



**Republic of Iraq**  
**Ministry of Higher Education and Scientific Research**  
**University of Basrah**  
**Al-Zahraa College of Medicine**



- Al-Zahraa College of Medicine
- Semester 5

# **Module Summary**

## **Infection and Immunity**

**Updated: Sep. 2023**

## **Educational Aims of the Unit**

The unit aims to enable students to develop towards meeting the learning outcomes described in outcomes for graduates (2015) relevant to the Doctor as Scholar and Scientist.

Students will develop an understanding of the scientific basis of bacterial, viral, fungal and parasitic infections by exploring the host/pathogen relationships and the mechanisms of action of key microorganisms in important clinical syndromes. Building upon this knowledge the students will then learn about infection prevention, control and management, especially in a Health care environment.

At the end of the unit the students will understand the principles of laboratory practice in Microbiology, virology and serology, and gain appreciation of actions and limitations of anti-microbial and anti-viral agents used. Finally the student should be able to connect the themes discussed within the unit to a clinical context, and be aware of the ethical and public health issues surrounding it.

## **Learning outcomes**

### **Outcomes 1 - The doctor as a scholar and a scientist**

1. The graduate will be able to apply to medical practice biomedical scientific principles, method and knowledge relating to :anatomy, biochemistry, cell biology, genetics, immunology, microbiology, molecular biology, nutrition, pathology, pharmacology and physiology. The graduate will be able to:
  - (a) Explain normal human structure and functions.
  - (b) Explain the scientific bases for common disease presentations.
  - (c) Justify the selection of appropriate investigations for common clinical cases.
  - (d) Explain the fundamental principles underlying such investigative techniques.
  - (e) Select appropriate forms of management for common diseases, and ways of preventing common diseases, and explain their modes of action and their risks from first principles.
  - (f) Demonstrate knowledge of drug actions: therapeutics and pharmacokinetics; drug side effects and interactions, including for multiple treatments, long-term conditions and non-prescribed medication; and also including effects on the population, such as the spread of antibiotic resistance.
  - (g) Make accurate observations of clinical phenomena and appropriate critical analysis of clinical data.
2. Apply psychological principles, method, and knowledge to medical practice.
  - (b) Discuss psychological concepts of health, illness and disease.
3. Apply social science principles, method, and knowledge to medical practice.
  - (b) Discuss sociological concepts of health, illness and disease.
  - (c) Apply theoretical frameworks of sociology to explain the varied responses of individuals, groups and societies to disease.
  - (d) Explain sociological factors that contribute to illness, the course of the disease and the success of treatment including issues relating to health inequalities, the links between occupation and health and the effects of poverty and affluence.
  - (e) Discuss sociological aspects of behavioral change and treatment compliance.
4. Apply to medical practice the principles, method and knowledge of population health and the improvement of health and health care.
  - (a) Discuss basic principles of health improvement, including the wider determinants of health, health inequalities, health risks and disease surveillance.

- (b) Assess how health behaviors and outcomes are affected by the diversity of the patient population.
  - (e) Explain and apply the basic principles of communicable disease control in hospital and community settings.
  - (f) Evaluate and apply epidemiological data in managing healthcare for the individual and the community.
  - (g) Recognize the role of environmental and occupational hazards in ill-health and discuss ways to mitigate their effects.
  - (i) Discuss the principles and application of primary, secondary and tertiary prevention of disease.
  - (j) Discuss from a global perspective the determinants of health and disease and variations in health care delivery and medical practice.
5. Apply scientific method and approaches to medical research.
- (a) Critically appraise the results of relevant diagnostic, prognostic and treatment trials and other qualitative and quantitative studies as reported in the medical and scientific literature.
  - (b) Formulate simple relevant research questions in biomedical science, psychosocial science or population science, and design appropriate studies or experiments to address the questions.
  - (c) Apply findings from the literature to answer questions raised by specific clinical problems.
  - (d) Understand the ethical and governance issues involved in medical research.

#### **Outcomes 2 - The doctor as a practitioner**

##### 1. Diagnose and manage clinical presentations.

Learn the results of investigations, including growth charts, x-rays and the results of the diagnostic procedures.

- a. Synthesise a full assessment of the patient's problems and define the likely diagnosis or diagnoses.

#### **Outcomes 3: The Doctor as a Professional**

##### 1. The graduate will be able to behave according to ethical and legal principles. The graduate will be able to:

- a. Recognize the rights and the equal value of all people and how opportunities for some people may be restricted by others' perceptions.
  - b. Reflect, learn and teach others.
  - c. Establish the foundations for lifelong learning and continuing professional development, including a professional development portfolio containing reflections, achievements and learning needs.
  - d. Continually and systematically reflect on practice and, whenever necessary, translate that reflection into action.
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## **Teaching and Learning Strategies**

Principles will be introduced in formal lectures, and learning will be re-enforced in practical classes and facilitator led small group work immediately afterwards. Student will work in the same teams throughout Phase I to encourage team-working.

