

Clinical Microbiology Kuwait Board Curriculum & General Objectives 2014

The educational program provides:

1. A broad understanding of the diagnosis and management of infectious disease from a clinical and laboratory perspective
2. The diagnostic techniques required in the practice of clinical microbiology
3. understanding of the areas of clinical microbiology detailed in the curriculum
4. knowledge of specialist areas for medical microbiology – infection control, virology, mycology, parasitology and public health
5. The communication skills required for the practice of clinical microbiology and the teaching skills necessary for effective practice
6. The acquisition of management skills required in the running of the microbiology laboratory
7. knowledge of the health protection aspects of clinical microbiology
8. Experience of research and development projects and critical assessment of published work so as to contribute in a team and individually to the development of the service.

9. The acquisition of life-long habits of reading, literature searches, consultation with colleagues, attendance at scientific meetings, and the presentation of scientific work that are essential for continuing professional development (CPD)
10. Experience of the practice of clinical governance and audit (specialist and multidisciplinary) through evaluation of practice against the standards of evidence-based medicine, which underpin medical microbiology practice.

The balance between practical laboratory and clinical training will be influenced by educational background, personal interests and guidance from supervisors.

PGY1 (R1)

The trainee has a comprehensive understanding of the principles and practices of medical microbiology under direct supervision.

PGY1 (R1) training:

1. It is a 12 months full-time.
2. This stage of the curriculum will begin with a formal introduction to the basic principles of medical microbiology and virology.
3. Following the induction period, the trainee will receive instruction and practical experience in further aspects of medical microbiology and virology.
4. The ***PGY1 (R1)*** training will be assessed by Rotation Supervisors and Program director.

PGY2 (R2) training:

The trainee has a good general knowledge and understanding of most principles and practices under indirect supervision.

They should be able to deal with most of the day-to-day issues in a hospital microbiology laboratory to an adequate level but will still require consultant input with.

PGY2 (R2) training is between months 13 –to- 24.

During **PGY2 (R2)** training, the trainee will continue to broaden their experience and understanding of medical microbiology.

The knowledge gained during this stage of training will be assessed by the CMKB Part 1 examination.

In order to complete *PGY2 (R2)* of medical microbiology training, trainees must have:

1. Satisfactorily completed a total of at least 12 months of training.
2. Achieved satisfactory outcomes in the requisite number of **workplace-based assessments**
3. Obtained one or more satisfactory outcomes in the **ARCP** to indicate satisfactory progress in training.

PGY3 (R3) training:

PGY3 (R3) training is between months 24-36.

This stage of the curriculum enables the trainee to undertake further specialized general medical microbiology training.

In order to complete PGY3 (R3) of medical microbiology training, trainees must have:

1. Satisfactorily completed a total of at least 36 months of training of which at least 12 months should be in ***PGY3 (R3)***
2. Achieved satisfactory outcomes in the requisite number of workplace-based assessments
3. Passed the CMKB Part 1 examination in medical microbiology
4. Obtained one or more satisfactory outcomes in the **ARCP** to indicate satisfactory progress in training.

PGY4 (R4) training:

PGY4 (R4) training is between months 36 -48.

This stage of the curriculum prepares the trainee for their senior post.

The ARCP undertaken at the end of ***PGY3 (R3)*** should identify goals for the trainee to achieve during this year of training.

The trainee has an in-depth knowledge and understanding of the principles of medical microbiology.

They should be competent to discuss and deal with the subject (or, where appropriate, perform the task/procedure), demonstrating a level of clinical or professional judgment commensurate with independent professional practice at senior level.

It is anticipated that a trainee at this level should have senior input readily available at all times where required.

By the end PGY4 (R4), the trainee should be able to demonstrate a level of knowledge and skill indicating suitability for independent professional practice in medical microbiology.

In order to complete *PGY4 (R4)* of medical microbiology training, trainees must have:

- 1.** Satisfactorily completed a total of at least 48 months of training, of which at least 12 months should be in *PGY4 (R4)*
- 2.** Achieved satisfactory outcomes in the requisite number of medical microbiology workplace-based assessments
- 3.** Satisfactorily completed all areas of the medical microbiology curriculum
- 4.** Obtained one or more satisfactory outcomes in the **ARCP** to indicate satisfactory progress in training.

PGY5 (R5) training:

PGY5 (R5) training is between months 48-60.

This stage of the curriculum prepares the trainee for their consultant post.

The ARCP undertaken at the end of *PGY4 (R4)* should identify goals for the trainee to achieve during their final year of training.

The trainee has an in-depth knowledge and understanding of the principles of medical microbiology.

They should be competent to discuss and deal with the subject (or, where appropriate, perform the task/procedure), demonstrating a level of clinical or professional judgment commensurate with independent professional practice at consultant level.

It is anticipated that a trainee at this level should have consultant input readily available at all times where required.

By the end PGY5 (R5), the trainee should be able to demonstrate a level of knowledge and skill indicating suitability for independent professional practice in medical microbiology.

The knowledge and skill gained during this stage of training will be assessed by the CMKB Final examination.

In order to complete PGY5 (R5) of medical microbiology training, trainees must have:

1. Satisfactorily completed a total of at least 60 months of training. of which at least 12 months should be in **PGY5 (R5)**
2. Achieved satisfactory outcomes in the requisite number of medical microbiology workplace-based assessments
3. Satisfactorily completed all areas of the medical microbiology curriculum

4. Obtained an **ARCP outcome 6** to indicate that all clinical (and research where relevant) competences have been achieved

CONTENT OF LEARNING

A. Core medical microbiology curriculum

1. *Laboratory aspects of microbiology*
2. *Knowledge of health and safety*
3. *Clinical skills, including the diagnosis and management of:*
 - a. infection in the community
 - b. healthcare-associated infection, including hospital-acquired infection and prevention
 - c. infection in immunocompromised patients including human immunodeficiency virus (HIV), transplantation and neutropenia
 - d. infection in the Intensive Care Unit (ICU) and Special Care Baby Unit (SCBU), including sepsis
 - e. outbreaks of infection in hospital and the community
 - f. infection in the returning traveler
 - g. sexually transmitted infection
 - h. food- and water-borne infection
 - i. pediatric infection
 - j. Infection in pregnancy.

4. *Specialist areas of Microbiology*

The trainee will acquire a working knowledge; with the opportunity to sub specialize if required, in:

- a. Virology
- b. Health protection and epidemiology
- c. Mycology
- d. Parasitology.

5. *Communication and management issues in microbiology*

Developing independent practice:

The trainee will develop the clinical, scientific, technical, management, communication and leadership skills required to run a laboratory and deliver a high-quality clinical service.

Workplace-based assessment:

Trainees will be expected to undertake workplace-based assessment throughout the entire duration of their training in medical microbiology.

These will comprise:

1. Case-based discussion (CbD) (minimum of 6 satisfactory outcomes required per year)
2. Directly observed practical skills (DOPS) (minimum of 6 satisfactory outcomes required per year for years R1 and R2; minimum of 4 satisfactory outcomes required per year for years R3, R4 and R5)
3. Evaluation of Clinical/Management Events (ECE) (minimum of 4 satisfactory outcomes required per year for years R1 and R2; minimum of 6 satisfactory outcomes required per year for years R3, R4 and R5)

SUPERVISION AND FEEDBACK

The role of the educational supervisor is to:

1. have overall educational and supervisory responsibility for the trainee in a given post
2. ensure that the trainee is familiar with the curriculum relevant to the year/stage of training of the post
3. ensure that the trainee has appropriate day-to-day supervision appropriate to their stage of training
4. ensure that the trainee is making the necessary clinical and educational progress during the post
5. ensure that the trainee is aware of the assessment system and undertakes it according to requirements
6. act as a mentor to the trainee and help with both professional and personal development
7. agree a training plan (formal educational contract) with the trainee and ensure that an induction (where appropriate) has been carried out soon after the trainee's appointment
8. discuss the trainee's progress with each trainer with whom a trainee spends a period of training
9. undertake regular formative/supportive appraisals with the trainee (at least two per year, approximately every six months) and ensure that both parties agree to the outcome of these sessions and keep a written record
10. regularly inspect the trainee's training record, inform trainees of their progress and encourage trainees to discuss any deficiencies in the training program, ensuring that records of such discussions are kept
11. keep the program director informed of any significant problems that may affect the trainee's training

In order to become an educational supervisor, a consultant must have a demonstrated interest in teaching and training, appropriate access to teaching resources, be involved in and liaise with the PGTC committee, be involved in annual reviews and liaise closely with KIMS Program Director.

SPECIALTY-SPECIFIC MEDICAL MICROBIOLOGY CURRICULUM *PGY1 (R1)*

INTRODUCTION

For many trainees, this period of training represents their first exposure to laboratory medicine (microbiology).

During this period there will be training in microbiology.

A formal period of instruction under supervision takes place at the beginning of this block and aims to provide an introduction to laboratory infection.

This introductory period will last approximately three to four months and is designed to equip the trainee with the fundamental knowledge and skills for the practice of medical microbiology, including necessary virology.

Knowledge will also be acquired through self-directed learning and formal lectures. Skills will be acquired through a formal training program supervised by educational supervisors.

The curriculum for this stage is divided into two sections:

1. Fundamental skills
2. Core knowledge.

Fundamental skills are essential to the practice of laboratory medicine (microbiology) and provide the foundation on which to develop.

1. FUNDAMENTAL SKILLS

Objective: To acquire sufficient knowledge of laboratory techniques to underpin clinical practice.

