dr Owadini Bandara
Member	Dr Chathuri Gunasekera

MODULE IMPLEMENTATION STAGE

Chairperson	Prof. Saman B. Gunatilake
Convenor	Dr Nilanthi Fernando
Member	Dr Deepthi Samarage
Member	Dr Mangala Bopitiya
Member	Dr Deepaka Weerasekera
Member	Dr Savithri Wimalasekera
Member	Dr Rushika Wijesinghe
Member	Dr Owadini Bandara
Member	Dr Chathuri Gunasekera

GENERAL OBJECTIVES

At the end of the Neurology and Musculoskeletal module, the student should be able to

1) Recapitulate normal structure and function of the Nervous & musculoskeletal systems & correlate the changes which occur in diseases of the nervous & musculoskeletal systems.

2) Enumerate the important and common disorders of the nervous & musculoskeletal systems.

3) Describe the etiology and pathogenesis of common nervous & musculoskeletal disorders and correlate clinical features to the pathophysiology of the disease.

4) Take a relevant history and perform a clinical examination to diagnose nervous & musculoskeletal disorders.

5) Plan out investigations to diagnose and manage nervous & musculoskeletal disorders.

6) Perform simple bed side and laboratory investigations to confirm / assist clinical diagnosis.

7) Describe principles of the pharmacological basis of the treatment of nervous & musculoskeletal disorders.

8) Describe the impact of social, occupational and environmental factors in nervous & musculoskeletal disorders.

9) Describe the basic management of the nervous & musculoskeletal disorders

10) Perform basic emergency procedures in life threatening conditions encountered in nervous & musculoskeletal disorders.

MAIN CONTENT AREAS

1) Introduction to clinical neurology
2) Infections of the nervous system
3) The Unconscious patient
4) Cerebrovascular disease
5) Tumours of the nervous system
6) Convulsive disorders
7) Movement disorders
8) Headache and other pain syndromes
9) Disorders of neuromuscular junction and myopathies
10) Cranial nerve palsies
11) Peripheral nerve disorders
12) Diseases of the spinal cord
13) Musculoskeletal disorders

1 Infections of the nervous system

Intermediate objectives	Detailed content area	Learning activity	Duration	Department
<u>The student should be able to</u> 1.1) List the infections of the nervous system in adults & children	**(A) Meningitis and cerebral abscess, encephalitis, tetanus, diphtheria, , tuberculosis, malaria**, **(B)** Botulism, toxoplasmosis			
1.2) Describe the aetiology, pathogenesis and lab diagnosis of infections of the nervous system.	**(A) Causative agents, morphology,** pathogenesis including virulent factors, lab diagnosis, including collection & transport of specimens and interpretation of results	1 SGD 1 Practical	3 hrs (1.5 × 2) 2.5 hrs (45 mins × 3)	Microbiology
1.3) Describe the pathological features of infections of the nervous system	**(A)** General & specific **pathological features**	1 Lecture 1 Practical (Infections + CVD+ tumours)	1 hr 2.5 hrs (45 mins × 3)	Pathology
1.4) Describe the clinical presentations, complications, management and prevention of **meningitis and complications** in adults and children	**(A) Clinical features, complications & management** of bacterial, viral and TB meningitis and cerebral abscess in adults, neonates, infants, older children Prevention of meningitis -Vaccines others	2 Lectures	45 mins x 2	Medicine & Paediatrics
1.5) Describe the clinical features, management & prevention of viral **encephalitis** in adults & children	**(A) JE, HSV, HIV, Mumps, Polio, Reye syndrome in children** **(B)** SSPE, enterovirus			
1.6) Describe pathogenesis, lab diagnosis, clinical features, management & prevention of Rabies	**(A) Rabies** lab diagnosis including collection, transport of specimens and interpretation of results Rabies control programme	2 Lectures	45mins x 2	Micro CM

2. The Unconscious Patient

Intermediate objective	Detailed content area	Learning activity	Duration	Department
<u>The student should be able to</u> 2.1) Outline the evaluation of an unconscious adult and a child 2.2) List the causes of coma	**(A) Glasgow coma scale, Modified Glasgow coma scale for children.** Features in the history & examination which are useful in coming to a **differential diagnosis**. Infections Cerebrovascular Metabolic and electrolyte disturbances Toxic Epilepsy Hypertensive	IT Lab module	45 mins	Medicine
2.3) Outline the necessary investigations in an unconscious patient	**(A) Haematalogical, Bio chemical, EEG, Neuro imaging**	SGD	45mins	Paediatrics
2.4) Describe the management of a patient in coma	**(A) Immediate & long-term management**			

