

**THE TAMILNADU DR.M.G.R. MEDICAL UNIVERSITY,  
No.69, Anna Salai, Guindy, Chennai – 600 032.**

**D.M/ M.Ch  
SUPER SPECIALTY DEGREE COURSE**



**SYLLABUS AND CURRICULUM**

**2021-2022**

**D.M. - INFECTIOUS DISEASE**

**THE TAMIL NADU Dr. M.G.R. MEDICAL UNIVERSITY, CHENNAI****Syllabus – D.M - INFECTIOUS DISEASE****1. AIMS:**

The Infectious Disease Training is a three-year program designed to train future faculty in academic infectious diseases. The programme provides rigorous training and supervised experience with a faculty of broad clinical and research expertise at a sufficient level for the resident to acquire outstanding skills as a specialist in infectious diseases.

**2. OBJECTIVES:**

The program provides a unified experience that allows trainees to develop excellence in the competencies specified by the MCI as they apply to the super-speciality of Infectious Diseases.

**2.1 Patient Care**

Exposure to the entire range of cases in infectious disease including regularly encountered inpatient and outpatient infections and the special situations including HIV/AIDS, Transplant, Hematology-Oncology infections, immunocompromized hosts, illnesses of travelers, hospital acquired infections , sexually transmitted infections, and the epidemiology of infectious diseases. The trainees will learn to gather data; order diagnostic tests; interpret data, especially those provided by the Microbiology Laboratory; make diagnostic and therapeutic decisions; perform procedures; manage patient therapies emphasizing the appropriate use of antimicrobial agents; and work with others to provide patient-focused care.

**2.2 Medical Knowledge**

Through direct patient care in a variety of settings, conferences, lectures, and appropriate use of the medical literature, the trainee will master the broad range of problems in infectious disease as they relate to the individual patient and to the

larger community. The trainees will have appropriately supervised primary responsibility for applying their knowledge to the solution of problems in differential diagnosis and complex management. They will learn to manage challenges unique to Infectious Disease including the feedback, in terms of antimicrobial resistance, from the individual patient to the environment; the actual loss of useful antimicrobial agents; and the recognition of new diseases.

### **2.3. Practice-Based Learning and Improvement**

The trainees will become expert in the use of the current medical literature to support evidence based decision-making. Through rounds and conferences they will learn to appraise the medical literature critically. With faculty supervision, they will hone their clinical skills.

### **2.4 Interpersonal and Communication Skills**

Thorough experience in the inpatient and outpatient settings, the trainees will learn and practice communication skills appropriate to the medical consultant. In their clinics, they will practice the development of an ongoing therapeutic relationship with highly complex patients. With appropriate supervision, they will serve as the primary caregivers for patients with HIV/AIDS and other chronic infectious disease problems. In this setting they will coordinate the care of professionals in a variety of specialties. They will practice the skills necessary to obtain a difficult history and when required, the delivery of bad news.

### **2.5. Professionalism**

The trainees will be expected to practice professionalism in all academic and clinical venues. With appropriate supervision, they will have primary responsibility for staffing clinics and for providing support and care for a panel of seriously ill patients. They will deal with patients of many ages and ethnicities and with varying degrees of impairment. Intellectual integrity is emphasized in all settings, including the clinic, the conference room, and the laboratory.

### **2.6 Systems-Based Practice**

In all settings, but particularly in the HIV/AIDS and General Infectious Disease

Clinics, the trainees coordinate interdisciplinary care by a range of specialists, including all of the medical specialties but strongly emphasizing social services, physical therapy, economics, transportation, and psychological support.

## **2.7 Research**

The trainees gain the basic skills and knowledge to function as an independent investigator. The trainees are exposed to state-of-the-art basic, translational, and clinical research and through active participation develops a firm basis for continuing success in one or more of these areas. Skills include developing appropriate scientific knowledge and critical evaluation of the relevant literature, problem solving in the design and interpretation of experiments, communication of progress and results in formal and informal settings, understanding national and international systems for funding research and obtaining their own funding, and sharpening critical thinking. Scientific professionalism will be stressed in each venue.

## **3. THEORY SYLLABUS:**

During the training programme, the resident will have formal instruction, clinical experience or other opportunities to gain expertise in the etiology, pathogenesis, epidemiology, clinical presentation, diagnosis, differential diagnosis, management and prevention of the following disorders pertaining to various pathogens and organ systems. A detailed log of at least 100 patients with different infectious diseases should be maintained. The curriculum will include a study of all infectious diseases—bacterial, mycobacterial, viral, spirochetal, rickettsial etc occurring in adults and in the pediatric age group. The trainee or resident must also have a practical knowledge of infections encountered in oncology, surgery, obstetrics/ gynaecology, post-transplant patients, and in other specialties. Emphasis will be given to national health programmes for control and prevention of infectious diseases (*e.g., Revised National Tuberculosis Control Programme, National AIDS Control Programme, UIP etc.*) wherever applicable.

The programs educational objectives will be attained through extensive experience

in the following areas: inpatient consultations on adults (*and children*), outpatient clinics and consultations, clinical microbiology, virology and Parasitology laboratory rotations, conferences, seminars and didactic courses, infection control meetings, antibiotic surveillance subcommittee meetings, biostatistics and research methodology coursework, research projects and teaching responsibilities.