By the end of *PGY1 (R1)*, and before proceeding to *PGY2 (R2)* of training, the trainee should:

- a. have gained a thorough understanding of laboratory health and safety practice
- b. have gained experience in the safe handling of clinical samples in the laboratory
- c. have gained a basic understanding of quality assurance in the diagnostic laboratory
- d. have developed, under supervision, core reporting skills
- e. have sufficient understanding of microbiology, mycology, immunology, virology and parasitology to offer basic advice on the interpretation of laboratory results

- f. be able to manage common medical emergencies relevant to their clinical practice
- g. Understand the importance of infectious disease notifications.
- h. function as part of a multidisciplinary team
- i. recognize critical incidents and start to understand how to manage them
- j. understand the importance of clinical audit and risk management

2. CORE KNOWLEDGE

Objective:

To achieve sufficient understanding of laboratory microbiology to offer basic advice on relevant investigations, infection control procedures and interpretation of results.

Subject:

1- Basic biology relevant to microorganisms and infection

- a. Explain basic biology (structure, genetics, taxonomy, epidemiology) of major bacterial, viral, fungal and parasitic agents
- b. Explain basics of the immune response to infection
- c. Compare and contrast cellular and humoral immunity
- d. Explain the basis of how vaccines work
- e. Explain the basics of molecular biology
- f. Explain the basis of genetic susceptibility to pathogens and disease

2- Host pathogen relationships

- a. Explain the basis of how the immune response protects against infection, and how it may contribute to pathogenesis of infectious diseases
- b. Explain the basis of different types of host–parasite relationships, e.g. symbiosis, viral latency, etc.
- c. Explain the types of immunodeficiency and how they affect susceptibility to and control of infectious diseases
- d. Explain pathogenic mechanisms involved in infectious diseases and the role of host response in immunopathology

3- Laboratory safety

- a. Explain basic laboratory hazards and precautions against them

4- Classification of pathogens

- a. Explain principles of standard precautions, hazard groups and containment levels

5- Standards of practice

- a. Describe the importance and relevance of standards to good laboratory practice.
- b. Understand the evidence base behind standard operating procedures (SOPs)/examination procedures (EPs) and the importance of audit and quality control to establish validity

6- Basic principles of diagnostic microbiology

- a. Explain the range of tests available, and the circumstances in which they are used
- b. Explain the difference between sterile and contaminated/colonized body sites
- c. Explain basic techniques for serodiagnosis in infectious diseases
- d. Explain nucleic acid-based detection system such as polymerase chain reaction (PCR)
- e. Explain simple antimicrobial and antiviral susceptibility testing and its interpretation
- f. Explain the basic principles behind drug monitoring and its uses

7- Clinical syndromes – advice and management

Outline the principles of epidemiology, presentation, diagnosis and management of clinical syndromes:

- a. genitourinary tract infection including sexually transmitted infections (STIs) and bacterial urinary tract infection
- b. respiratory tract infection
- c. gastrointestinal infections
- d. skin and soft tissue infection
- e. eye infection
- f. post-operative infection
- g. inoculation incident
- h. encephalitis/meningitis
- i. brain abscess
- j. hepatitis including test interpretation
- k. rashes and rash contacts (pregnant and non pregnant)
- l. infections in pregnancy, including methods of diagnosis, and implications of infection for mother and fetus
- m. congenital infection and infection acquired perinatally
- n. infections in the immunocompromised including basic
- o. understanding of how to make the diagnosis of infection and treatment options
- p. deep infection (e.g. septicaemia, endocarditis, bone infection)
- q. common nosocomial infection (e.g. device-associated infection)
- r. infection in travelers (e.g. malaria)
- s. community-acquired and nosocomial infections in which environmental factors play a role (e.g., food, water, air)

8- Treatment and prevention strategies

- a. Explain the range of therapies available for infectious disease, the clinical indications for their use and their side effects
- b. Explain the classification of antimicrobial agents
- c. Explain in detail the mechanism of action of acyclovir and beta-lactam antibiotic agents and mechanisms for development of resistance to these agents
- d. Explain the basic principles of action and resistance for other antimicrobial agents, their uses and limitations
- e. Explain the basic principles of prophylaxis, both with antimicrobials and with immune globulins
- f. Describe existing vaccines and the schedules of immunization.

9- Infection prevention and control

- a. Describe routes of transmission and methods of preventing nosocomial spread of common and important infecting organisms ('alert organisms'), including:
 1. methicillin-resistant and -sensitive *Staphylococcus aureus*
 2. vancomycin-resistant enterococci
 3. varicella zoster virus
 4. Enteric infections including viral diarrhea
 5. respiratory tract infections, including TB
 6. Blood-borne viruses
 7. extended-spectrum beta-lactamase-producing organisms (ESBLs)
 8. Multiply-resistant *Acinetobacter baumannii*
 9. *Clostridium difficile* – associated diarrhoea
- b. Describe issues surrounding the isolation of the febrile traveler
- c. Describe the principles and practice of surveillance and public health with particular regard to food-borne and vaccine preventable infections and STIs

10- Sterilization and disinfection

- a. Describe basic terms
- b. Describe the basis of the different methods available
- c. Describe the importance of removal of pathogenic organisms in the prevention of infection in:
 1. pre-operative sterilization
 2. aseptic technique
 3. decontamination of environmental sources

SPECIALTY-SPECIFIC MEDICAL MICROBIOLOGY CURRICULUM PGY2-5 (R2-R5)

INTRODUCTION

This period of training in medical microbiology will consist of consolidation of clinical and laboratory work started in *PGY1 (R1)* up to consultant level.

Flexibility at this stage will be encouraged to reflect the needs of the trainee and may additionally include modules such as virology, epidemiology, public health medicine, research, time in another laboratory, etc.

1. LABORATORY ASPECTS OF MICROBIOLOGY

Objective: to be competent in the management of the microbiology laboratory.

A. Understanding of appropriate staining and culture techniques

Describe microscopy, culture and identification techniques for common pathogens

Process all routine specimens received in the laboratory and carry out further tests necessary for full identification of pathogens

B. Antimicrobial susceptibility testing

Describe current techniques for susceptibility testing including Etest, broth dilution and automated methodologies with appropriate quality control

Perform simple susceptibility tests

Provide clinical advice based on interpretation of the results of susceptibility testing

Analyze use and limitations of the antibiogram for outbreak investigation and control

C. Understand serologic and antigen-based techniques

Describe the basis and clinical interpretation of results of latex agglutination, enzyme-linked immunosorbent assay (ELISA), immunofluorescence, complement fixation test (CFT) and the various controls

Perform simple serological tests Provide clinical advice based on interpretation of the results of serology

B. Molecular diagnostic techniques

- Describe the principles and applications of serological and nucleic acid-based techniques relevant to Microbiology
- Describe the criteria for selection of tests and their interpretation in disease diagnosis, appropriate therapy and follow-up, including advantages and limitations
- Provide clinical advice based on the interpretation of results of serological and nucleic acid-based techniques

C. Knowledge of automated and semi-automated methodologies in microbiology

Describe automated culture and identification methodologies

D. Point-of-care testing

Describe the role of clinical governance issues with and quality assurance of point of-care testing.

E. Knowledge of typing methods available

Explain the principles, advantages and limitations of various phenotypic and genotypic methods

Describe the role of typing in incident/outbreak investigations

Recommend appropriate typing methods for clinical situations and interpret the results

F. Reference centers

Describe the indications for referral of specimens to reference facilities

Describe regulations for transportation of samples

Refer specimens to reference lab appropriately

G. Principles of laboratory management

External bodies/Institutions relevant to service and their role

Explain:

External quality control including National External Quality Assessment Service (NEQAS) schemes

Internal quality control and internal quality assurance

Team working

Time management

Decision making and prioritization skills
Negotiation skills managing underperformance

2. KNOWLEDGE OF HEALTH AND SAFETY

Objective:

- To obtain an in-depth understanding of health and safety issues both locally and nationally in order to practice safely in a laboratory and in a clinical or other setting and to advise on safe practice
- To obtain an understanding of risk assessment for dealing with category 3 and 4 pathogens and be familiar with the requirements for handling of such pathogens.

A. Health & safety

Work within and brief others as necessary about the current legislative framework underpinning health and safety (H&S) at work, including:

- Health and Safety at Work
- Reporting of Injuries and Diseases
- Control of Substances Hazardous to Health
- Management of Health and Safety

Perform an infection–prevention and control-oriented risk assessment when required for all procedures undertaken in the hospital, including the laboratory, for all categories of worker, including the pregnant and immunocompromised.

3. CLINICAL SKILLS

Objective: By the end of the educational program, trainees would be expected to advice on diagnosis, treatment and prevention of the following clinical problems:

- 3.1 Infection in the community
- 3.2 Hospital-acquired infection and infection prevention and control and prevention
- 3.3 Infection in immunocompromised patients including HIV, transplantation and neutropenia
- 3.4 Infection in critical care and sepsis
- 3.5 Outbreaks of infection in hospital and the community
- 3.6 Infection in the returning traveler
- 3.7 Food- and water-borne infection

- 3.8 Sexually transmitted diseases
- 3.9 Occupationally-acquired disease
- 3.10 Pediatric infection
- 3.11 Infection in pregnancy

3.1 Clinical microbiology – infection in the community

Objective: Understand infection in primary care, with reference to epidemiology, diagnosis, treatment and prevention.

