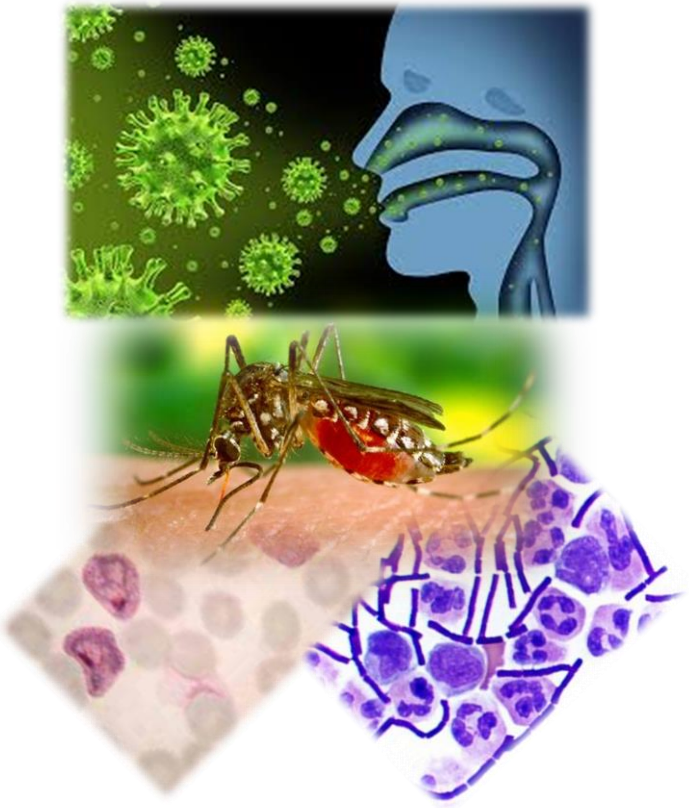
FOUNDATION MODULE 2

HANDBOOK



Faculty of Medicine

University of Colombo

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Content Page

1. WELCOME MESSAGE

Dear Students,

Welcome to the Foundation Module 2.

Why should you learn about Microbiology and Parasitology?

An increase in the population movement, expansion of international trade in food items and medicinal biological products, social and environmental changes linked to urbanization, and deforestation are all manifestations of the rapidly-changing nature of the world we live in. The rapid adaptation of microorganisms has facilitated the return of old communicable diseases and the emergence of new ones. Due to the evolution of antimicrobial resistance, curative treatment for a wide range of parasitic, bacterial, viral and fungal infections have become less effective. The occurrence of a communicable disease in one country, becomes a concern for all.

The COVID-19 pandemic is far more than a health crisis: it is affecting societies and economies at their core. While the

impact of the pandemic will vary from country to country, it will most likely increase poverty and inequalities at global scale making the vulnerable population more susceptible to infectious diseases. The impact of the COVID-19 pandemic on control programmes for other diseases e.g. malaria, is under much discussion. Not only may the pandemic impede control activities but it may also deviate limited financial and human resources away from other health programmes.

Microbiology and Parasitology is the study of the organisms and the diseases (infections) they cause.

The Foundation Module 2 aims to provide you with the background knowledge and basic skills required to diagnose and manage infectious diseases as a medical practitioner. Management of infectious diseases includes treatment of the specific infections and taking measures to prevent the spread of these diseases. You will learn about the nature of microorganisms, the kinds of diseases they cause, how these diseases are acquired (pathogenesis), the laboratory diagnosis

of these infections and the prevention and control of infectious diseases.

You are encouraged to participate actively in the learning exercises and discuss with the teaching staff. Preparation prior to participation in lessons and self- studying will be helpful to complete the Module successfully.

Prof. Deepika Fernando

Senior Professor in Parasitology

Chairperson/FM2

2. INTRODUCTION

The Foundation Module 2 will consist of five weeks during the 6th term (week 6-10) of the undergraduate MBBS course. This module aims to lay the foundation for the teaching and learning sessions of the Infectious and Parasitic Diseases Module which is scheduled for the 9th term.

The objectives and format for the Microbiology and Parasitology components are given separately. The format and the objectives specified below are subject to regular review and amendments may be introduced as appropriate.

3. COMMITTEE

Chairperson : Professor Deepika Fernando,
Department of Parasitology

Convenor : Dr.Hermali Silva
Department of Parasitology

Members:

Department of Microbiology

Dr. Channa Senanayake

Professor Enoka Corea

Dr. Nilanthi Senanayake

Dr. Neesha Rockwood

Dr. Chathuri Gunasekara

Dr. Sumudu Surandee

Department of Parasitology

Prof. Nadira Karunaweera

Prof. Sharmini Gunawardena

Dr. Yamuna Siriwardana

Dr. Sanath Senanayake

Dr. Nilakshi Samaranayake

Department of Pharmacology: Prof. Chamari Weeraratne

Department of Physiology : Dr. Sahan Guruge

Department of Anatomy : Dr. Dineshani Hettiarachchi

Department of Pathology : Dr. Ahalya Sivashanger

Department of Community Medicine: Dr. Nadeeka Chandrarathne

4. AIMS OF THE MODULE

The Foundation Module 2 is aimed at producing a student who has a good grasp of the *basic scientific principles of Microbiology and Parasitology* and is capable of undertaking the study of the *practice of management of Infectious Diseases* in the subsequent "Infectious and Parasitic Diseases Module".