3.Cerebrovascular Diseases

Intermediate objectives	Detailed content area	Learning activity	Duration	Department
The student should be able to; 3.1) Describe the anatomy of the arterial and venous system and the lobes of the brain. Outline the definitions of cerebrovascular events.	**(A) Stroke,** **TIA**	Lecture	45 mins	Medicine
3.2) List the types of CVD Describe the pathophysiology of infarcts and haemorrhages	**(A) Arterial Infarcts – Thrombosis / Embolism** **Venous thrombosis** **Haemorrhages - sub-arachnoid / intracerebral**	Small group discussion	3 x 45 mins	Pathology
3.3) Diagnose a cerebrovascular event and clinically differentiate between the types. List the risk factors / causes of CVD Discuss the investigation, management and prevention of CVD	**(A) Features in the history & examination**, **Anatomical site of the CVA,** **Differentiate between SAH & cerebral infarction / and ICH based on history and examination,** **Differentiate anterior & posterior circulation strokes**	Lecture	45 mins	Medicine
	(A) Risk factors: smoking .HTN, cholesterol, stress. Risk factor assessment and management **Investigations and the findings in each type of lesion and their importance in diagnosis,** **Acute, intermediate and long term management of a patient with stroke.** **The degree of disability and prognosis** **Multi disciplinary team and stroke units.** **Primary, secondary and tertiary prevention methods in CVD**			

4.CNS Tumors & increased ICP

Intermediate objectives	Broad content	Learning activity	Duration	Department
The student should be able to; 4.1) Classify CNS tumours in adults & children Describe the clinical& pathological effects of CNS tumour	**(A) List the tumours. Pathological & clinical classification** **Features of increased intra cranial pressure & herniation**	Lecture Practical	45 mins 45 mins	Pathology
4.2) Describe the causes & clinical presentation of hydrocephalus.	**(A) Communicating & non - communicating hydrocephalus. Clinical features & Management**	Case based SGD .(PIII)	45mins	Paediatrics

**Path practical related to tumours will be dealt in CNS infections practical slot.

5. Epilepsy

Intermediate objectives	Detailed content area	Activity	Duration	Department
The student should be able to 5.1) Discuss the classification of epilepsies and epilepsy syndromes. List the causes of secondary epilepsy	**(A) Definition & ILAE Classification epilepsies / epilepsy syndromes**	Lecture	45 mins	Medicine
5.2) Discuss the clinical features & management of different & common epilepsies and epilepsy syndromes in adults	**(A) Generalized Tonic Clonic epilepsy, Juvenile Myoclonic epilepsy, Temporal Lobe epilepsy,**			
5.3) Discuss the clinical features & management of different & common epilepsies and epilepsy syndromes in children	**(A) Febrile seizures, Infantile spasms, West Syndrome, Myoclonic epilepsy, Childhood Absence Epilepsy, Temporal Lobe Epilepsy, Benign rolandic epilepsy**	Lecture	45 mins	Paediatrics
5.4) Discuss the drug therapy of Epilepsies	**(A) Principles of AED therapy** **(A) Anti Epileptic Drugs**	Lecture Lecture	45 mins 45 mins	Pharmacology
5.5) Discuss the differential diagnosis of Epilepsy	**(B)** Breath holding episodes, vasovagal syncope, pseudoseizures & other paroxysmal events	Video	45 mins	Paediatrics
5.6) Describe management of status epilepticus	**(A) Status Epilepticus**	Study Guide/ FiLM		Paediatrics & Medicine

6. Movement Disorders

Intermediate Objectives	Detailed content areas	Activity	Duration	Department
<u>The student should be able to</u> 6.1) List different types of movement disorders caused by extra pyramidal lesions 6.2) Describe common causes of these disorders in adults and children	**(A) Tremors- Parkinsonism** (idiopathic, drug induced) Chorea • **Rheumatic chorea (A)** • Huntington's chorea **(B)** • Chorea gravidarum/ other causes of chorea **(B)** • Athetosis • Dystonia **(B)** - Spasmodic torticollis - **Drug induced dystonia (A)** - Writer's cramp - Blepharospasm & oromandibular dystonia 2. Ballismus- Hemiballismus **(B)** 3. Myoclonus **(B)** 4. Tics **(B)**	Lecture	45 min	Medicine
6.3).Discuss the clinical features, diagnosis & management of movement disorders in adults & children	**(A) Especially Rheumatic Chorea and Parkinson's disease**			
6.4).List the common causes of ataxia in adults & children	**(B)** Adults – cerebellar or dorsal column lesions→ SCID/ Tabes dorsalis Children – Ataxic cerebral palsy - -Hereditory ataxias (Friedreich ataxia, ataxia telangiectasia)			
6.5) Discuss drug therapy of Parkinson's Disease	Drugs used in Parkinson's disease	Lecture	45 mins	Pharmacology