Etiology, pathophysiology and presentation of infectious diseases

- a) Explain etiology and clinical presentation of infectious diseases
- b) Explain pathophysiology of the disease process, with particular reference to common and important infections such as urinary tract infection and respiratory tract disease
- c) Assimilate clinical, laboratory and epidemiological information and use this to differentiate between infections and other conditions
- d) Select and interpret appropriate tests
- e) Analyze data to produce specific or differential diagnosis

Treatment of infections

Explain the optimum treatment of infections and how to access current guidelines
Select the appropriate antimicrobial in the clinical setting
Liaise between clinicians and laboratory

Spread of infectious disease and its prevention

Explain the epidemiological consequences of different diseases and of the systems available for disease control with reference to: tuberculosis (TB), viral hepatitis, genitourinary disease, immunization strategies

Make an accurate risk assessment

Demonstrate when urgent action is required based on epidemiology

3.2 Clinical microbiology – hospital-acquired infection and infection control and prevention

Objective: Understand specific infection problems related to hospital-acquired infections (HAIs).

Sources and risk factors for the acquisition of HAIs

Describe the reservoirs, sources, routes of transmission and portals of entry of common HAIs

Describe interactions between the microbe, the patient risk factors and others in the environment, e.g. device and antimicrobial exposure

Explain importance of the colonized patient and infected or colonized staff

Describe the epidemiology and control of common and important multi-resistant organisms, e.g. methicillin-resistant *Staphylococcus aureus* (MRSA), glycopeptide-resistant enterococci (GRE), and *Clostridium difficile*

Make an accurate risk assessment

Demonstrate when urgent action is required based on epidemiology

Prevention of HAIs by sterilization and disinfection

Describe the processes for disinfection and sterilization in the hospital and primary care settings including their indications advantages and limitations

Make an accurate risk assessment

Demonstrate when urgent action is required if disinfection or sterilization fails

Definition and prevention of specialty-associated HAIs

Describe the definitions of specialty-based HAIs

Describe the evidence for current recommendations on management in specific clinical situations, e.g. particular surgical procedures, device-associated infections,

adult and neonatal intensive care units, burns units, oncology and transplant units, cystic fibrosis units

Describe the context of in which HAIs occur due to resistant organisms, e.g., MRSA, vancomycin-resistant enterococcus (VRE), ESBL producers

Describe antimicrobial treatment or prophylaxis appropriate above contexts

Describe the use of methods of isolation/cohorting to control specific HAIs or resistant organisms in specialties

Make an accurate risk assessment

Use antimicrobials appropriately to treat or prevent HAIs

Use isolation/cohorting of patients to prevent HAI spread, including the pragmatic use of bed management

Physical layout of ward, departments and operating theatres

Describe ward, departmental and operating theatre design & layout relevant to infection prevention and control

Demonstrate interpretation of regulations relating to hospital design and function.

Ventilation

Describe the role of ventilation in operating theatres and suites, isolation rooms and other areas, e.g. pharmacy and laboratory

Describe the principles and importance, e.g. in surgical site infection, prevention of spread of TB

Describe the principles of operating theatre air sampling, validation of theatre ventilation commissioning tests and the regulations governing theatre ventilation

Describe the actions and solutions that may be necessary when ventilation systems do not meet current requirements

Make an accurate risk assessment

Demonstrate when urgent action is required

Patient isolation

Describe when patient isolation or cohorting or ward closure, is used to control or prevent the spread of micro-organisms or infections

Describe the types of patient isolation, the specific precautions they use and in what circumstance they are used

Make an accurate risk assessment

Demonstrate when urgent action is required

Pragmatic use of bed occupancy

Reporting HAIs

Describe the requirements and mechanisms for reporting of HAIs within healthcare organizations (e.g. root cause analysis), locally and nationally, including mandatory surveillance and 'serious untoward incidents' of infection

Describe the role of HAI reporting in total quality management, controls assurance, review body inspections, e.g. CQC

Demonstrate when action is required

Report clearly and accurately

3.3 Clinical microbiology – immunocompromised patients including HIV, transplantation and neutropenia

Objective: Understand specific problems related to opportunist infection including preventative diagnostic and therapeutic strategies.

Pathophysiology and clinical signs and symptoms of infection in compromised hosts

Biological and iatrogenic causes of immunodeficiency

Describe the causes and risk factors of immunocompromised

Describe clinical and laboratory manifestations of immunocompromised

Perform assessments of patients' risk of immunocompromised

Integrate clinical and laboratory data to define immunocompromised in patients

Diagnosis, therapy and prevention of infection in immunocompromised hosts

Explain available diagnostic techniques and their limitations

Explain available therapeutic options and preventative measures

Perform and interpret investigations relevant to the patient and achieve specific or differential diagnosis and initiate appropriate treatment

Perform risk–benefit analyses

3.4 Clinical microbiology – Infection in critical care and sepsis

Objective: Understand the specific infection problems related to the Intensive Care Unit (ICU) and the consequences of infection including Sepsis syndrome.

Sepsis syndrome

Describe the pathophysiology of sepsis syndrome

Describe the rationale for interventions in sepsis syndrome

Recognition of the consequences of severe infection including disseminated intravascular coagulation (DIC) and sepsis syndrome

Clinical management of patients

Explain the diagnosis and management of common infection problems in the ICU setting, e.g. ventilator-associated pneumonia, line-infections, septicemia

Describe outcomes of infection

Outline evidence base for diagnosis and management

Recognition and management of specific infection problems in the critically ill

Justify a course of action to clinical teams

Communication skills

3.5 Clinical microbiology – outbreaks of infection in hospital and the community

Objective: To be able to recognize and deal effectively with outbreaks of infection.

General principles of outbreak investigation and prevention and control

Describe the use of surveillance to identify incidents/outbreaks

Ability to initiate investigation and control measures

Describe the role of others in outbreak management.

Reference laboratories

Dealing with the unexpected

Initiation of investigation and control measures

Recognition of abnormal patterns of infection

Communication (both in writing and verbally) with colleagues, the media and the public

Local procedures for the prevention and control of infectious diseases

Describe the local procedures for the prevention and control of infectious diseases

Ability to contact other sources of information and support when appropriate

Use of appropriate IT methodologies and statistics

Specialist expertise

Describe the availability of expertise, including reference centers

Outline modelling methods and their limitations

Ability to contact other sources of information and support when appropriate

3.6 Clinical microbiology – infection in the returning traveler

Objective:

Understand the burden of infectious disease in developing countries and be able to advise on appropriate investigation and management of patients who have recently returned from overseas.

Common causes of infection in returning travelers

Describe the common causes of infection in returning travelers

Performing clinical/epidemiological assessment to investigate and manage patients with specific presentations, e.g. diarrhea, fever, lymphadenopathy, soft tissue involvement

Common measures for preventing infection in travelers

Describe common measures for preventing infection in travelers, e.g. travel vaccination, malaria prophylaxis, mosquito bite prevention, and food and water precautions

Malaria

Describe epidemiology, diagnosis, prevention and treatment

Viral hemorrhagic fever

Describe epidemiology, diagnosis, prevention and treatment

Emerging travelers or imported infections

Outline diagnosis, prevention and treatment of emerging travelers or imported infections, e.g. West Nile virus, other arboviruses

Common tropical

Describe epidemiology and distribution of common tropical infections, e.g. schistosomiasis, onchocerciasis, filariasis, trypanosomiasis, gastrointestinal parasites, dengue, yellow fever, TB, HIV, enteric fever, cholera, dysentery

3.7 Clinical microbiology – food- and water-borne infection

Objective:

Basic understanding of food- and water-borne infection and the public health and infection prevention and control requirements of such infections

Food and water pathogens

Describe the basic biology of the common pathogens involved in food- and water-borne infections and the laboratory methods used to test for them (including the use of indicator organisms)

Endoscope water-disinfectant microbiology

Describe the requirements for testing endoscopy rinse water and renal unit water, and the results that should be achieved

3.8 Clinical microbiology – sexually transmitted infections (STIs)

Objective: Understand STIs, including diagnostic, therapeutic and preventative strategies.

Etiology, pathogenesis and presentation of STIs

Describe the etiology, pathophysiology and clinical presentation of STIs

Describe the changing epidemiology of STIs

Diagnosis of STIs

Describe the available diagnostic tests for STIs and their limitations, including culture, serology, antigen detection and nucleic acid detection

Compare and contrast the advantages and disadvantages of different diagnostic methods

Congenital infections

Describe the infections that can be transmitted from mother to baby during the antenatal, perinatal and postnatal period

Explain the role of risk avoidance, therapeutic interventions, immunization and Caesarian section in the prevention of congenital infections

Management of STIs

Describe therapeutic options and preventative measures

Explain the importance of health education, contact tracing and partner notification in reducing the incidence of STIs

3.9 Clinical microbiology – occupationally-acquired disease

Occupationally-acquired infection

Outline the zoonotic infections that may be occupationally acquired

Discuss the implications of blood-borne viruses (BBVs) for HCWs

Describe the management of ‘inoculation incident’ and follow-up for healthcare workers (HCWs), including ethics, screening and counselling

Describe local, national and international guidelines and standards in relation to occupational exposure to infection

3.10 Clinical microbiology – pediatric infection

Objective: Understand the specific infection problems related to infection in children, including neonates, and preventive, diagnostic and therapeutic strategies.