### **3.1: Content**

#### **I: BASIC PRINCIPLES IN THE DIAGNOSIS AND MANAGEMENT OF INFECTIOUS DISEASES**

##### ***A: Microbial Virulence factors***

- Molecular Perspective of Microbial Pathogenicity
- Microbial Adherence
- Toxins

##### ***B: Host Defense Mechanism***

- Innate (General or Nonspecific) Host Defense Mechanisms
- Human Genetics and Infection
- Antibodies
- Complement
- Granulocytic Phagocytes
- Cell-Mediated Defense against Infection
- Nutrition, Immunity and Infection
- Evaluation of the Patient with Suspected Immunodeficiency

##### ***C: Epidemiology of Infectious Disease***

- Epidemiologic Principles
- One Health concept
- Emerging and Reemerging Infectious Disease Threats
- Hospital Preparedness for Emerging and Highly Contagious Infectious Diseases

##### ***D: Clinical Microbiology***

- The Clinician and the Microbiology Laboratory

##### ***E: Anti – Infective Therapy***

- Principles of Anti-infective Therapy
- Molecular Mechanisms of Antibiotic Resistance in Bacteria
- Pharmacokinetics and Pharmacodynamics of Anti-Infective Agents

- Penicillin's
- Cephalosporin's
- Other  $\beta$  - lactam Antibiotics
- Beta - Lactam Allergy
- Fusidic Acid
- Aminoglycosides
- Tetracyclines and Chloramphenicol
- Rifamycins
- Metronidazole
- Macrolides, Clindamycin and Ketolides
- Glycopeptides (*Vancomycin and Teicoplanin*), Streptogramins (*Quinupristin – Dalfopristin*), and Lipopeptides (*Daptomycin*)
- Polymyxins (*Polymyxin B and Colistin*)
- Oxazolidinones
- Sulfonamides and Trimethoprim
- Quinolones
- Urinary Tract Agents: Nitrofurantoin and Methenamine
- Tropical Antibacterials
- Antimycobacterial Agents
- Systemic Antifungal Agents
- Antiviral Drugs (Other than Antiretrovirals)
- Immunomodulators
- Hyperbaric Oxygen
- Agents Active against Parasites
- Complementary and Alternative Medicines for Infectious Diseases
- Antimicrobial Management: Cost and Resistance
- Interpreting the Results of Clinical Trials on Antimicrobial Agents
- Outpatient Parenteral Antimicrobial Therapy
- Understanding the profile of antibiotics in terms of generations.
- Newer antibiotics FDA/Non FDA approval of drugs -significance.

## **II: MAJOR CLINICAL SYNDROMES**

### **A: Fever**

- Temperature Regulation and the Pathogenesis of Fever
- Fever of Unknown Origin
- The Acutely ill patient with Fever and Rash
- Acute undifferentiated febrile illnesses

### **B: Upper Respiratory Tract Infections**

- The Common Cold
- Pharyngitis
- Acute Laryngitis

- Acute Laryngotracheobronchitis (*Croup*)
- Otitis Externa, Otitis Media and Mastoiditis
- Sinusitis
- Epiglottitis
- Infections of the Oral Cavity, Neck and Head

***C: Pleuropulmonary and Bronchial Infections***

- Acute Bronchitis
- Chronic Obstructive Pulmonary Diseases, Chronic Bronchitis and Acute Exacerbations
- Bronchiolitis
- Acute Pneumonia
- Pleural Effusion and Empyema
- Lung Abscess
- Chronic Pneumonia
- Cystic Fibrosis

***D: Urinary Tract Infection***

***E: Sepsis, severe sepsis and septic shock***

***F: Intra – abdominal Infections***

- Peritonitis and Intraperitoneal Abscesses
- Infections of the Liver and Biliary System
- Pancreatic Infections
- Splenic Abscess
- Appendicitis
- Diverticulitis and Typhilitis

***G: Cardiovascular Infections***

- Endocarditis and Intravascular Infections
- Infections of Prosthetic Valves and Other Cardiovascular Devices
- Prophylaxis of Infective Endocarditis
- Mediastinitis

***H: Central Nervous System Infections***

- Approach to the Patient with Central Nervous System Infection
- Acute Meningitis
- Cerebrospinal Fluid Shunt Infections
- Chronic Meningitis
- Encephalitis, Myelitis and Neuritis
- Brain Abscess

- Subdural Empyema, Epidural Abscess and Suppurative Intracranial Thrombophlebitis

### ***I: Skin and Soft Tissue Infections***

- Cellulitis and Subcutaneous Tissue Infections
- Myositis
- Lymphadenitis and Lymphangitis

### ***J: Gastrointestinal Infections and Food Poisoning***

- Principles and Syndromes of Enteric Infection
- Esophagitis
- Nausea, Vomiting and Noninflammatory Diarrhea
- Antibiotic - Associates Colitis
- Inflammatory Enteritides
- Enteric Fever and Other Causes of Abdominal Symptoms with fever
- Foodborne Diseases
- Tropical Sprue / Enteropathy
- Whipple's Disease

### ***K: Bone and Joint Infections***

- Infectious Arthritis of Native Joints
- Osteomyelitis
- Infections Arthritis of Native Joints

### ***L: Diseases of the Reproductive Organs and Sexually Transmitted Diseases***

- Genital Skin and Mucous Membrane Lesions
- Urethritis
- Vulvovaginitis and Cervicitis
- Infections of the Female Pelvis
- Prostatitis, Epididymitis and Orchitis

### ***M: Eye Infections***

- Microbial Conjunctivitis
- Microbial Keratitis
- Endophthalmitis
- Infectious Causes of Uveitis
- Periocular Infections