GENERAL OBJECTIVES

At the end of the module you should be able to:

1. Classify infectious and parasitic disease agents.
2. Describe the aetiology, pathology and pathogenesis of common infectious and parasitic diseases.
3. Discuss the laboratory diagnosis, management, epidemiology, prevention and control of common infectious and parasitic diseases.

SPECIFIC OBJECTIVES

At the end of the module, the students will be able to:

1. Classify infectious and parasitic disease agents and describe the pathogenic agents causing common infectious and parasitic diseases.
2. Describe the different host parasite relationships.
3. Describe the source, mode of transmission, portal of entry and virulence of pathogens causing common infections.
4. Describe the pathogenesis and pathology underlying the common infectious and parasitic diseases.
5. Outline the principles of the clinical and laboratory diagnosis of common infectious and parasitic diseases.

6. Select the appropriate investigations for laboratory diagnosis of common infectious and parasitic diseases, explain the collection and transport of specimens and interpret the results of such investigations.
7. Demonstrate selected practical skills in performing laboratory tests to diagnose infectious and parasitic diseases.
8. Outline the principles of management of common infectious and parasitic diseases including choice of chemotherapeutic agents.
9. Describe the epidemiology and principles of prevention and control of infectious and parasitic diseases.

5. FORMAT OF TEACHING

The following aspects will be covered in the lectures and practical classes.

1. Introduction to microbiology / classification of bacteria, viruses, fungi
2. Introduction to infectious diseases
3. Introduction to parasitic diseases
4. Host microbe relationship and microbes of the body
5. Pathogenesis and pathology of infectious diseases
6. Syndromes and organisms
7. Principles of laboratory diagnosis of infectious diseases
8. Collection and transport of specimens
9. Principles of epidemiology and prevention and control of infectious diseases

	Lecture	**Duration (hours)**
1	Introduction to infectious diseases	1
2	Introduction to Microbiology / Introduction to Bacteria, Viruses, Fungi	1
3	Introduction to Parasitology	1
4	Host parasite relationship and normal flora of the body	1
5	Pathogenesis and pathology of infectious diseases	1
6	Principles of laboratory diagnosis, transmission and control of parasitic diseases	1
7	Syndromes and organisms	1
8	Laboratory diagnosis of infections	1
9	Collection and transport of specimens	1
10	Epidemiology of infectious diseases and principles of prevention in Sri Lanka	1

11	Organisms causing upper respiratory tract infections • Normal flora of the URT • Classification of Streptococci • *S. pyogenes* • Respiratory viruses (RSV, Parainfluenza, adenovirus, corona viruses including SARS CoV2)	2
12	Organisms causing lower respiratory tract infections • *S. pneumoniae* • *H. influenzae* • *M. pneumoniae* • *C. pneumoniae* • *L. pneumophila* • Respiratory viruses • *Bordetella pertussis*	2
13	Organisms causing CNS infections • *N.meningitidis* (*S. pneumoniae / H. influenzae*) • Enteroviruses • Group B *Streptococci* • *Listeria* • Mumps • Rabies • Polio • Introduction to arboviruses / Japanese encephalitis • HSV	3
14	Organisms causing urinary tract infections • Introduction to enterobacteria • *E. coli* and other coliforms	2

	• *Enterococci / S. saprophyticus* • *Pseudomonas*	
15	Organisms causing vaginitis • Normal flora of the vagina • *Candida* • *Gardnerella* • *Trichomonas*	1
16	Organisms causing sexually transmitted diseases • *N. gonorrhoea* • *C. trachomatis* • *T. pallidum* • *Herpes simplex* virus • HIV • HPV	2
17	Organisms causing diarrhoea • Pathogenesis of diarrhoea • Introduction to *Salmonella* • *Salmonella* causing food poisoning • *Shigella* • *Campylobacter* • EIEC / EHEC/EPEC/ETEC • Rotavirus/Norovirus/Adenovirus/Calci virus	2
18	Small intestinal nematodes • *Ascaris lumbricoides* (round worm) • *Necator americanos* (hook worm) • *Strongyloides stercoralis*	2
19	Large intestinal nematodes & cestodes • *Enterobius vermicularis* (pin worm) • *Trichuris trichiura* (whip worm)	1