Pediatric infection

Describe the pathophysiology, clinical signs and symptoms of infectious diseases in children, especially those illnesses that are particularly important in or specific to childhood, e.g. neonatal meningitis, group B sepsis, intraventricular shunt infections

Describe relevant diagnostic techniques

Outline the pharmacokinetics of prescribing for children

Describe the antimicrobials best avoided in children

3.11 Clinical microbiology – Infection in pregnancy

Objective: Understand the specific infection problems related to pregnancy including preventive, diagnostic and therapeutic strategies

Pregnancy and the immune system

Describe the effects of pregnancy on the immune system

Pregnancy-specific infections

Describe the etiology, risk factors, clinical presentation and diagnosis of infections specific to pregnancy, e.g. septic abortion, chorioamnionitis and endometritis

Infections important in pregnancy

Describe the etiology, risk factors, clinical presentation and diagnosis of infections considered important in pregnancy, including urinary tract infections, sexually transmitted infections, fungal infection including candidiasis, parasitic diseases, e.g. toxoplasmosis and malaria in pregnancy

Treatment of infections in pregnant women

Describe the use of antimicrobials in treating infections in pregnancy

Describe potential teratogenicity when prescribing in pregnancy and the need to avoid certain antimicrobials

4 SPECIALIST AREAS OF MICROBIOLOGY

Objectives: the trainees will acquire a working knowledge of:

4.1 Virology

4.2 Health protection and epidemiology

4.3 Mycology:

Objectives:

1. To understand superficial and deep infections caused by yeasts, molds and dimorphic fungi.
2. To study the colony and microscopic characteristics and biochemical methods used in the identification of pathogenic fungi.
3. To study the methods used in the diagnosis of superficial and deep-seated (systemic) fungal infections.
4. To learn about the therapeutic and preventative strategies for fungal infections.

Superficial fungal infections caused by keratinophilic fungi

(Dermatophytes)

Describe the etiology, risk factors and clinical presentation and treatment of fungal infections of skin, hair, and nails.

Systemic fungal infections caused by filamentous (molds) fungi

Describe the etiology, risk factors and clinical presentation of opportunistic mycoses (aspergillosis, mucormycosis, and emerging opportunistic fungal infections).

Systemic fungal infections caused by yeasts and yeast-like fungi

Describe the etiology, risk factors and clinical presentation of candidiasis, and cryptococcosis

Endemic fungal infections caused by dimorphic fungi

Describe the etiology, risk factors and clinical presentation of endemic mycoses (histoplasmosis, coccidioidomycosis, blastomycosis and penicilliosis).

Describe use of appropriate antifungal agents

Describe serological methods used in the diagnosis of systemic mycoses

Describe methods available for susceptibility testing and their limitations

Describe the use of chemoprophylaxis and environmental measures to prevent infection in the immunocompromised

4.4 Parasitology:

Objectives: The rotation aims to converse trainees the skills required to understand, diagnose, treat and prevent the major parasitic diseases that are especially prevalent in the Arabian Gulf, tropical and developing countries. The endemic- and travel-associated organisms responsible for the major parasitic diseases in the Arabian Gulf in general and Kuwait in particular, will provide the main focus for discussion as they have also been the main focus for research in Kuwait.

The rotation course-work is continually updated in response to changing needs, new developments in knowledge/outbreaks and technology, and resident feedback.

Rotation duration

Two weeks

Intended learning outcomes

By the end of this module, residents should be able to:

1. Describe and explain of the development and transmission of the major parasite pathogens including the endemic- and travel-associated organisms responsible for the major parasitic diseases in the Arabian Gulf in general and Kuwait in particular,
2. Describe and explain how their complex life cycles cause the clinical and pathological conditions that constitute the disease chronicity,
3. Describe and explain the remarkable and diverse ways in which the parasites survive by evading the host response to them,
4. Describe, plan and critically assess attempts to control each infection by drug treatment, vaccination or by attacking vector or intermediate hosts that are essential to development of the parasite and transmission of infection.

Assessment/Grading

The residents will be assessed based on their attendances and participation in the discussion/presentation and will be graded as ‘*Satisfactory or Un-satisfactory*’.

4.1 Virology

Microbiology trainees should normally undertake 6–12 months' training in virology, at least three months of which should take place before the CMKB Part 1 examination.

Pregnancy and viral infection

Describe the investigation, intervention and advice for women with, or in contact with, rash/illness in pregnancy.

Describe the natural history of cytomegalovirus rubella, parvovirus B19, measles, enterovirus, hepatitis B, HIV, hepatitis C in relation to pregnancy

Describe rates of abnormality and fetal loss in cases complicated by, in comparison to those not complicated by, viral infection

Describe risk, and absence of evident risk, of viral immunizations

Blood-borne virus infected healthcare worker

Describe the investigation, intervention and advice following ascertainment of a healthcare worker with a blood-borne viral infection

Describe the reporting mechanisms of such incidents

Explain the relevance of past employment

Describe role and use of prophylactic measures

Outline the role of public notification exercises, helplines and look back investigation testing

Eye infections

Describe the etiology, risk factors, and clinical presentation of eye infections with adenovirus, herpes simplex virus, Chlamydia

Pharyngitis

Describe the etiology, risk factors, and clinical presentation of viral causes of pharyngitis and infectious mononucleosis

Viral hepatitis

Describe the epidemiology and risk factors

Describe the management of acute cases, including appropriate information for the management of contacts, ascertainment of risk factors and notification

Describe the investigation of individual cases, methods for and significance of virus quantitation

Rotavirus & Norovirus

Describe the epidemiology and risk factors of infections

Describe the management of acute cases, including infection prevention and control

Respiratory infections with RSV and influenza

Describe the epidemiology and risk factors in hospitals and the community of RSV and influenza.

Describe the use of antivirals in prophylaxis and treatment of risk groups.

Describe the use of immunization in prevention.

Describe infection prevention and control precautions to prevent spread

Smallpox

Describe the identification and investigation of suspected cases

Describe the need for liaison reference facilities and public health teams (notification) and infection prevention and control team in investigation and management

Rabies

Describe the investigation and management of potential contact in returned travelers, of bat associated bites and of suspected clinical cases

Viral hemorrhagic fevers and dengue

Describe the epidemiology and risk factors

Describe the identification, including differential diagnosis, and investigation of suspected cases.

Describe the need for liaison reference facilities and infection prevention and control team in investigation and management

Rickettsial diseases

Describe the epidemiology and risk factors

Describe the identification, including differential diagnosis, and investigation of suspected cases.

Describe the need for liaison reference facilities

Encephalitis and meningitis

Describe the clinical presentation, management and investigation of CNS infections due to Herpes simplex virus (including recurrent infection) and enteroviruses

Psittacosis and *Chlamydia (Chlamydia) pneumonia* & Q fever

Describe the clinical presentation, management, investigation and notification

Varicella-zoster

Chickenpox: describe the management of the acute case in children, management of the acute case in adults, management of the case in pregnant women including obstetric risk factors and counselling, investigation and prevention of secondary cases and infection prevention and control in relation to the immunosuppressed, and neonates and the pregnant

Zoster: describe risk factors and the management of infection in 'normal' people, pregnancy and the immunocompromised

Creutzfeldt-Jakob disease (CJD), Variant CJD

Describe the clinical presentation, management, investigation and reporting

Viral infection of immunocompromised patients

Describe the risk factors for, clinical presentation, management and investigation of infection due to: BK, CMV, EBV, HHV-6, and adenovirus

Outline the treatment of infections

Outline the infection prevention and control precautions for these infections

Occupational health and viruses

Describe the risk factors for clinical presentation, management and investigation of infection from: Hepatitis B virus, Hepatitis C virus, HIV,

Influenza virus, Varicella-Zoster virus and Herpes simplex virus

Describe precautions required by healthcare workers if infected with these viruses

4.2 Health protection and epidemiology

Objective: Understand the importance of control of communicable diseases and be able to evaluate effectiveness of services to prevent, diagnose and treat infection.

Surveillance

Demonstrates the principles and practices of surveillance of infectious disease, including the use of routine and enhanced surveillance systems

Individuals responsible for Health Protection

Describe the role of others in the prevention and control of infection

Immunization

Describe the general principles involved in immunization programs

Describe methods of vaccine delivery, surveillance of immunization programs and evaluation of vaccine efficacy

Agents of bioterrorism

Describe the epidemiology, risk factors, clinical presentation of current perceived potential microbiological agents for bio-terrorism

Outline the potential for abuse of laboratory organisms for bioterrorism

Reference laboratories

Describe the role and function of reference laboratories

4.3 Mycology

Objective: Understand superficial and deep infection caused by yeasts and molds including diagnostic, therapeutic and preventative strategies.

Superficial fungal infection

Describe the etiology, risk factors and clinical presentation and treatment of fungal infections of skin, hair, nails and mucous membranes

Systemic fungal infection and endemic fungal infection

Describe the etiology, risk factors and clinical presentation of systemic and endemic mycoses including candidiasis, aspergillosis, cryptococcosis, histoplasmosis, coccidioidomycosis and blastomycosis

Describe use of appropriate antifungal agents

Describe methods available for susceptibility testing and their limitations

Describe the use of chemoprophylaxis and environmental measures to prevent infection in the immunocompromised

4.4 Parasitology

Objective: Understand parasitic disease likely to present in the Kuwait.

Epidemiology of parasitic disease

Describe the epidemiology of:

- Imported parasitic infections with an emphasis on the infections common in Local practice: e.g. malaria, intestinal protozoa, intestinal helminths, leishmaniasis, trypanosomiasis, filariasis and schistosomiasis
- Endemic parasitic infections including for example toxoplasmosis, giardiasis, hydatid disease
- Parasitic infections associated with severely immunocompromised patients, e.g. microsporidiosis, cryptosporidiosis

Describe the conditions under which infections are acquired so that the risk of infection to patients can be assessed describe the conditions under which infections are acquired so that the risk of infection to patients can be assessed

Clinical features and laboratory diagnosis of parasitic disease

Describe the clinical features and laboratory diagnosis of:

- Imported parasitic infections (above)
- Endemic parasitic (above)
- Parasitic infections associated with severe immunocompromised (above)

Treatment of parasitic disease

Describe the use of antiparasitic drugs, including antimalarial agents, imidazoles, ivermectin, praziquantel

Describe in detail the diagnosis and management of toxoplasmosis in the context of pregnancy

5 COMMUNICATION AND MANAGEMENT ISSUES IN

MICROBIOLOGY

Objectives: To develop necessary management, communication and leadership skills to run a laboratory and deliver a high-quality clinical service

Laboratory management and practice

Define good laboratory management

Explain the concepts of good laboratory practice

Summarize the process of management and being managed

Laboratory accreditation

Describe the criteria for laboratory accreditation

Clinical audit

Describe the process of clinical audit

Standards of professional practice and clinical governance

Describe the importance of clinical governance and delivery of high-quality standards in microbiology and virology

Describe the concept of clinical risk management and procedures designed to minimize risks

Outline the importance of patient consent to use data or specimens for ethically approved research or teaching

Teaching

Explain how to utilize the teaching methods, assistance and resources available

Demonstrate good presentation skills, good public speaking and organization of teaching

Information technology

Information technology.