7.Headaches and Pain Syndromes

Intermediate objectives	Detailed content areas	Learning activity	Duration	Department
Students should be able to 7.1) List common causes of headache in adults and children	**(A) Headache** **Migraine** **Cluster headache** **Tension headache** **Temporal arteritis** **Trigeminal neuralgia**	Lecture	45 mins	Medicine
7.2) Identify features of headache due to raised ICP				
7.3) Describe the clinical features and management of common causes of headache				
7.4) Discuss the therapeutics of head ache	**(A) Management of headache**			

8. Neuromuscular Junction Diseases and Myopathies

Intermediate objectives	Detailed content area	Learning activity	Duration	Department
Student should be able to 8.1) Recall anatomy of the muscle, neuromuscular junction, physiology of neuromuscular transmission and muscle contraction	**(B)** Muscle- histology **(A) Neuromuscular junction** **(B)** Nerve impulse generation and transmission, physiology of muscle contraction	SDL/ FiLM	45 min	Anatomy Physiology
8.2) Describe the clinical features and management of common neuromuscular junction problems	**(A) Myasthenia gravis** **(B)** Lambert Eaton syndrome **(A)** Drugs acting at the NMJ Anticholinesterases, NMJ Blockers **(B)** Botulinin toxin	Lecture Lecture x 2	45 mins 45 mins x 2	Medicine Pharmacology
8.3) Describe the clinical features and management of common muscle disorders in children	**(A) Duchene& Beckers muscular dystrophy** **(B)** other muscular dystrophies **(B)** dystrophia myotonica **(B)** congenital myopathies inflammatory myopathies metabolic myopathies infectious myopathies	Lecture	45 mins	Paediatrics

9.Cranial Nerves and Peripheral Nerves

Intermediate objectives	Detailed content area	Learning activity	Duration
Student should be able to 9.1) Describe the features of an upper and lower motor neurone lesion and to differentiate between an upper motor neurone lesion and a lower motor neurone lesion	Upper motor neuron lesions Lower motor neuron lesions	SDL /FiLM	45 mins
9.2) Explain the common **peripheral nerve disorders & polyneuropathies**, their aetiology, clinical features, investigations and management.	**(A) Peripheral nerve disorders - Guillian Barre Syndrome,** **(A) DM neuropathy,** **(A) Alcoholic neuropathy, drug induced neuropathy,** **(B)** Vitamin deficiency, toxic neuropathies	Lecture Medicine	45 mins
9.3) Describe the clinical presentations of **cranial nerve palsies** aetiologies, clinical features investigations and management 9.4) distinguish between upper motor and lower motor neuron lesions in each of them 9.5) Carry out proper cranial nerve examination & funduscopy	**(A) Cranial nerve palsies** **visual field defects** **abnormalities of conjugate gaze** **Diplopia** **Bells palsy** **Vertigo** **Nystagmus** **(A) Ptosis**	Self Study Study Guides /Medicine& Paed Skills lab/IT Lab PBL	45 mins x 3 Medicine

10 Spinal Cord Disorders

Intermediate objectives	Broad content areas	Learning activity	Duration	Department
Student should be able to 10.1) Describe basic anatomy and physiology of the spinal cord	Course Structure	Hand out FML/ Self learning Material		Anatomy
10.2) Classify the diseases of the spinal cord & describe the common causes for each category of spinal cord disorders presentation Describe clinical assessment, relevant investigations & management in a patient with spinal cord lesion	Clinical differentiation & localizations of various spinal cord lesions. • Inflammatory • Spinal & paraspinal abscess **(B)** TB,Neuroshyphilis **(B)** **Transverse myelitis (A)** • Degenerative **Syringomyelia, MND, SACD (A)** • Demyelinating **(B)** Multiple sclerosis **(B)** • Vascular **(B)** Anterior spinal artery thrombosis • Neoplastic **(B)** • Myeloma, Metastatic **(B)**	Lecture	45 mins	Medicine
10.3) Describe diseases of spinal cord & the common causes in paediatric practice	**(A) Congenital** **Spina bifida** **Meningomyelocoele**	Lecture	45 mins (PIII)	Paediatrics