### ***N: Hepatitis***

- Acute Viral Hepatitis
- Chronic Viral Hepatitis

### ***O: Acquired Immunodeficiency Syndrome***

- Epidemiology and prevention of Acquired Immunodeficiency Syndrome and Human Immunodeficiency Virus Infection
- Diagnosis of Human Immunodeficiency Virus Infection
- The Immunology of Human Immunodeficiency Virus Infection
- General Clinical Manifestations of Human Immunodeficiency Virus Infection (*Including the Acute Retroviral Syndromes and Oral, Cutaneous, Renal, Ocular and Cardiac Diseases*)
- Pulmonary Manifestations of Human Immunodeficiency Virus Infection
- Gastrointestinal and Hepatobiliary Manifestations of Human Immunodeficiency Virus Infection
- Neurologic Diseases Caused by Human Immunodeficiency Virus – I and Opportunistic Infections
- Malignancies in Human Immunodeficiency Virus Infection
- Human Immunodeficiency Virus Infection in Women
- Paediatric Human Immunodeficiency Virus Infection
- Antiretroviral Therapy for Human Immunodeficiency Virus Infection
- Management of Opportunistic Infections Associated with Human Immunodeficiency Virus Infected
- Vaccines for Human Immunodeficiency Virus - I Infection

### **III: INFECTIONS DISEASES AND THEIR ETIOLOGIC AGENTS**

#### ***A: Viral Diseases***

- Introduction to Viruses and Viral Diseases

#### ***DNA Viruses***

##### *Poxviridae*

- Orthopoxviruses: Vaccinia (*Smallpox Vaccine*), Variola (*Smallpox*), Monkeypox and Cowpox.
- Other Poxviruses that infect humans; Parapox viruses, Molluscum Contagiosum and Tanapox.

##### *Herpesviridae*

- Introduction to Herpesviridae
- Herpes Simplex Virus
- Varicella - Zoster Virus
- Cytomegalovirus
- Epstein - Barr Virus (*Infectious Mononucleosis*)
- Human Herpesvirus Types 6 & 7
- Kaposi's Sarcoma - Associated Herpes Virus (*Human Herpesvirus Type 8*)
- Herpes B Virus

*Adenoviridae*

- Adenovirus

*Papovaviridae*

- Papillomaviruses
- JC, BK and other Polyomaviruses; Progressive Multifocal Leukoencephalopathy.

*Hepadnaviridae*

- Hepatitis B Virus and Hepatitis Delta Virus

*Parvoviridae*

- Parvovirus

**RNA Viruses***Reoviridae*

- Orthoreoviruses and Orbiviruses
- Coltiviruses and Seadornaviruses (*Colorado Tick Fever*)
- Rotaviruses

*Togaviridae*

- Alphaviruses
- Rubella Virus (*German Measles*)

*Flaviviruses*

- Flaviviruses (*Yellow Fever, Dengue Hemorrhagic Fever, Japanese Encephalitis, West Nile Encephalitis, St. Louis Encephalitis, Tick – Borne Encephalitis*)
- Hepatitis C
- Hepatitis G Virus and TT virus

*Coronaviridae*

- Coronaviruses, Including Severe Acute Respiratory Syndrome (SARS) - Associated Coronavirus

*Paramyxoviridae*

- Parainfluenza Viruses
- Mumps Virus
- Respiratory Syncytial Virus
- Human Metapneumovirus
- Measles Virus (*Rubeola*)
- Zoonotic Paramyxoviruses; Hendra, Nipah and Menangle Viruses

*Rhabdoviridae*

- Vesicular Stomatitis Virus and Related Viruses
- Rhabdoviruses

*Filoviridae*

- Marburg and Ebola Virus Hemorrhagic Fevers

*Orthomyxoviridae*

- Influenza Virus

*Bunyaviridae*

- California Encephalitis, Hantavirus Pulmonary Syndrome and Bunyavirid Hemorrhagic Fevers

*Arenaviridae*

- Lymphocytic Choriomeningitis Virus, Lassa Virus and the South American Hemorrhagic Fevers

*Retroviridae*

- Human T - Cell Lymphotropic Virus Types I & II
- Human Immunodeficiency Viruses

*Picornaviridae*

- Introduction to the Enteroviruses
- Poliovirus
- Coxsackieviruses, Echoviruses and Newer Enteroviruses
- Hepatitis A Virus
- Rhinovirus

*Calciviridae and other Gastrointestinal Viruses*

- Noroviruses and other Calciviruses
- Astroviruses and Picobirnaviruses

*Unclassified Viruses*

- Hepatitis E Virus

***B: Prion Diseases***

- Prions and Prion Diseases of the Central Nervous System (*Transmissible Neurodegenerative Diseases*)

***C: Chlamydial Diseases***

- Introduction to Chlamydial Diseases
- *Chlamydia trachomatis* (Trachoma, Perinatal Infections, Lymphogranuloma Venereum and other Genital Infections)
- Chlamydophila (*Chlamydia*) psittaci (Psittacosis)
- Chlamydophila (*Chlamydia*) Pneumoniae

#### **D: Mycoplasma Diseases**

- Introduction to *Mycoplasma* Diseases
- *Mycoplasma Pneumoniae* and Atypical Pneumonia
- Genital Mycoplasmas: *Mycoplasma genitalium*, *Mycoplasma hominis*, and *Ureaplasma* Species

#### **E: Rickettsioses and Ehrlichioses**

- Introduction to Rickettsioses and Ehrlichioses
- *Rickettsia rickettsii* and other spotted fever group Rickettsiae (Rocky Mountain Spotted Fever and other Spotted Fever)
- *Rickettsia akari* (Rickettsialpox)
- *Coxiella Burnetii* (Q Fever)
- *Rickettsia Prowazekii* (Epidemic or Louse – Borne Typhus)
- *Rickettsia typhi* (Murine Typhus)
- Scrub Typhus
- *Ehrlichia Chaffeensis* (Human Monocytic Ehrlichiosis), *Anaplasma phagocytophilum* (Human Granulocytotropic Anaplasmosis), and other Ehrlichiae.