Demonstrate:

- A working knowledge of laboratory data entry and retrieval and surveillance systems
- An understanding of the Data

Protection Act

DEVELOPING INDEPENDENT PRACTICE

Objective: Throughout their training, trainees are given increasing responsibility and independence appropriate for their demonstrated level of Competence and professional development, as judged by their clinical and educational supervisors.

The purpose of this component of training is to take such graded responsibility further, to enable the transition to the independent practice required of a CMKB Certificate holder.

Demonstration of the skills required for independent practice is a requirement of the curriculum, and the relevant competencies must be assessed and achieved prior to completion of the training program.

- the trainee must have been assessed by clinical and educational supervisors to be capable of safe practice with reduced supervision in the areas of clinical, laboratory, infection prevention & control and public health work. They must

therefore be in full compliance with the educational processes of ARCP. , i.e.
ready to start more independent practice

Clinical Microbiology Kuwait Board

Rotation Specific Objectives

2014

A. Mubarak Alkabeer Hospital Objectives:

1. R1 Rotation

Strengthen the basic knowledge of principles and practice in Clinical Microbiology especially in relation to microbial illnesses and infectious diseases of public health importance, classification of microorganisms, their structures and mechanism of transmission, host immune response, pathogenesis, available vaccines in prevention of infectious diseases, principles of immunology that are relevant to pathophysiology of illnesses and their manifestations.

During this year, they will cover:

1. Introduction to laboratory safety and acquaintance with the standard operation procedures (SOP).
2. Learn how to receive specimens, labelling.
3. Rotate through the Microbiology Laboratory, learning methodology, bench work and quality control of the following sections:
 - a. Blood culture.
 - b. Respiratory and body fluids.
 - c. Urine.
 - d. Stool and parasitology.
 - e. Swabs.
 - f. Serology.
4. Involved in hands-on training with Gram stain, ZN stain, Giemsa staining techniques, agar preparation and inoculation with clinical specimens.
5. Bacterial isolation and identification using conventional methods e.g. API 20E, API 20NE, API STAPH, API 20A systems as well as VITEK II, VITEK MS system.
6. Susceptibility testing using KB, E test.
7. Verification of laboratory results, communication of positive results to clinical colleagues.
8. Attend regular ward rounds and morning report when all positive results are discussed with the consultant/senior registrar and followed up.
9. Required to follow laboratory safety protocols.
10. Participate on the on-call duty.
11. Required to keep a training record detailing their training experience (Log Book), 2-3 cases per a week.
12. Participate in all “Academic day” activities.

2. R2 Rotation

The main objective is to expose the residents to gain laboratory and clinical training in patient work-up, laboratory investigation, interpretation of results, managing patients and infection control practices.

During this year, they will cover:

1. Management of patients including follow-up of patients whose results have been reviewed for proper and appropriate antimicrobial treatment.
2. Attendance at infection control discussion and ward rounds.
3. Sign-out results with grade responsibilities.
4. Participate on the on-call duty
5. Required to keep a training record detailing their training experience (Log Book), 2-3 cases per a week.
6. Interpretation of clinical significance of positive cultures and other abnormal test results
7. Confirmation of unusual patterns of antibiotic susceptibility (e.g. extended spectrum beta-lactamase, carbapenemase).
8. Review smear /culture discrepancy.
9. Authorization of results (both positive and negative results).
10. Isolation, identification, and antimicrobial susceptibility of NEQAS specimens received in the laboratory on a monthly basis.
11. Participate in clinical grounds with clinical departments.
12. Participate in all “Academic day” activities

3. R3 Rotation

The main objective is to achieve more advanced training by the residents in clinical competence and laboratory management. They will participate in the management decision taken inside the laboratory, continue with case reports, consulting and offering independent advice on new investigations of difficult-to-treat patients and proffering appropriate therapy. They should master the practical application of molecular microbiology and serological tests for patient diagnosis and management.

1. Required to keep a training record detailing their training experience (Log Book), minimum 3 cases per a week
2. Isolation, identification, and antimicrobial susceptibility of NEQAS and UKNEQAS specimens received in the laboratory.
3. Explain the potential effects of pre-analytical variables on test results.
4. Evaluate diagnostic utility of laboratory test in a given situation, interpret the test results, and correlate with available clinical data.
5. They should check, discuss and report laboratory results.
6. They should identify significant results and discussed with clinicians and further investigations and/or management.
7. Participate on the on-call duty.
8. Participate in the clinical grounds with various clinical departments.
9. Participate in all “Academic day” activities

D. KIMS Objectives for R5 in Faculty of Clinical Microbiology, Mubarak Hospital

The main objective is to allow the residents to consolidate the knowledge gained in each year of the training and follow a personal training plan designed to enhance:

- a. Knowledge and experience of clinical microbiology and infectious diseases.
- b. Development of expertise in patient diagnosis and management as well as laboratory investigations.
- c. Development of self-confidence at management skills, total quality management, safety and infection control practices to a consultant level.
- d. Attendance at Intensive Care Unit rounds with the Senior Registrar/Consultant.

At this stage, the resident should have management skills in the following:

- i. Interaction with medical, and nursing staff.
- ii. Management of infection control issues – including giving appropriate advice.
- iii. Management of laboratory errors.
- iv. Record management.
- v. Trouble shooting of laboratory equipment and laboratory information system.
- vi. Participate on the on-call duty.
- vii. Participate in Infection Control meeting.
- viii. Provision of clinical consultation with senior registrar.
- ix. Required to keep a training record detailing their training experience (Log Book), 3 cases per a week.
- x. Inpatient consultations i.e. patients whose cases are referred for advice on appropriate investigations and management.
- xi. Participate in clinical grounds in all the clinical departments.
- xii. Isolation, identification, and antimicrobial susceptibility of NEQAS and UKNEQAS specimens received in the laboratory on a monthly basis.
- xiii. Auditing

B. Farwanya Hospital Objectives:

Farwaniya Hospital (R1) Rotation Objectives

3 months from 1/1/2015-31/3/2015

The educational program provides:

11. An understanding of the diagnosis and management of community acquired sepsis in adult patients.
12. An understanding of the diagnosis and management of hospital acquired sepsis in adult patients.
13. An understanding of the diagnosis and management of community acquired urinary tract infections (CA-UTI) in adult patients.
14. An understanding of the diagnosis and management of hospital acquired urinary tract infections (HA-UTI) in adult patients.
15. An understanding of the diagnosis and management of community acquired respiratory infections (CAP) in adult patients.
16. An understanding of the diagnosis and management of hospital acquired respiratory infections (HAP) in adult patients.
17. An understanding of the diagnosis and management of community acquired sepsis in pediatric patients.
18. An understanding of the diagnosis and management of hospital acquired sepsis in pediatric patients.
19. An understanding of the diagnosis and management of community acquired urinary tract infections in pediatric patients.
20. An understanding of the diagnosis and management of hospital acquired urinary tract infections in pediatric patients.
21. An understanding of the diagnosis and management of community acquired respiratory infections in pediatric patients.
22. An understanding of the diagnosis and management of community acquired respiratory infections in adult patients.
23. Knowledge of the difference between healthcare-associated infections, including hospital-acquired infection and community infections in Farwaniya Hospital.
24. Training on diagnostic techniques to detect infections in the above-mentioned systems.

Objectives

By the end of the educational program, residents are expected to advice on diagnosis, treatment and prevention of the following clinical problems:

A- Adult:

Objective: Understand the specific infection problems related to adult blood stream, urinary tract and respiratory system including methods for preventive, diagnosis and therapeutic strategies.

Adult Immune system

Describe the adult immune system

Vaccination

Adult infection focusing on blood stream, urinary tract and respiratory

1. Sepsis:

Describe the pathophysiology, clinical signs and symptoms of community and hospital acquired sepsis.

List risk factors associated with the infection and epidemiology.

Describe relevant diagnostic techniques.

Outline the different group of antibiotic groups.

Outline possible complications.

2. Urinary tract infections:

Describe the pathophysiology, clinical signs and symptoms of community and hospital acquired UTIs.

List risk factors associated with the infection and epidemiology.

Describe relevant diagnostic techniques.

Outline the different group of antibiotic groups and complications.

3. Respiratory tract infections

Describe the pathophysiology, clinical signs and symptoms of community and hospital acquired respiratory infection, including CAP, HAP and ventilator- associated infections (VAP).

List risk factors associated with the infection and epidemiology.

Describe relevant diagnostic techniques and role of virology

Outline the different group of antibiotic and concept of combination therapy.

B- Infections in pediatrics

Objective: Understand the specific infection problems related to pediatric blood stream, urinary tract and respiratory system including methods for preventive, diagnosis and therapeutic strategies.

Pediatric Immune system

Describe the common immune system diseases in children and related infections

Vaccination

Pediatric infection focusing on blood stream, urinary tract and respiratory

1. Sepsis:

Describe the pathophysiology, clinical signs and symptoms of community and hospital acquired sepsis.