11.Cerebral Palsy

Intermediate Objectives	Content	Activity	Duration	Department
<u>Student Should be able to</u> 11.1) Define Cerebral Palsy classify and describe the clinical features and the management of cerebral palsy	**(A) spastic diplegia** **spastic hemiplegia** **spastic quadriplegia** **dyskinetic cerebral palsy** **athetoid cerebral palsy** **multidisplinary management / rehabilitation**	PBL	Session I- 45 mins Session II 45 minutes x2	Paediatrics

12. Musculoskeletal System- Arthritis

Intermediate objective	Detailed content area	Learning activity	Duration	Department
student should be able to 12.1) Classify and list main causes of arthritis in adults 12.2) Discuss the clinical features, diagnosis and management of rheumatoid arthritis	**(A) Classification of Arthritis in adults** **Rheumatoid arthritis, Sero negative arthropathies, Reactive arthritis**	Lecture	45 mins	Medicine
12.3) Discuss the clinical features, diagnosis and management of connective tissue disorders with emphasis on systemic lupus erythematosis	**(A) systemic lupus erythematosis** other connective tissue disorders ▪ Scleroderma **(B)** ▪ polyarteritis nodosa**(B)** ▪ dermatomyositis, polymyositis**(B)** ▪ S'joren Sydrome**(B)**	Lecture	45 mins	Medicine
12.4) Classify and list main causes of arthritis in children & discuss the clinical features, diagnosis and management of juvenile idiopathic arthritis	**(A) Classification of Arthritis in children** **juvenile idiopathic arthritis**	SGD	45 mins	Paediatrics
12.5) Discuss the common causes, diagnosis and management of low back ache	**(A) Backache** **history taking, examination and investigations of a patient with low back ache**	Lecture	45 mins	Medicine
12.6) Describe the use of corticosteroids and NSAIDS in the management of arthritis	**(A) Corticosteroids, NSAIDS, disease modifying drugs indications, drug interactions side effects contraindications**	Lecture 1	45 mins x 2	Pharmacology

13 .Musculoskeletal System.- Bone and joint infections

Intermediate objectives	Broad content areas	Learning Activity	Duration	Department
student should be able to 13.1) Describe the pathogenesis, causes, clinical presentation, investigations & management of bone & joint infections	**(A) Bone and Joint Infections** • **Acute osteomyelitis** • **Chronic osteomyelitis** • **Tuberculous osteomyelitis** • **TB spine**	Lecture Practical Lecture Lecture	45 mins 45 mins 45 mins 45 mins	Pathology Pathology Surgery Microbiology

14. .Musculoskeletal System - Bone tumours

Intermediate objectives	Broad content areas		Duration	Department
14.1) classify & briefly describe the pathology of common bone tumours	• primary/ secondary**(B)** • benign /malignant • haemopoetic • chondrogenic • osteogenic	SGD	45 min	Pathology
14.2) describe –clinical presentation, investigations, management & prognosis of common bone tumours	• chondroma **(B)** • osteosarcoma **(A)** • Ewings tumour **(A)** • Osteoclastoma **(A)** • Chondrosarcoma **(A)** • secondary bone tumours **(B)**	Lecture	45 min	Surgery

15. Musculoskeletal System -Paediatric orthopaedic problems

Intermediate objectives	Broad content areas	Learning activity	Duration	Department
Student should be able to 15.1) Discuss the common paediatric orthopaedic problems	**(B)** Congenital talipes equino varus, flat feet, bow legs	Lecture	45 mins	Surgery

Week 1

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1.00pm-1.45pm	Introduction to clinical neurology	CNS infections L/Path	CNS tumours L/Path		CVD L/Med
1.45pm-2.30pm	Causative organisms CNS infections SGD / CNS infections and CVD, tumours Practical,Path	Meningitis & encephalitis L/ Med	CNS infections Practical – Micro/ IT Lab module on unconscious patient - Med	Rabies control programme L/CM	NMJ Physiology SDL/FiLM
2.45pm-3.30pm		Meningitis & encephalitis L/ Paed		CHS	BSS
3.30pm-4.15pm		Rabies L/Micro		CHS	BSS