#### **F: Bacterial Diseases**

- Introduction to Bacteria and Bacterial Diseases

#### **Gram – Positive Cocci**

- *Staphylococcus aureus* (Including Staphylococcal Toxic Shock)
- *Staphylococcus epidermidis* and other Coagulase - Negative Staphylococci
- Classification of Streptococci
- *Streptococcus pyogenes*
- Nonsuppurative Poststreptococcal Sequelae: Rheumatic Fever and Glomerulonephritis
- *Streptococcus Pneumoniae*
- Enterococcus Species, *Streptococcus bovis* and *Leuconostoc* Species
- *Streptococcus agalactiae* (Group B Streptococcus)
- Viridans Streptococci, Group C and G Streptococci, and *Gemella morbillorum*.
- *Streptococcus anginosus* Group

**Gram – Positive Bacilli**

- Corynebacterium diphtheria
- Other Coryneform Bacteria and Rhodococcus
- Listeria monocytogenes
- Bacillus anthracis (*Anthrax*)
- Bacillus species and Related Genera other than Bacillus anthracis
- *Erysipelothrix rhusiopathiae*

**Gram – Negative Cocci**

- Neisseria meningitidis
- Neisseria gonorrhoeae
- Moraxella (*Branthamella*) catarrhalis and other than Gram - Negative Cocci

**Gram – Negative Bacilli**

- *Vibrio cholera*
- Other Pathogenic Vibrios
- Campylobacter jejuni and Related Species
- Helicobacter Pylori and other Gastric Helicobacter Species
- Enterobacteriaceae
- Pseudomonas aeruginosa
- Stenotrophomonas maltophilia and Burkholderia cepacia
- Burkholderia pseudomallei and Burkholderia mallei: Melioidosis and Glanders .
- Acinetobacter Species
- Salmonella Species, Including Salmonella typhi
- Shigella Species (*Bacillary Dysentery*)
- Haemophilus Infection
- Brucella Species
- Francisella tularensis (*Tularemia*)
- Pasteurella Species
- Yersinia Species, Including Plague
- Bordetella Species
- Streptobacillus moniliformis (*Rat – Bite Fever*)
- Legionella
- Other *Legionella* Species
- Capnocytophaga
- Bartonella, including Cat - Scratch Disease
- *Calymatobacterium granulomatis* (*Donovanosis Granuloma Inguinale*)
- Other Gram - Negative and Gram - Variable Bacilli

**Spirochetes**

- Treponema pallidum (*Syphilis*)
- Endemic Treponematoses
- Leptospirosis

- *Borrelia* Species (Relapsing Fever)
- *Borrelia burgdorferi* (*Lyme Diseases, Lyme Borreliosis*)
- *Spirillum minus* (*Rat – bite fever*)

### **Anaerobic Bacteria**

- Anaerobic Infections: General Concepts
- *Clostridium tetani* (*Tetanus*)
- *Clostridium botulinum* (*Botulism*)
- Gas Gangrene and other *Clostridium* - Associated diseases
- *Bacteroides*, *Prevotella*, *Porphyromonas* and *Fusobacterium* species (and other Medically important Anaerobic Gram – Negative Bacilli)
- Anaerobic Cocci
- Anaerobic Gram - Positive Nonsporulating Bacilli

### **Mycobacterial Diseases**

- *Mycobacterium tuberculosis*
- *Mycobacterium leprae* (*Leprosy, Hansen's Disease*)
- *Mycobacterium avium* Complex
- Infections caused by Non - Tuberculosis Mycobacteria

### **Higher – Bacterial Diseases**

- *Nocardia* Species
- Agents of Actinomycosis

### **G: Mycoses**

- Introduction of Mycoses
- *Candida* Species
- Agents of Mucormycosis and Related Species
- *Sporothrix Schenckii*
- Agents of Chromoblastomycosis
- Agents of Mycetoma
- *Cryptococcus neoformans*
- *Histoplasma capsulatum*
- *Blastomyces dermatitidis*
- *Coccidioides* Species
- Dermatophytoses and other Superficial Mycoses
- *Paracoccidioides brasiliensis*
- Uncommon Fungi
- *Pneumocystis* Species

### **H: Protozoal Disease**

- Introduction to Protozoal Diseases
- *Entamoeba histolytica*

- Free - Living Amebas
- Plasmodium Species (Malaria)
- Leishmania Species: Visceral (kala - azar), Cutaneous and Mucocutaneous Leishmaniasis
- Trichomonas vaginalis
- Babesia Species
- Cryptosporidiosis (Cryptosporidium hominis, Cryptosporidium parvum and other species)
- Cyclospora cayetanensis, Isopora belli, Sarcocystis Species, Balantidium coli and Blastocystis hominis.
- Microsporidiosis

#### ***I: Diseases Due to Helminths***

- Introduction to Helminth Infection
- Intestinal Nematodes (*Roundworms*)
- Tissue Nematodes, Including Trichinosis, Dracunculiasis, and the Filariases
- Trematodes (*Schistosomes and other Flukes*)
- Cestodes (*Tapeworms*)
- Visceral Larva Migrans and other Unusual Helminth Infections

#### ***J: Ectoparasitic Diseases***

- Introduction to Ectoparasitic disease
- Lice (*Pediculosis*)
- Scabies
- Myiasis and Tungiasis
- Mites (Including Chiggers)
- Ticks

#### ***K: Diseases of Unknown Etiology***

- Kawasaki Syndrome

### **IV: SPECIAL PROBLEMS**

#### ***A: Nosocomial Infections***

- Organization for Infection control
- Isolation
- Disinfection, Sterilization and Control of Hospital Waste
- Infections Caused by Percutaneous Intravascular Devices
- Nosocomial Respiratory Infections
- Nosocomial Urinary Tract Infections
- Nosocomial Hepatitis and other infections transmitted by blood and blood products.