20	Intestinal and urogenital protozoa • *Entamoeba histolytica* • *Giardia lamblia* • *Balantidium coli* • *Cryptosporidium parvum* • *Trichomonas vaginalis*	1
21	Organisms causing abdominal infections, Anaerobes including Clostridia & Hepatitis • Introduction to anaerobes • Normal flora of the GIT (*Bacteroides, Enterobacteriacae, Enterococci*) • Abdominal infections • *Helicobacter pylori* • *Clostridium tetani/ C. botulinum/ C. perfringens / C. difficile* • Hepatitis viruses	2
22	Organisms causing fever and rash • Measles • Rubella • *Varicella zoster* virus • Herpes simplex virus	2
23	Organisms causing fever • S. Typhi/ S.Paratyphi • Dengue / Chikungunya/ Zika • Influenza virus • Leptospirosis and other spirochaetes • Rickettsae (typhus and spotted fever) • Melioidosis	3
24	Malaria	4
25	Organisms causing chronic inflammation • TB	2

	• Non tuberculous mycobacteria (NTM)/Leprosy	
26	Filariasis	3
27	Toxoplasmosis, emerging and re-emerging infections	1
28	Organisms causing skin infections • Normal flora of the skin • *S. aureus / S. epidermidis* • Introduction to fungi • Dermatophytes / Candida / *Malassezia furfur*	2
29	Leishmaniasis	1
30	Medically important arthropods	1
31	Pediculosis and scabies	1
32	Organisms causing toxin-mediated infections • Tetanus /Diphtheria • Food poisoning (*S.aureus, B. cereus, C. botulinum*) • Cholera / ETEC • Toxic shock syndrome/ Scalded skin syndrome	1
33	Organisms causing latent infections • Introduction to herpes viruses • CMV, EBV, HSV, VZV • HIV	2
34	Sterilization and Disinfection	1
35	Principles of management of infections	1
36	Immunisation and vaccines	1
Parasitology lectures: 17 hours		Microbiology lectures: 38 hours
Community Medicine Lectures: 1 hour		Total lecture hours FM2: 56 hours

Practicals

	Microbiology practicals	**Duration (hours)**
1	Gram stain	1
2	Microscopy and colony morphology	1
3	Respiratory tract infections / CNS infections	1
4	STD and vaginitis /Diarrhoea	1
5	Skin infections / UTI /Fever with rash	1
	Parasitology practicals	
1	Introduction to use of microscopes	1
2	Malaria	2
3	Intestinal Protozoa	1
4	Filariasis, Leishmaniasis and Toxoplasmosis	1
5	Demonstration of intestinal nematodes and cestodes	1

CD Snakes

6. ASSESSMENT

The Foundation Module 2 will be assessed along with the Foundation Module 1 in the Unit 1 examination.

The assessment will comprise of 40 MCQ (true/false type) and a practical assessment consisting of 40 projected OSPEs.

The marks will be allocated as follows:

- 60% of the marks from the MCQ question paper
- 40% of marks from the practical assessment (20% from the Microbiology practical examination and 20% from the Parasitology practical examination)

7. DISTINCTIONS AND MEDALS

Please see criteria for award of Distinctions and Medals in Parasitology and Microbiology given in the latest edition of the "Student Handbook" available at https://med.cmb.ac.lk.

8. RECOMMENDED READING MATERIAL

8.1 Microbiology

1. Lippincott's Illustrated Reviews : Microbiology
   Author: Strohl W A
   Publisher : Lippincott-Williums

2. Medical Microbiology & Infection at a glance
   Author: Gillespie, Stephen H.
   Publisher: Oxford : Blackwell

3. Microbiology & Clinical Microbiology Made Ridiculously simple
   Author: Gladwin, Trattler, Mohan
   Publisher: Medmaster

4. Sherris Medical Microbiology, 7th Edition
   Author: Kenneth Ryan et al
   Publisher: McGraw-Hill Education

8.2 Parasitology

1. Basic Clinical Parasitology by Franklin A Neva and Harold W Brown. 6th Edition. Prentice Hall International Inc.

2. Essential Malariology by Bruce-Chwatt 2nd edition.

3. Medical Parasitology by D.R.Arora and B.B.Arora, 3rd Edition.

4. A Colour Atlas of Tropical Medicine and Parasitology by Peters and Gilles.

5. Atlas of Medical Helminthology and Protozoology. P.L.Chiodini. 4th Edition, Edinburgh:Churchill Livingstone, 2011.

Additional Reading Material

1. Worms and Human Diseases. Ralph Muller, 2nd Edition. Oxon: CABI Publishing, 2002.

2. Atlas of Medical Parasitology: an atlas of important protozoa, helminths and arthropods. Zaman Vigar. Hong Kong: Cameron Printing.

3. Principles and practice of Clinical Parasitology. Stephen. H. Gillespie (Ed). Chichester. John Wiley, 2001.