FOUNDATION MODULE 2 – Parasitology component

Introduction

The Foundation Module 2 will consist of five weeks during the 5th term (week 6-10) of the undergraduate MBBS course. The module aims to lay the foundation for the teaching and learning sessions of the Infectious and Parasitic Diseases Module which is scheduled for the 6th-7th term.

General Objectives

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

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

Specific objective

1) Introduction to Parasitology

2) Principles of transmission, laboratory diagnosis, prevention and control of parasitic diseases

- Define the common nomenclature and terms used in Parasitology: parasite, host, endoparasite, ectoparasite, pathogen, commensal, obligatory parasite, facultative parasite, immunopathology, virulence.
- Describe briefly the characteristic features of each of the above with examples.
- Describe the different mode/s of transmission of the parasitic diseases.
- Outline the principles used in the laboratory diagnosis including selection of appropriate specimens for aetiological diagnosis and their proper collection and transport.
- Relate the life cycle, source and mode of transmission to the prevention and control of disease.

3) Blood and Tissue protozoa

a) Malaria

The student should be able to:

- Describe the life cycle of human malaria parasites and the different modes of malaria transmission
- Describe the morphological features of malaria parasite stages that occur in the human host, particularly those that are relevant for diagnosis of human malaria.
- Describe the clinical outcomes of malaria infections
- Outline the factors that determine the clinical outcome of a malaria infection, including immunity to malaria

- List the methods used in the diagnosis of malaria, including their advantages and disadvantages
- Discuss the methods used in the control of the disease

b) Toxoplasmosis

The student should be able to:

- Describe the morphology of *Toxoplasma gondii*
- Outline the life cycle of *Toxoplasma gondii*
- List the modes of transmission of infection
- Describe the spectrum of clinical manifestations
- Describe the principles of diagnosis
- Discuss the principles of management
- List the preventive measures that can be taken to prevent infection

c) Leishmaniasis

The student should be able to:

- Describe the life cycle of *Leishmania* spp parasites
- Describe the different clinical presentations
- Describe the morphological features of Leishmania parasite stages that occur in the human host, particularly the details relevant for the laboratory diagnosis
- List the factors that determine the clinical outcome of this infection
- Outline the principles of the diagnostic methods used.
- Describe the factors that affect disease transmission and principles of its prevention and control.

4) Blood and tissue helminths: **Bancroftian filariasis**

The student should be able
to:

- Outline the geographical distribution of bancroftian filariasis, globally and in Sri Lanka
- Describe the epidemiological aspects of lymphatic filariasis with special reference to Sri Lanka
- Describe the mode/s of transmission
- Outline the life cycle of the causative parasite
- Describe the clinical spectrum of lymphatic filariasis
- Describe the underlying pathogenesis of these clinical manifestations
- Describe the methods available for diagnosis including their advantages and disadvantages
- Discuss the control of filariasis including the new strategies being currently practiced
- Discuss the strategies available for treatment of lymphatic filariasis
- Discuss the social implications of the disease
- Name the other filarial infections that may occur.

5) Intestinal and Urogenital protozoal parasites

The student should be able to briefly describe the following aspects regarding medically important intestinal and urogenital protozoal parasites (i.e. *Entamoeba histolytica, Giardia lamblia, Balantidium coli, Cryptosporidium parvum* and *Trichomonas vaginalis)*

- The different morphological forms
- Epidemiological aspects
- Life cycles
- Modes of transmission
- Sites of infection in the human body
- Pathogenesis, clinical features and complications
- Laboratory diagnosis
- Principles of treatment
- Preventive measures

6) Intestinal Helminthiasis: **Intestinal nematodes**

The student should be able to:

- List the medically important nematodes that inhabit the human intestines
- Briefly describe the following aspects with regard to these nematodes
    - The morphology of the different stages
    - Life cycle
    - Methods of transmission to humans
    - Clinical manifestations and complications
    - Methods of diagnosis
    - Prevention and control

7) Cestodes

- List the medically important cestodes that inhabit the human intestines
- Outline their
    - Life cycle
    - Methods of transmission to humans
    - Clinical manifestations and complications
    - Methods of diagnosis
    - Methods of prevention

8) Snakes

The student should be able to:

- List the important snakes belonging to the families- Elapidae, Viperidae and Colubridae
- Name the important venomous and non-venomous snakes
- Differentiate between Elapids, Vipers and Colubrides based on their morphological characteristics
- Identify the important snakes based on their body markings

- List the measures taken to prevent snake bite
- Describe the first aid measures given to snake bite victims

9) Emerging and re-emerging infections

The student should be able to:

- Define emerging and re-emerging infections
- List the diseases which may be important to Sri Lanka and those diseases emerging and re-emerging in Sri Lanka and globally
- Briefly describe the factors which predispose to the emergence and re-emergence of infections
- Recognize the current handicaps when dealing with the risks of these infections
- Outline the emergence of drug resistance in pathogens
- Briefly describe the preventive aspects of these infections

10) Medically important Arthropods

The student should be able to:

- List the different groups of arthropods that have an impact on human health
- Describe the various mechanisms by which they impart ill effects

11) Mosquitoes

- List the important species of vector mosquitoes in Sri Lanka and the diseases they transmit
- Describe their habits and breeding grounds
- List the methods available for control and the basis of each method

12) Flies

- Explain the importance of housefly as a mechanical vector of disease
- List the other groups of flies that are medically important
- Briefly describe myiasis

13) Ticks/fleas/bugs

- Differentiate them from each other
- Describe their medical importance and available control methods

14) Mites

- Identify *Sarcoptes scabiei* mite
- Describe the mode/s of transmission, pathogenesis, clinical manifestations, complications and treatment of scabies

15) Lice

- Differentiate between the head, body and pubic louse
- Describe the treatment and control methods.

Practical skills to be acquired

At the end of the Foundation Module 2 the student should.

- Be able to properly use the compound light microscope
- Describe the principles regarding collection, storage and delivery/transport of faecal and blood specimens to a laboratory for diagnosis of parasitic infections
- Be able to examine stained thin blood films and identify malaria parasites (*Plasmodium falciparum* and *Plasmodium vivax*)
- Be able to examine stained thick blood films and identify microfilaria (*Wuchereria bancrofti)*
- Be able to prepare and examine wet smears of stools in saline and iodine to identify intestinal protozoal and helminth parasites
- Identify
  - the snakes of medical importance
  - the mosquitoes and flies of medical importance by their body markings

Summary of lectures

Title	**Lecture (hrs)**	**CD**
Introduction to Parasitic diseases	1	
Laboratory diagnosis, transmission and control	1	
Malaria	3	
Small intestinal nematodes	2	
Intestinal and urogenital protozoa	1	
Large intestinal nematodes and cestodes	1	
Filariasis	2	
Leishmaniasis	1	
Medically important arthropodes	1	
Toxoplasmosis, emerging and re-emerging infections	1	
Lecture by Anti Malaria Campaign	1	
Lecture by Anti Filariasis Campaign	1	
Snakes		1