List risk factors associated with the infection and epidemiology.

Describe relevant diagnostic techniques.

Outline the different group of antibiotic groups.

Outline possible complications.

Describe the antimicrobials best avoided in pediatrics.

2. Urinary tract infections:

Describe the pathophysiology, clinical signs and symptoms of community and hospital acquired UTIs.

List risk factors associated with the infection and epidemiology.

List risk factors associated with the infection.

Describe relevant diagnostic techniques.

Outline the different group of antibiotic groups and complications.

Describe the antimicrobials best avoided in pediatrics.

3. Respiratory tract infections

Describe the pathophysiology, clinical signs and symptoms of community and hospital acquired respiratory infection, including CAP, HAP and ventilator- associated infections (VAP).

Describe relevant diagnostic techniques and role of virology

Outline the different group of antibiotic and concept of combination therapy.

Describe the antimicrobials best avoided in pediatrics.

Farwaniya Hospital Workplace-Based Assessment

Trainee	Case-based Discussion (CbD)	Direct Observation of Practical Skills (DOPS)	Evaluation of Clinical/ Management Events (ECE)	Multisource Feedback (MSF)
CMKB R1	6 per Rotation	6 per Rotation	6 per Rotation	2 per Rotation

Farwaniya Hospital (R3) Rotation Objectives

4 months from 1/6/2015-30/9/2015

The educational program provides:

25. An understanding of the diagnosis and management of bone and joint in adult patients.
26. An understanding of the diagnosis and management of infective endocarditis in adult patients.
27. An understanding of the diagnosis and management of dialysis related infections in adult patients.
28. An understanding of the diagnosis and management of complicated skin and soft tissue infections in adult patients.
29. An understanding of the diagnosis and management of bone and joint in pediatric patients.
30. Knowledge of the difference classes of antibiotics, role of combination therapy, optimal treatment option and therapeutic monitoring.
31. Knowledge of the difference between bones and joint infections, in adults and pediatrics patient in Farwaniya Hospital.
32. Training on diagnostic techniques to detect infections in the above-mentioned systems.

Objectives

By the end of the educational program, residents are expected to advice on diagnosis, treatment and prevention of the following clinical problems:

C- Adult:

Objective: Understand the specific infection problems related to adult bone and joint, infective endocarditis, dialysis related and skin and soft tissue including methods for preventive, diagnosis and therapeutic strategies.

Adult infection focusing on bone and joint, infective endocarditis, dialysis related and skin and soft tissue

1. Bone and joint:

Describe the pathophysiology, clinical signs and symptoms of bone and joint infections.

Describe the pathology related to osteomyelitis, tendonitis and other infections.

Describe the pathology related to prosthetic joint infections, mainly hip and knee.

List risk factors associated with the infection and epidemiology.

Describe relevant diagnostic techniques both radiological and laboratory based.

Outline the treatment plan and alternatives.

2. Infective endocarditis:

Describe the pathophysiology, clinical signs and symptoms of infective endocarditis.

List risk factors associated with the infection and epidemiology.

Describe relevant diagnostic techniques.

Outline the different group of antibiotic groups and complications.

Outline the different group of antibiotic, concept of combination therapy and monitoring antibiotic levels.

Role of surgery in the treatment.

3. Dialysis related infections:

Describe the pathophysiology, clinical signs and symptoms of peritoneal and hemodialysis infection.

List risk factors associated with the infection and epidemiology.

Describe relevant diagnostic techniques and role of viruses.

Outline the different group of antibiotic and concept of empirical combination therapy.

4. skin and soft tissue infection

Describe the pathophysiology, clinical signs and symptoms of adult skin and soft tissue infection.

List risk factors associated with the infection and epidemiology.

Describe relevant diagnostic techniques.

Outline the different group of antibiotic groups and complications.

Outline the different group of antibiotic.

Role of surgery in the treatment.

D- Infections in pediatrics

Objective: Understand the specific infection problems related to pediatrics bone and joint, skin, and soft tissue including methods for preventive, diagnosis and therapeutic strategies.

Pediatric infection focusing on bone and joint and skin and soft tissue

1. Bone and joint:

Describe the pathophysiology, clinical signs and symptoms of bone and joint infections.

Describe the pathology related to osteomyelitis.

List risk factors associated with the infection and epidemiology.

Describe relevant diagnostic techniques both radiological and laboratory based.

Outline the treatment plan and alternatives.

2. skin and soft tissue infection

Describe the pathophysiology, clinical signs and symptoms of pediatric skin and soft tissue infection.

List risk factors associated with the infection and epidemiology.

Describe relevant diagnostic techniques.

Outline the different group of antibiotic groups and complications.

Outline the different group of antibiotic.

Role of surgery in the treatment

Farwaniya Hospital Workplace-Based Assessment

Trainee	Case-based Discussion (CbD)	Direct Observation of Practical Skills (DOPS)	Evaluation of Clinical/ Management Events (ECE)	Multisource Feedback (MSF)
CMKB R3	8 per Rotation	8 per Rotation	8 per Rotation	2 per Rotation

Farwaniya Hospital (R4) Rotation Objectives

4 months from 1/2/2015-31/5/2015

The educational program provides:

33. An understanding of the diagnosis and management of Ear-Nose and Throat (ENT) related adult patients.
34. An understanding of the diagnosis and management of complicated intensive care unit (ICU) infections in adult patients.
35. An understanding of the diagnosis and management of complicated intensive care unit infections (PICU) in pediatric patients.
36. An understanding of the diagnosis and management of complicated intensive care unit (NICU) infections in neonatal patients.
37. An understanding of the diagnosis and management of immunocompromised adult patients on antipneumococcal agents.
38. Knowledge of the different classes of antibiotics, role of combination therapy, optimal treatment option and therapeutic monitoring.
39. Knowledge of the infection control issues in ICU, PICU and NICU setting, in Farwaniya Hospital.
40. Knowledge of the outbreak management in ICU, PICU and NICU setting, in Farwaniya Hospital.
41. Training on diagnostic techniques to detect infections in the above-mentioned systems.
42. Training on multi-disciplinary approach in treating complicated infections in the above-mentioned systems.

Objectives

By the end of the educational program, residents are expected to advise on diagnosis, treatment and prevention of the following clinical problems:

E- Adult:

43. **Objective:** Understand the specific infection problems related to ENT, complicated ICU patients and immunocompromised adult patients on steroids including methods for preventive, diagnosis and therapeutic strategies.

Adult infection focusing on ENT and ICU setting

5. ENT:

Describe the pathophysiology, clinical signs and symptoms of ENT infections.

Describe the pathology related to ear, nose and throat infections.

Describe the pathology related to ENT infections and the role of fungal infection.

List risk factors associated with the infection and epidemiology.

Describe relevant diagnostic techniques both radiological and laboratory based.

Outline the treatment plan and alternatives.

6. ICU-setting:

Describe the pathophysiology, clinical signs and symptoms of complicated ICU patient under medical or surgical care.

List risk factors associated with the infection and epidemiology.

Describe relevant diagnostic techniques to differentiate source of infection.

Outline the role of sepsis biomarker.

Outline the different group of antibiotic groups and complications.

Outline the different group of antibiotic, concept of combination therapy and monitoring antibiotic levels.

7. Immunocompromised adult patients:

Describe the pathophysiology, clinical signs and symptoms of infections in immunocompromised patients on antisuppressive agents.

Describe the immune-physiology related to antisuppressive agents.

List common infections and epidemiology.

Describe relevant diagnostic techniques both radiological and laboratory based.

Outline the treatment plan and alternatives.

Role of biomarker in the diagnosis

F- Infections in pediatrics

Objective: Understand the specific infection problems related to pediatric intensive care including methods for preventive, diagnosis and therapeutic strategies.

Pediatric infection focusing on PICU setting

1. PICU-setting:

Describe the pathophysiology, clinical signs and symptoms of complicated PICU patient.

List risk factors associated with the infection and epidemiology.

Describe relevant diagnostic techniques to differentiate source of infection.

Outline the role of sepsis biomarker.

Outline the different group of antibiotic groups and complications.

Outline the different group of antibiotic, concept of combination therapy and monitoring antibiotic levels.

G- Infections in neonates

Objective: Understand the specific infection problems related to neonatal intensive care including methods for preventive, diagnosis and therapeutic strategies.

Neonatal infection focusing on NICU setting

2. NICU-setting:

Describe the pathophysiology, clinical signs and symptoms of complicated NICU patient.

List risk factors associated with the infection and epidemiology.

Describe relevant diagnostic techniques to differentiate source of infection.

Outline the role of sepsis biomarker.

Outline the different group of antibiotic groups and complications.

Outline the different group of antibiotic, concept of combination therapy and monitoring antibiotic levels.