- Human Immunodeficiency Virus in Health Care settings
- Nosocomial Herpesvirus Infections
- Needle stick injury approach

### ***B: Infections in Special Hosts***

- *Infections in the Immunocompromised Host: General Principles*
- Infections in patients with Hematologic Malignancies
- Prophylaxis and Empirical Therapy for Infection in Cancer Patients
- Infections in Injection Drug Users
- Risk factors and approaches to Infection in Transplant Recipients
- Infections in Recipients of Hematopoietic Stem Cell Transplantation
- Infection in Solid Organ Transplant Recipients
- Infections in Patients with Spinal Cord Injury
- Infections in the Elderly
- Infections in Asplenic Patients

### ***C: Surgical and Trauma – Related Infections***

- Postoperative Infections and Antimicrobial Prophylaxis
- Burns
- Bites

### ***D: Immunizations***

- Including adult immunisation and special situations like travel.

### ***E: Zoonoses***

### ***F: Travel Medicine***

- Protection of Travelers
- Infections Associated with International travel

### ***G. National guidelines***

- Vector borne diseases – National Vector borne Diseases Control Programmes- Malaria, Dengue, Filariasis, Chikungunya, Japanese encephalitis, Kala azar.
- Leprosy
- Polio
- Tropical diseases
- HIV
- TB

- Public Health Act

## **H. One Health Concept**

### **3.2 Guidelines**

Guidelines for patient care clinical experience are as follows:

1. General inpatient infectious diseases consultation service
2. Outpatient infectious diseases clinic
3. Inpatient consultation in oncology, pulmonology, surgery
4. Pediatric infectious diseases rotation.
5. Rotation at a Communicable Diseases Hospital
6. Rotation at a public hospital, where STD elective can be done, if not available on site.
7. Transplant infectious diseases inpatient consultation service wherever possible
8. Exposure to various infectious disease control programmes of Government of India (Revised National Tuberculosis Control Programme, National Vector Borne Disease Control Programme etc.)
9. Rotation through Microbiology
10. ICU rotation to learn Nosocomial Infection.

The main features of these rotations will involve history taking and examination of the patients, sending relevant investigations, reviewing investigation

reports and following up with microbiology, formulating a differential diagnosis and a therapeutic plan, discussing the case with the primary consultant and the core faculty for the program, identifying critical questions related to the case, reading of the topic from a standard ID textbook, literature search to retrieve comprehensive review including epidemiology, microbiology, pathology, clinical manifestations, investigative approach, treatment modalities, prognosis and preventive strategies, retrieve practice guidelines (Indian and international), systematic reviews (Cochrane review) if any, review of controversies and identification of research needs.

### **3.3 Knowledge**

1. Knowledge necessary to obtain an orderly history on patients suspected of having an infectious disease.
2. Knowledge necessary to perform a physical examination of patients with infectious problems .
3. Knowledge necessary to describe the typical physical findings and the typical microorganisms .
4. Knowledge to order appropriate tests, to perform portions of test as necessary and to interpret results.
5. Knowledge to recognize a possible need for and requests consultation for performance or interpretation of procedures.
6. Knowledge for each of the Common Infectious Diseases including tropical infectious diseases to describe the clinical manifestations, etiologic agents and differential diagnosis and to make a differential diagnosis for each of the Common Presenting Problems.
7. Knowledge to identify the appropriate therapeutic approach and perform therapeutic procedures when appropriate to the patient's condition.
8. Knowledge to recognize need and seek consultation for the performance of therapeutic procedures.
- 9.. Knowledge to identify mechanism of action, indications, contra-indications, dosing schedule, efficacy, cost, side effects, and pharmacokinetics and

pharmacodynamics for antimicrobials and biological products including monoclonal antibodies.

10. Knowledge to identify rational combinations of antibiotics\_and the therapeutic mechanisms of action.
11. Knowledge to identify clinical situations and methods for measuring appropriate blood and tissue levels of antibiotics.
12. Knowledge to identify accepted clinical situations and drugs of choice for chemoprophylaxis.
13. Knowledge to identify clinical situations and appropriate agents for recommended active and passive immunization: active immunization for infectious diseases.
14. Knowledge to identify important reservoirs and modes of transmission\_of infections of public health importance and accepted preventive measures.\_
15. Knowledge to identify reportable infectious diseases\_and proper procedures for reporting them.
16. Knowledge of the basic principles of nosocomial infectious diseases in the various institutional settings, especially catheter-associated urinary tract infections, nosocomial pneumonia, and sepsis associated with intravascular devices, surgical site infections and therapy.
17. Knowledge for the purposes of referral and patient education, to identify indications, success rates, and common complications of common surgical procedures for infectious disease problems.