Some concepts will be discussed in more detail in tutorials, and Moodle- based tests and coursework will allow for formative assessment. Students will be provided with workbooks describing structured tasks to direct independent learning throughout the unit, and ongoing use of an e-portfolio will nurture and encourage reflective practice.

## **Unit Outline/Syllabus**

### **Session 1:**

Lecture: Introduction to Clinical Microbiology Group Work: Diagnostic Procedures

Lecture: Anatomy of the Immune System

### **Session 2:**

Lecture: Immune System

Group Work: Immunity Group Work Lecture: Bacterial Pathogenesis

### **Session 3:**

Lecture: Skin, Wounds and Trauma Group Work:

Lecture: The Upper Respiratory Tract

### **Session 4:**

Lecture: The Lower Respiratory Tract Group Work: Respiratory Tract Infections

Lecture: Vaccinations

### **Session 5:**

Lecture: Sexual Transmitted Diseases. Group Work: Urinary and STI

Lecture: Blood Borne Diseases

### **Session 6:**

Lecture: HIV.

Group Work: Case Study HIV Lecture: Gastrointestinal infection.

### **Session 7:**

Lecture: Travel Diseases

Group Work: Gastrointestinal diseases/travel Lecture: Nervous System

### **Session 8:**

Lecture: Childhood Diseases Group Work

Lecture: Surface Infections

### **Session 9:**

Lecture: Antibiotics

Group Work: Formative Assessment Lecture: MRSA and antibiotic Stewardship

### **Session 10:**

Lecture: Infection Control 1 Group Work:

Lecture: Hospital Acquired diseases

### **Session 11:**

Lecture: Infection Control 2 Group Work: Group Presentation

### **Session 12: Revision**

Informal revision session

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### Assessment Method Summary\*

<b>Type</b> (Examination, Test, Coursework, Presentation, Practical, Other)	<b>TDs Outcomes</b>	<b>Duration</b> (e.g. 1 hour, 4,000 words)	<b>Timing</b>
Written examinations (a combination of single best answer, constructed response or extending matching questions)	Doctor as Scholar/Scientist	2 hours (2x2 hours from term 3)	End of each term in Phase I. Intermediate professional exam (IPE), Final Professional Exam (FPE)
Objective Structured Clinical Examinations	Doctor as a Scholar/Scientist	12 stations	End of each year in Phase I, component of IPE and FPE.
Workbook	Formative in Phase I, summative in Phase II		Completed throughout unit
E-portfolio <sup>†</sup>	Doctor as a Professional		Formative during phase I, summative at end of Phase II

\*All learning outcomes described will be tested to a sufficient standard in Phase I to satisfy the requirements of an exit degree.

### Secondary Learning Outcomes

**In addition to meeting the outcomes described in Outcomes for Graduates, at the completion of the unit students will be able to:**

1. Understand the scientific basis of bacterial, viral, fungal and parasitic infections.
2. Describe the principles of the infection model.
3. Understand the anatomy of the immune system.
4. Describe the response of the body to infection utilising the innate and acquired (adaptive) immune system in a range of clinical infections.
5. To further describe the infective consequences of an immune system that functions inappropriately, including patients who are immunocompromised.
6. Describe a clinical approach to gathering information to evaluate a patient with a possible infection and to use the principles of pathogen/patient/person/place to consider a diagnosis of infection.
7. Describe the patient-pathogen interaction for a range of clinically important infections.
8. Describe the use of laboratory investigations to aid in the diagnosis of infection, and to interpret common and important results for a patient with a possible infection.
9. Outline the principles of the epidemiology of infective diseases and contrast infections acquired in different settings, including travel-acquired infections.
10. Describe the principles of managing a patient with infection, with reference public health issues.
11. Understand the principle of infection management including:
  - Clinical use of antimicrobial agents for prophylaxis and treatment
  - Antimicrobial resistance
  - Antimicrobial stewardship and control
  - Outpatient Parenteral Antibiotic Therapy (OPAT)
  - Use of agents active against viruses
  - Management of Healthcare Associated Infections (HCAI)
12. Describe important issues linked with hospital-acquired infections; including how these are investigated.

## Key Texts and/or Other Learning Materials

### Essential

**Lippincott's Illustrated Reviews: Microbiology.** (Third Edition 2013), Harvey, RA, Cornelissen, CN, Fisher, BD.

### Background

**Medical microbiology and infection at a glance** – Stephen Gillespie and Kathleen Bamford  
(for a quick overview of the subject)

• **Medical microbiology – a guide to microbial infections** – David Greenwood, Richard Slack, John Peutherer and Mike Barer (for more depth)

• **The viral storm** – Nathan Wolfe (for entertainment as well as education)

• **Principles and practice of infectious diseases** – Gerald Mandell, John Bennett, Raphael Dolin  
(just to glance at to get an idea of the range of infectious diseases and the approach to understanding and managing them)

**Please note:** This specification provides a concise summary of the main features of the unit and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods can be found in the support documents via Moodle. The accuracy of the information contained in this document is subject to ongoing review by the University of Buckingham and forms part of the Medical School's annual return to the General Medical Council.

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