Farwaniya Hospital Workplace-Based Assessment

Trainee	Case-based Discussion (CbD)	Direct Observation of Practical Skills (DOPS)	Evaluation of Clinical/ Management Events (ECE)	Multisource Feedback (MSF)
CMKB R3	8 per Rotation	8 per Rotation	8 per Rotation	2 per Rotation

C. Ibn Sina Hospital Rotation:

Rotation-specific objectives R3 Ibn Sina Hospital (CMKB)

The educational program provides:

1. An understanding of the epidemiology, microbial etiology, laboratory diagnosis and management of infections in pediatric surgery patients
2. An understanding of the epidemiology, microbial etiology, laboratory diagnosis and management of infections in neuro- surgery patients

3. An understanding of the epidemiology, microbial etiology, laboratory diagnosis and management of infections in patients with neurological diseases
4. An understanding of the epidemiology, microbial etiology, laboratory diagnosis and management of infections in Burn patients and patients undergoing plastic surgery
5. An understanding of the epidemiology, microbial etiology, laboratory diagnosis and management of infections in renal transplant patients
6. An understanding of the epidemiology, microbial etiology, laboratory diagnosis and management of infections in patients with ophthalmological diseases including different surgeries
7. An understanding of the epidemiology, microbial etiology, laboratory diagnosis and management of infections in patients undergoing renal dialysis (peritoneal and hemodialysis)
8. An understanding of the epidemiology, microbial etiology, laboratory diagnosis and management of infections in patients with both hematological malignancies and solid tumors
9. Training on diagnostic techniques to detect infections in the above mentioned group of patients with emphasis on new laboratory techniques available in Ibn Sina Hospital Microbiology Laboratory including rapid techniques both molecular and non-molecular and microbiology lab automation
10. Training on Infection Control tasks needed when encountering specific infections including both community-acquired (e.g. respiratory viral disease) and health-care associated infections including investigation of outbreaks with MDR pathogens
11. Training on antimicrobial stewardship efforts to control spread of antimicrobial resistance in tertiary-care hospital settings with emphasis on the layout of antibiograms for different departments

1. Medical Expert:

Objectives:

By the end of the educational program, residents would be expected to advise on diagnosis, treatment and prevention of the following clinical problems:

A. Infections in Pediatric Surgery:

Objectives:

- Understand the specific infection problems in pediatric surgery patients in term of:
 - Different types of surgeries done in the department that can predispose to infections
 - Risk factors including congenital anomalies, GI surgeries, Urological surgeries, ICU stay, Mechanical ventilation etc...
 - Different types of infections
 - Diagnostic modalities used to diagnose those specific infections including diagnosing sepsis, pneumonia and fungal infections
 - Treatment of those infections in the light of the microbial surveillance including antifungal therapy
 - Prevention of such infections in the light of the risk factors with emphasis on the correction of congenital neurosurgical anomalies

- Go through the specific antibiotic guidelines of the department with emphasis on the different antimicrobials used including antifungal agents and their precautions in neonates and young children (pharmacokinetics and pharmacodynamics)

- Go through the special infections in pediatric urology patients with emphasis on the recurrent UTI's in special group of patients and the new modalities both in the diagnosis, treatment and prevention

B. Infections in Neurosurgery patients:

Objectives:

- Understand the specific infection problems in Neurosurgery patients in term of:

- Different types of surgeries done in the department that can predispose to infections including basal skull fracture surgeries, tumor removal, intra-ventricular shunt insertion and removal
- Risk factors for neurosurgical infections including the presence of foreign bodies (shunts), obstructions (hydrocephalus), congenital anomalies
- Different types of infections including:
 - Shunt infections
 - Brain abscess
 - Encephalitis
 - Meningitis
 - Ventriculitis
 - Discitis after disc removal surgeries
- Diagnostic modalities used to diagnose those specific infections including laboratory testing of CSF from patients with shunt infections both with or without external ventricular drain
- Treatment of those infections in the light of the microbial surveillance and with emphasis on the importance of penetration of the antibiotic into Blood Brain Barrier
- Prevention of such infections in the light of the risk factors with emphasis on the early removal of foreign bodies and correction of congenital neurosurgical anomalies
- Go through the specific antibiotic guidelines of the department with emphasis on the different antimicrobials used with emphasis on their pharmacokinetics and pharmacodynamics

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C. Infections in patients with neurological problems:

Objectives:

- Understand the specific infections in the CNS in patients in the Neurology Department such as meningitis and encephalitis which are very few in Ibn Sina Hospital as the Neurology Department in Ibn Sina Hospital is mainly for chronic neurological disease such as MS , Motor Neuron Disease, Parkinsonism etc...

D. Infections in Burns and Plastic Surgery patients:

Objectives:

- Understand the specific infection problems in Burn and Plastic surgery patients in term of:
 - Different degrees of Burns and the correlation with the risk for infection
 - The different treatment modalities upon receiving a burn patient such as early grafting and its impact on preventing burn wound infections
 - The different preventative modalities for Burn patients including type of protective isolation, type of ventilation, presence of HEPA filters in the ICU, patient cubicles and operating theatre etc...
 - Different types of plastic surgeries done in the department that can predispose to infections including:
 - surgeries to correct congenital anomalies such as cleft lip and cleft palate
 - Cosmetic surgeries such as breast reconstruction surgery
 - Managing complications of cosmetic surgeries including botox treatment and filler therapy especially those done in private clinics
 - Risk factors for infections in Burn patients including the degree of Burn, timing of grafting, presence of chemical burn with involvement of lungs (predisposing to VAP)
 - Diagnostic modalities used to diagnose Burn infections including laboratory testing burn wounds with emphasis on the need for rapid methods to diagnose skin and soft tissue infections in the burn area (Cephide / *S.aureus* and MRSA detection from the wounds)
 - Treatment of those infections in the light of the microbial surveillance and with emphasis on the importance frequent debridement of the burn and necrotic tissues
 - Prevention of such infections in the light of the risk factors with emphasis on the early grafting and correction of congenital anomalies

E. Infection in Renal Transplant Patients

Objectives:

- Understand the specific infection problems in renal transplant patients in term of:
 - The epidemiology of infections in renal transplant patients
 - Risk factors for acquiring infections post-renal transplant
 - Different types of infections including:
 - Postoperative wound infections for both the kidney donor and recipient
 - Early post-transplant infections:
 - Pneumonia
 - Sepsis
 - IAI
 - UTI
 - cSSSI
 - Late post-transplant infections:
 - Sepsis
 - CAP including viral pneumonia
 - UTI
 - Viral infections: pneumonia, meningitis, encephalitis
 - Fungal infections: Pneumonia, mucormycosis, cryptococcal meningitis
 - Parasitic infections: strongyloidosis, Cryptosporidium infections
 - Diagnostic modalities used to diagnose those infections including rapid molecular techniques for the diagnosis of sepsis, pneumonia and UTI, fungal infections and viral infections
 - Diagnostic modalities of viral infections in renal transplant patients including the following:
 - Viral pneumoniae (rapid molecular Cephide/Genexpert method for H1 N1 infection)
 - CMV viral infections
 - EBV viral infections
 - CNS viral infections

- Viral GI viruses
 - Treatment of those infections in the light of the microbial surveillance and with emphasis on the importance side effects and renal toxicity
 - Prevention of such infections using good antimicrobial stewardship, good infection control practices and handhygiene
- Go through the specific antibiotic guidelines of the department with emphasis on the different antimicrobials used with emphasis on their pharmacokinetics and pharmacodynamics especially in regards to nephrotoxicity

F. Infections in patients in the Ophthalmology Department

Objectives:

- Understand the specific infection problems in patients in the Ophthalmology Department term of:
 - The epidemiology of infections in patients in the Ophthalmology Department
 - Risk factors for acquiring infections in patients in the Ophthalmology Department
 - Different types of infections in patients in the Ophthalmology Department includes:
 - Conjunctivitis
 - Keratitis
 - Endophthalmitis
 - Uviitis
 - Post-operative infections of the eye
 - Diagnostic modalities used to diagnose those infections including rapid molecular techniques for the diagnosis of conjunctivitis, corneal ulcer infections including viral infections

- Treatment of those infections in the light of the microbial surveillance and with emphasis on the importance of proper topical and systemic antibiotics which can penetrate to reach the site of infection

G. Infections in Renal Dialysis patients:

Objectives:

- Understand the specific infection problems in patients undergoing renal dialysis in term of:
 - The epidemiology of infections in undergoing renal dialysis
 - Risk factors for acquiring infections in undergoing renal dialysis
 - Different types of infections in patients undergoing renal dialysis includes:
 - Peritonitis
 - Wound infection
 - Sepsis
 - Diagnostic modalities used to diagnose those infections including rapid molecular techniques for the diagnosis of sepsis and peritonitis
 - Laboratory testing of PD fluids for Gram-stain and culture both bacterial and fungal
 - Treatment of those infections in the light of the microbial surveillance and with emphasis on the importance of choosing the proper type and dose of the antibiotic in the context of dialysis

H. Infections in patients with hematological malignancies and solid tumors:

Objectives:

- Understand the specific infection problems in patients with hematological malignancies and solid tumors in term of:
 - The epidemiology of infections in patients with hematological malignancies and solid tumors

- Risk factors for acquiring infections in patients with hematological malignancies and solid tumors
- Different types of infections including:
 - Post-operative infections in patients undergoing different surgeries for removal of solid tumors such as SSSI and IAI
 - Febrile neutropenia in patients taking chemotherapy
 - Pneumonia both CAP and HAP including bacteria, viral, fungal and parasitic infections such as *Pneumocystis jirovecii* pneumonia (PJP)
 - Central-line infections in patients having hickman's catheter for chemotherapy
 - GI infections such as *C.difficile* infection, Crptosporidiosis, Salmonellosis, viral GE
 - CNS infections including Cryptococcal infections
- Diagnostic modalities used to diagnose those infections including rapid molecular techniques for the diagnosis of sepsis, pneumonia and UTI
- Diagnostic modalities of Fungal infections in patients with hematological malignancies and solid tumors including the following:
 - Smear of different clinical samples
 - Culture and susceptibility
 - Antigen detection: Manam, Galactomanan and D-glucan
 - PCR for fungal infections
- Diagnostic modalities of viral infections in patients with hematological malignancies and solid tumors including the following:
 - Viral pneumoniae (rapid molecular Cephide/Genexpert method for H1 N1 infection)
 - CMV viral infections
 - EBV viral infections
 - CNS viral infections
 - Viral GI viruses
- Treatment of those infections in the light of the microbial surveillance and with emphasis on the importance side effects and renal toxicity since most of the patients are on chemotherapy

- Prevention of such infections using good antimicrobial stewardship, good infection control practices and handhygiene
- Prophylactic antimicrobials that can be used for prevention of bacterial infections in neutropenic patients as well as in prevention of *Pneumocystis jervusii* infection
- Go through the specific antibiotic guidelines of the department with emphasis on the different antimicrobials used with emphasis on their pharmacokinetics and pharmacodynamics especially in regards to nephrotoxicity

2. Skills:

a. Practical Skills

Ibn Sina Hospital Practical Training:

Objectives:

The residents at the end of the rotation should master important practical skills which will be under direct observation (direct observation of Practical skills DOPS).