### **3.4 Bioethics:**

1. Respect human life and the dignity of every individual
2. Refrain from supporting or committing crimes against humanity and condemn all such acts.
3. Treat the sick and injured with competence and compassion and without prejudice and apply the knowledge and skills when needed.
4. Protect the privacy and confidentiality of those for whom we care and breach

that confidence only when keeping it would seriously threaten their health and safety or that of others.

5. Work freely with colleagues to discover, develop, and promote advances in medicine and public health that ameliorate suffering and contribute to human well being.
6. Educate the public about present and future threats to the health of humanity
7. Advocate for social, economic, educational and political changes that ameliorate suffering and contribute to human well being.
8. Teach and mentor those who follow us, for they are the future of our caring profession.

#### **4. CLINICAL TRAINING:**

1. Clinical postings in infectious disease wards to obtain competency to take history and perform appropriate physical examination.
2. Development of competency to perform proper investigations, plan appropriate investigations and interpret the investigative results
3. Development of competency in the diagnosis, management and follow up of infectious diseases.
4. The microbiologist be in attendance on a daily ward round taken by the consultant and his residents.
5. Learn ethical practice.

During II year, students are encouraged to undergo special postings for learning new advanced techniques / Procedure / Skills in institutions of higher repute where the requisite facilities are available without affecting the duties of the

parent department.

**Clinical postings: Recommended schedule for three years training:**

The post graduate student is required to work full time in the department, participate in the patient care and academic and research activities as described below.

The post graduate students will be primarily responsible for the care of patients which include clinical, investigative and therapeutic aspects. In addition, they shall pursue research and academic activities.

**a. Clinical Rotations**

- i. First Year posting: in the parent department with resident duty (in turns) on all days (depending on the number of candidates)

- ii. Second year posting will include the following:

One month posting each in:

- a. General Medicine
- b. Pediatrics
- c. Obstetrics & Gynaecology
- d. Clinical Microbiology (including Lab. work)
- e. Community Medicine (including Preventive Clinic)
- f. Casualty (Emergency Medicine)
- g. Immuno-suppression Unit (Transplant / Oncology)
- h. Medicine ICU
- i. Surgery ICU
- j. PICU
- k. NICU
- l. RNTCP Unit\*
- m. ART Clinic\*
- n. STD Clinic\*

\* - only morning hours- rest of the day to be spent in the parent department

- iii. Third Year posting: in the parent department with on call duty on all days

(in turn if feasible, depending on the number of candidates).

**b. Clinical Microbiology Laboratory exposure**

- i. Rotation through various work stations for direct observation and hands-on learning
- ii. Rounds in the laboratory trouble-shooting problems and addressing clinical correlation.

- iii. Reading of textbook (and other sources) regarding background information
- iv. Directed reading of the primary literature for specific information
- v. Slide lectures addressing specific microscopy topics.
- vi. HIV ELISA testing, CD4 testing, viral load in PCR lab

**c. Hospital Epidemiology:**

- i. Discussion sessions to review readings and basic concepts in hospital epidemiology
- ii. Regular schedule of meetings: Infectious Diseases (ID) Seminar, Infection Control (IC) Staff and Committee meetings, Drug Utilization
- iii. Special project assignments, evaluating new or ongoing problems/nosocomial infections.
- iv. Outbreak investigation training
- v. One report on hospital infection epidemiology during the course.

**d. Infectious diseases epidemiology**

- i. Environmental factors in Infectious Diseases
- ii. Emerging and re-emerging diseases like dengue, ebola. Epidemic alert: Notification and reportable diseases, Recognition of Bioterrorism
- iii. Control strategies (levels of prevention and modes of intervention, source reduction, vaccination, integrated vector control and diagnosis and treatment) especially with regard to malaria, kala azar, scrub typhus)
- iv. International instruments (International Health Regulations and international disease surveillance) and WHO regulations and guidelines
- v. Research in Infectious Diseases
- vi. Knowledge of the Geo-sentinel network and Geographical Information mapping of various diseases

**e. Prevention of Hospital acquired Infections (Infection Control)**

- i. Epidemiology and Surveillance
- ii. Cluster investigation
- iii. Transmission and control of nosocomial infection

iv. Disinfection and sterilization

- v. Isolation system
- vi. Regulatory compliance

**During the training programme, patient safety is of paramount importance; therefore, skills are to be learnt initially and later to be performed under supervision followed by performing independently. Provision of skills laboratories for cardiopulmonary resuscitation in the medical colleges is mandatory.**

## **5. SKILL TRAINING REQUIREMENTS:**

The following are the skill based training requirements required to be completed by the candidates

### **5.1 Clinical Microbiology Laboratory:**

1. Rotation through various work stations for direct observation and hands-on learning .
2. Rounds in the laboratory trouble-shooting problems and addressing clinical correlation.
3. Reading of textbook sources regarding background information.
4. Directed reading of the primary literature for specific information.
5. Slide lectures addressing specific microscopy topics.
6. Procedures to be observed
  - a. Gram Stain of exudates and body fluid from various sources - 20 numbers
  - b. Sputum Acid fast stain -15 numbers
  - c. Malaria parasite -10 numbers
  - d. Bone Marrow aspirate and Biopsy -5 numbers
  - e. Body fluid aspiration including joints -10 numbers

## **5.2 Hospital Epidemiology:**

1. Discussion sessions to review readings and basic concepts in hospital epidemiology.
2. Regular schedule of meetings: Infectious Diseases (ID) Seminar, Infection Control (IC) Staff and Committee meetings, Drug Utilization.
3. Understanding of restricted antibiotic stewardship.
4. Local microbiological resistance.
5. Special project assignments, evaluating new or ongoing problems/nosocomial infections.
6. Outbreak investigation training.