Child with coma SGD/Paed will be dealt in Phase III

Week 2

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1.00pm-1.45pm	NMJ Disorders L/Med	NMJ /Muscle disorders L/Paed	Epilepsy L/Med	Therapeutics of Epilepsy L/ Pharmo	PBL Cerebral Palsy Session II
1.45pm-2.30pm	Drugs acting at the NMJ L/ Pharmo	Cerebral palsy PBL Session I	Epilepsy L/Paed	Therapeutics of Epilepsy L/ Pharmo	
2.45pm-3.30pm	Drugs acting at the NMJ L/ Pharmo	Local anaesthetics General anaesthetics Pre anaesthetic medication L / Pharmo X 2	Other paroxysmal events- Video/Pead	CHS	BSS
3.30pm-4.15pm			PBL SDL time	CHS	BSS

Week3

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1.00pm-1.45pm	Cranial nerve disorders Skills lab/IT Lab Med/Paed L & FiLM	Peripheral neuropathies L / Med	Headache & management of headaches L/Med		PBL Ptosis
1.45pm-2.30pm		Spinal cord disorders L/Med	Drugs used in Parkinson's disease L/Pharmo	CHS	BSS
2.45pm-3.30pm		Movement disorders L/Med	Neurocutaneous disorders Seminar Med/Paed/FM	CHS	BSS
3.30pm-4.15pm		Neurological emergencies L/Med			

Menigomyaelocele, Hydrocephalus, SGD/Paed will be dealt in Phase III

Week 4

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1.00pm-1.45pm	Rh Arthritis L/Med	NSAIDS/ Management of arthritis L/Pharmo	Bone infections L/Path	Bone tumours L/Path	Paediatric orthopaedic problems L/Surgery
1.45pm-2.30pm	SLE L/Med		Bone infections L/Surgery	Bone tumours L/Surgery	Bone infections L/Micro
2.45pm-3.30pm	Childhood arthritis SGD/Paed	Strong analgesics and Pain relief in Malignancies L/Pharmo	Bone infections & bone tumours Practical /Path	CHS	BSS
3.30pm-4.15pm	Backache L/Med			CHS	BSS

RECOMMENDED READING

Clinical Neurology
Neurology (Oxford) – Michael Donaghy
Clinical Neurology (Lange)– Aminoff, Greenberg, Simon
Understanding Neurology – John Green & Ian Bowe
Introduction to Clinical Neurology – Gelb

Medicine
Kumar and clark Clinical Medicine– Praveen J Kumar & Micheal L.Clark (WB Saunders) – 6th Edition
Davidson's Principles and Practice of medicine (Churchill Livingstone) 20th Edition

Paediatrics
Illustrated Text of Paediatrics ,Tom Lissauer, Graham Clayden,2007 Jun,3rd edition
Essential Paediatrics – by O.P. Ghai
Hospital Paediatrics David Hull, Milner, Anthony D.1998,3 rd edition

Pathology
Pathological basis of disease – Robbins and Cotran
Robbins pathologic basis of disease By Cotran, Kumar & Collin(7th edition), Publisher-Sunders Company
Muir's textbook of Pathology (15th edition)
Concise Pathology – Chandrasoma and Taylor
Text book of Pathology By Harsh Mohan

Pharmacology
Clinical Pharmacology – Bennet and Brown (10th Edition)
Rang & Dale's Pharmacology (6th Edition)
Textbook of Pharmacology – Bowman W.C. and Rand M.J.
Basic and Clinical Pharmacology – *Katzung* B.G.

Microbiology
Medical Microbiology: A guide to Microbial Infections: Pathogenesis, Immunity, Laboratory Diagnosis and control - David Greenwood, Richar Slack, John Peuthener (17th edition)

Mim's Medical Microbiology – Richard Goering, Hazel Dockrell, Mark Zukerman, Derek Wakelin (4th edition)

Community medicine
Frontiers in Social Paediatrics – H.P.S. Sachdev & P Chawdry
Park & park – Preventive & Social Medicine
Park's Textbook of Preventive and Social Medicine, J.E. Park, K. Park, 17th Edition

Surgery
Scott: An Aid to Clinical Surgery: Edited by – Robin C.N. Wiliamson, Bruce P.Waxman
Bailey & Love's Short Practice of Surgery: Williams Bulstrode O' Connell