This will include the following areas:

- **Diagnosis of sepsis using:**
 - Conventional culture techniques with both conventional ID and susceptibility (VITEK, Disc diffusion, Etest) rapid ID by Vitek MS
 - Rapid molecular methods (Verigene) and Gene Xpert for the rapid detection of *S.aureus*, MRSA, CNS
 - Markers of sepsis (PCT)
- **Diagnosis of Pneumonia using:**
 - Gram stain of different respiratory specimens
 - Zeihl Neelson stain for AFB
 - Conventional culture techniques with both conventional ID and susceptibility (VITEK, Disc diffusion, Etest) rapid ID by Vitek MS

- Rapid molecular methods (Unyvero)
- **Diagnosis of SSI using:**
 - Gram stain of different swabs, pus specimens and tissues
 - Conventional culture techniques with both conventional ID and susceptibility (VITEK, Disc diffusion, Etest) rapid ID by Vitek MS
 - Rapid molecular methods using Gene Xpert for the rapid detection of *S.aureus*, MRSA
- **Diagnosis of UTI using:**
 - Gene Xpert for the rapid detection of *S.aureus*, MRSA
 - Rapid detection methods (Alfred 60) for the detection of UTI and the antimicrobial susceptibility testing of urinary isolates
- **Diagnosis of CNS infections using:**
 - Gram stain of CSF from patients with meningitis, shunt infections, ventriculitis etc., pus from brain abscess cases
 - Cell count and chemistry of CSF
 - Conventional culture techniques with both conventional ID and susceptibility (VITEK, Disc diffusion, Etest) rapid ID by Vitek MS
 - Rapid molecular methods (Verigiene) and Gene Xpert for the rapid detection of *S.aureus*, MRSA, CNS
- **Diagnosis of GI infections using:**
 - Stool Routine Examination
 - Conventional culture techniques with both conventional ID and susceptibility (VITEK, Disc diffusion, Etest) rapid ID by Vitek MS
 - Rapid molecular methods: Gene Xpert for the rapid detection of *Clostridium difficile*
- **Diagnosis of colonization with specific organisms (Surveillance cultures) using:**
 - Conventional culture
 - Rapid molecular methods for:
 - MRSA (nasal) using GeneXpert
 - Carbapenemase detection using GeneXpert

- **Testing all QC specimens that arrive to the Microbiology Unit Of Ibn Sina Hospital Lab**

b. Clinical Skill

Ibn Sina Hospital Clinical Training:

Objectives:

The residents at the end of the rotation should master important clinical skills which will be under case-based discussion (CBD) and evaluation of clinical management events (CME)

These include:

- Maintain log book with 2-3 cases/week to be written in full detail to be discussed with the tutor
- Daily rounds to different wards and ICU's to discuss different cases with clinicians
- Daily follow up of patients with infections in different wards and ICU's
- Involvement in 1st on call with direct supervision from tutors

3. Communicator:

At the end of the rotation, the resident should be able to :

- Effectively educate laboratory personnel and other health-care providers in formal and informal settings
- Effectively share in the education process of junior residents
- Deliver information clearly in both written and oral forms to laboratory personnel, administrators, physicians, other health professionals and patients

4. Manager:

At the end of the rotation, the resident should be able to :

- Describe the role of a Quality management system in the microbiology lab
- Effectively prioritize their duties and tasks amongst their multiple roles as teachers and trainees
- Know the principles of lab management starting including managing manpower, procedures and methods and laboratory equipments

5. Health Advocate:

At the end of the rotation, the resident should be able to :

- Demonstrate the principles and practice of laboratory biosafety
- Demonstrate the different methods for antimicrobial stewardship for the advocacy of rational use of antimicrobials

6. Collaborator:

At the end of the rotation, the resident should be able to :

- Describe the roles and expertise of all members of the interdisciplinary team in the clinical microbiology lab
- Demonstrate the ability to accept, consider and respect the opinions of other team members

7. Scholar:

At the end of the rotation, the resident should be able to :

- Demonstrate the ability to start thinking of different collaborative research ideas in clinical microbiology Lab
- Critically appraise the medical literature relating to Clinical Microbiology
- Use IT for the enhancement of patient care

Ibn Sina Hospital Workplace-Based Assessment

Trainee	Case-based Discussion (CbD)	Direct Observation of Practical Skills (DOPS)	Evaluation of Clinical/ Management Events (ECE)	Multisource Feedback (MSF)
CMKB R3	6 per Rotation	6 per Rotation	6 per Rotation	2 per Rotation

Maternity Hospital (R3) Rotation Objectives

The educational program provides:

44. An understanding of the diagnosis and management of infectious diseases in neonate and pregnant mothers from a clinical and laboratory perspective.
45. An understanding of the diagnosis and management of sexually transmitted infections (STIs).
46. Knowledge of special areas related to Women Infections & Health “ Genital, post- surgical and urinary”
47. Knowledge of healthcare-associated infections, including hospital-acquired infection and prevention at Maternity Hospital.
48. Training on special diagnostic techniques available at Maternity Hospital.

Objectives

By the end of the educational program, residents would be expected to advise on diagnosis, treatment and prevention of the following clinical problems:

H- Neonatal infections

Objective: Understand the specific infection problems related to neonates, and preventive, diagnostic and therapeutic strategies.

Neonates and Immune system

Describe the neonatal immature immune system

Vaccination

Neonatal infection

Describe the pathophysiology, clinical signs and symptoms of early, late and congenital infectious diseases in neonate, especially those illnesses that are particularly important in or specific to childhood, e.g. neonatal meningitis, group B sepsis.

Describe relevant diagnostic techniques

Outline the pharmacokinetics of prescribing for neonates

Describe the antimicrobials best avoided in neonates

I- Infections in pregnancy

Objective

Understand the specific infection problems related to pregnancy including preventive, diagnostic and therapeutic strategies

Pregnancy and the immune system

Describe the effects of pregnancy on the immune system

Pregnancy-specific infections

Describe the etiology, risk factors, clinical presentation and diagnosis of infections specific to pregnancy, e.g. septic abortion, chorioamnionitis and endometritis

Infections important in pregnancy

Describe the etiology, risk factors, clinical presentation and diagnosis of infections considered important in pregnancy, including urinary tract infections, sexually transmitted infections, and fungal infection including candidiasis, parasitic diseases, e.g. toxoplasmosis and malaria in pregnancy

Treatment of infections in pregnant women

Describe the use of antimicrobials in treating infections in pregnancy

Describe potential teratogenicity when prescribing in pregnancy and the need to avoid certain antimicrobials

Pregnancy and viral infection

Describe the investigation, intervention and advice for women with, or in contact with, rash/illness in pregnancy.

Describe the natural history of cytomegalovirus rubella, parvovirus B19, measles, enterovirus, hepatitis B, HIV, hepatitis C in relation to pregnancy

Describe rates of abnormality and fetal loss in cases complicated by, in comparison to those not complicated by, viral infection

Describe risk, and absence of evident risk, of viral immunizations

J- Sexually transmitted infections (STIs)

Objective: Understand STIs, including diagnostic, therapeutic and preventative strategies.

Etiology, pathogenesis and presentation of STIs

Describe the etiology, pathophysiology and clinical presentation of STIs

Describe the changing epidemiology of STIs

Diagnosis of STIs

Describe the available diagnostic tests for STIs and their limitations, including culture, serology, antigen detection and nucleic acid detection

Compare and contrast the advantages and disadvantages of different diagnostic methods

Congenital infections

Describe the infections that can be transmitted from mother to baby during the antenatal, perinatal and postnatal period

Explain the role of risk avoidance, therapeutic interventions, immunization and Caesarian section in the prevention of congenital infections

Management of STIs

Describe therapeutic options and preventative measures

Explain the importance of health education, contact tracing and partner notification in reducing the incidence of STIs

Female Genitourinary Infections

Objective

Understand the specific infection problems related to female genitourinary infections including preventive, diagnostic and therapeutic strategies

Etiology, pathogenesis and presentation of female Genitourinary Infections

(GUIs)

Describe the etiology, pathophysiology and clinical presentation of GUIs

Describe the changing epidemiology of GUIs

Vaginal microbiota

Innate immunity to infection in the lower female genital tract

Prophylactic antibiotics and intrauterine procedures

Pelvic inflammatory syndrome

Trichomoniasis

Bacterial vaginosis

Candida vaginitis

Mycoplasmas infections

Other female genital infections (abscess, warts, vesicular lesions)

Urinary tract infection

Diagnosis of GUIs

Describe the available diagnostic tests for GUIs and their limitations, including culture, serology, antigen detection and nucleic acid detection

Compare and contrast the advantages and disadvantages of different diagnostic methods

Management of GUIs

Describe therapeutic options, guidelines and preventative measures

Maternity Hospital Workplace-Based Assessment

Trainee	Case-based Discussion (CbD)	Direct Observation of Practical Skills (DOPS)	Evaluation of Clinical/ Management Events (ECE)	Multisource Feedback (MSF)
CMKB R3	6 per Rotation	6 per Rotation	6 per Rotation	2 per Rotation