## **5.3 Infectious Disease Epidemiology**

1. Environmental factors in Infectious Diseases.
2. Emerging and re-emerging diseases, Epidemic alert: Notification and reportable disease, Bioterrorism.
3. Control strategies (levels of prevention and modes of intervention, source reduction, vaccination, integrated vector control and diagnosis and treatment)
4. International instruments (International Health Regulations and international disease surveillance)
5. Research in Infectious Diseases.

**a. Prevention of Hospital acquired Infections (Infection Control)**

1. Epidemiology and Surveillance
2. Cluster investigation
3. Transmission and control of nosocomial infection
4. Disinfection and sterilization
5. Isolation system
6. Regulatory compliance

**6. TEACHING METHODOLOGY:**

In addition to the clinical and skill based rotation mentioned above, the trainees are required to attend and present at the following formal teaching activities:

1. Infectious Disease lectures
2. Infectious Diseases Case Presentations
3. Infectious Disease Seminars/discussions
4. Journal Club
5. Morbidity and Mortality Conference
6. Electronic/and computer simulators
7. Web based
8. Transplant Conferences (if available)
9. City wide Infectious Diseases Conferences (if available)
10. Internal Medicine Grand Rounds

11. Participation in either a National or International Infectious Diseases Conference.
12. Research and Scholarly Activity

## **7. RESEARCH WORK:**

Each resident is required to conduct research during the training period. The resident will spend time preparing for a research project. Subsequently the resident will be doing his research on a daily basis which will culminate in writing his/her research work. The research work should result in a scholarly publication or a presentation at national/international scientific meetings. Therefore, careful planning and serious execution of the research plan is necessary. This learning objective is achieved by designing and executing a research project under the close supervision of sponsoring faculty and the Research Committee. This objective is further supported by attending local and national research seminars. These activities will supplement the knowledge base of the resident. In addition, it will allow the presenting resident to acquire the necessary skills to deliver an effective presentation.

Students should attend Research Methodology workshop within first six months of D.M Course conducted by the University.

## **8. LOG BOOK:**

Academic achievements of the candidate should be reflected in this portfolio including posters presentation in conferences and workshops attended. The Postgraduate student of a Postgraduate Degree Course in Super specialties shall maintain Log Book of the work carried out by them and the training programme undergone during the period of training including complex cases looked after, seminars, lectures and Journal presentation by the candidate.

The Log Book shall be checked and assessed by the faculty members imparting the training.

Periodical evaluation of Log Book to be done by the Head of the Department as per 52<sup>nd</sup> SAB.

The Evaluation of the candidates in both theory and practical aspects will help the candidate in the improvement of his/her knowledge skills & attitude.

## **9. COMPETENCY ASSESSMENT:**

### Overall:

|                                                                                                                                   |   |          |
|-----------------------------------------------------------------------------------------------------------------------------------|---|----------|
| 1. Communication / Commitment / Contribution / Compassion towards patients and Innovation                                         | - | 10 Marks |
| 2. Implementation of Newly learnt techniques                                                                                      | - | 10 Marks |
| 3. Documentation of case sheets / discharge Summary / Review                                                                      | - | 10 Marks |
| 4. Number of cases presented in Clinical Meetings/ Journal Clubs / Seminars / Papers presented in Conference.                     | - | 10 Marks |
| 5. No. Of Medals/ Certificates won in the conference / Quiz competitions and other academic meetings with <u>Overall</u> details. | - | 10 Marks |
| -----                                                                                                                             |   |          |
| Total                                                                                                                             |   | 50 Marks |
| -----                                                                                                                             |   |          |

|            |     |            |   |             |
|------------|-----|------------|---|-------------|
| Assessment | I   | - February | - | First Year  |
|            | II  | - August   | - | First Year  |
|            | III | - February | - | Second Year |
|            | IV  | - August   | - | Second Year |
|            | V   | - February | - | Third Year  |
|            | VI  | - May      | - | Third Year  |

VIVA INCLUDING COMPETENCY ASSESSMENT - 100 Marks (50+50)

## **10. THEORY EXAMINATION:**

|                   |                                                                                                             |
|-------------------|-------------------------------------------------------------------------------------------------------------|
| <b>Paper I:</b>   | <b>Basic Sciences as applied to Infectious Diseases</b>                                                     |
| <b>Paper II:</b>  | <b>Clinical Microbiology including Bacteriology, Parasitology, Virology &amp; Mycology and Pharmacology</b> |
| <b>Paper III:</b> | <b>Community acquired infections including neglected tropical diseases</b>                                  |
| <b>Paper IV:</b>  | <b>Recent Advances and Special Populations</b>                                                              |

Each paper will contain:

1. Essay questions (2) - 2 X 15 = 30 Marks

2. Short Notes (10) - 10 X 7 = 70 Marks

Total -----  
100 Marks  
-----

### **11. CLINICAL EXAMINATION:**

| Particulars | Time for candidate to examine the cases | Time for examiners to question the candidates | Maximum Marks |
|-------------|-----------------------------------------|-----------------------------------------------|---------------|
| Long Case   | 1 Case x 30 Minutes                     | 30 Minutes                                    | 100           |
| Short Case  | 2 Cases x 15 Minutes                    | 30 Minutes                                    | 100           |
| Ward Rounds | 3 Patients x 10 Minutes                 | 30 Minutes                                    | 100           |
| OSCE        | 5 Stations x 3 Minutes                  | 15 Minutes                                    | 50            |
| Viva Voce   |                                         | 15 Minutes                                    | 100           |
| Log Book    |                                         |                                               | 50            |
|             |                                         |                                               | <b>500</b>    |

VIVA INCLUDING COMPETENCY ASSESSMENT - 100 Marks (50+50)

As per Medical Council of India Post Graduate Medical Education Regulations 2000 (amended upto 10<sup>th</sup> August 2016) clause **13.9 A Postgraduate student of a Postgraduate degree Course in broad specialties/ Super Specialties** would be required to present one poster presentation to read one paper at a National/State conference and to present one Research paper which should be published/accepted for publication/sent for publication during the period of his Postgraduate studies so as to make him eligible to appear at the Postgraduate Degree Examination.

Apart from Poster/Oral paper presentation in National/State conferences, the Research paper published by the candidate in the University Journal of Medical Sciences will be considered as equivalent to the Research Paper as mentioned in 13.9. clause. Case Reports can also be published in University Journal of Medical Sciences but case reports will not be considered as Research Paper.

The candidate can also present Research Paper as per Clause 13.9 of

Post Graduate Education Regulation 2000, and if the article sent for publication by the candidate as primary author or corresponding author which has not yet been published/accepted for publication, the candidate should submit a letter from the HOD, stating that the article sent for publication is of publishable merit and the proof of the Research Article submitted to the Journal for publication should be sent to the university forwarded through the HOD [as per 53<sup>rd</sup> SAB]

The student can submit articles for the University journal anytime from the time of registration till 6 months prior to theory examination.

## **12. OSCE:(5 stations)**

1. Clinical scenario of General ID/ Tropical Disease
2. Clinical scenario of Transplant/ Immunocompromised patient
3. Clinical scenario of Infection control or Outbreak management
4. Antibiotics/ Disinfectants - Indications and adverse effects
5. Gram stain, Ziehl - Nielsen stain and peripheral Smear

## **13. REFERENCE BOOKS:**

1. Mandell, G.L., Bennett, J.E., Dolin, R. Mandell. Douglas, and Bennett's Principles and Practice of Infectious Diseases, Philadelphia, Churchill Livingstone.
2. Andrew Cliff and Matthew Smallman-Raynor Turgeon. Oxford Textbook of Infectious Disease Control. M.L. Oxford University Press.
3. John G. Barlett. Pocket Book of Infectious Disease Therapy. Lippincott Williams &Wilkins.
4. David Schlossberg. Clinical Infectious Disease. Cambridge University Press.
5. R Guerrant, Walker D.H, Weller P.F. Tropical Infectious Diseases. Elsevier Churchill Livingstone.
6. Forbes, B., Sahm, D., Weissfeld, A. Bailey and Scott's Diagnostic Microbiology. Mosby,St. Louis.
7. Koneman, E.W., Allen, S.D. Janda, W.M., Schreckenberger, P.C., Winn, W.C. Color Atlasand Textbook of Diagnostic Microbiology, J.B. Lippincott, Philadelphia.
8. Murray P.R, Baron E.J, Pfaller M.A, Tenover F.C, Tenover R.H. Manual of Clinical Microbiology, American Society for Microbiology.
9. Garcia L.S, Bruckner D.A. Diagnostic Medical Parasitology. American Society for Microbiology.

10. Immunology & Serology in Laboratory Medicine. St. Louis, Mosby.
11. Text Book of Tuberculosis, 2nd Edition. Rom WN, Garay SM, eds. Philadelphia, PA: Lippincott Williams & Wilkins, 2004.
12. Manson's Tropical Diseases, 22nd Edition. Gordon C. Cook, Alimuddin I. Zumla, eds.
13. Tropical Infections Diseases, 2nd ed, Richard L. Guerrant, David H. Walker, Peter F. Weller, Vol 1 & 2, Churchill Livingstone, 2006

**\*\*Note:** The editions are as applicable and the latest editions shall be the part of the syllabi.

#### **14. JOURNALS:**

1. Clinical Infectious Diseases
2. Journals of Infectious Diseases
3. Current Opinion in Infectious Diseases
4. AIDS
5. New England Journal of Medicine
6. Lancet
7. British Medical Journal
8. The National Medical Journal of India
9. Journal of Association of Physicians of India.

**Postgraduate Students Appraisal  
Form Clinical Disciplines**

Name of the Department/Unit :

Name of the PG Student :

Period of Training : FROM.....TO.....

| Sr. No. | PARTICULARS                                          | Not Satisfactory | Satisfactory | More Than Satisfactory | Remarks |
|---------|------------------------------------------------------|------------------|--------------|------------------------|---------|
|         |                                                      | 1 2 3            | 4 5 6        | 7 8 9                  |         |
| 1.      | Journal based / recent advances learning             |                  |              |                        |         |
| 2.      | Patient based /Laboratory or Skill based learning    |                  |              |                        |         |
| 3.      | Self directed learning and teaching                  |                  |              |                        |         |
| 4.      | Departmental and interdepartmental learning activity |                  |              |                        |         |
| 5.      | External and Outreach Activities / CMEs              |                  |              |                        |         |
| 6.      | Thesis / Research work                               |                  |              |                        |         |
| 7.      | Log Book Maintenance                                 |                  |              |                        |         |

Publications

Yes/ No

Remarks\* \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**\*REMARKS:** Any significant positive or negative attributes of a postgraduate student to be mentioned. For score less than 4 in any category, remediation must be suggested. Individual feedback to postgraduate student is strongly recommended.

SIGNATURE OF ASSESSEE SIGNATURE OF CONSULTANT SIGNATURE OF HOD

\*\*\*\*\*