



MALAYSIAN MEDICAL COUNCIL

SPECIALTY-SPECIFIC REQUIREMENTS (SSR)

(MEDICAL MICROBIOLOGY)

Prepared By:

Specialty Education Subcommittee (SEC)
of the Medical Education Committee (MEC),
Malaysian Medical Council

Approved by the Malaysian Medical Council:

29th August 2024

Preface

1. The Specialty-Specific Requirements (SSR) pertain to requirements within each specialty and specify the minimum requirements pertaining to the training curriculum, trainers, educational resources and head of programme.
2. The Specialty-Specific Requirements (SSR) are intricately linked to the MMC Malaysian Standards for Medical Specialist Training 2019, and the Standards and SSR must be read and applied together.

Specialty-Specific Minimum Requirements for Training Curriculum (Based on Area 1.2.4 of Malaysian Standards for Medical Specialist Training) - Medical Microbiology							
Specialty-Specific Requirements (Reference Standard)	Criteria						
1) Minimum entry requirements for postgraduate training (Standard 3.1.)	1. Fully registered with the Malaysian Medical Council with a current annual practicing certificate. 2. Successful entry evaluation into the programme.						
2) Minimum duration of training programme (Standard 1.2.4 - Table 2)	Completion of a minimum of 48 months of specialised training in the specialty programme.						
3) Structure of training (rotation/modules) Training overview Training rotation/modul	The programme should have a clear pathway encompassing phases of training which shall include the basic and advanced components in Medical Microbiology. <table><tr><td>Core areas</td><td>Minimum Duration (weeks)</td></tr><tr><td>Bacteriology</td><td rowspan="2">144</td></tr><tr><td>Virology</td></tr></table>		Core areas	Minimum Duration (weeks)	Bacteriology	144	Virology
Core areas	Minimum Duration (weeks)						
Bacteriology	144						
Virology							

es and case mix (Standard 1.2.4 - Table 3 & Table 4)	<table border="1"> <tr> <td data-bbox="540 113 969 212">Immunology</td><td data-bbox="969 113 1373 415" rowspan="3"></td></tr> <tr> <td data-bbox="540 212 969 310">Mycology</td></tr> <tr> <td data-bbox="540 310 969 415">Parasitology</td></tr> <tr> <td data-bbox="540 415 969 674"> General Pathology (Medical Microbiology, Anatomic Pathology, Chemical Pathology, Haematology) </td><td data-bbox="969 415 1373 674">48*</td></tr> </table> *Effective learning period per year or 12 months is 48 weeks	Immunology		Mycology	Parasitology	General Pathology (Medical Microbiology, Anatomic Pathology, Chemical Pathology, Haematology)	48*
Immunology							
Mycology							
Parasitology							
General Pathology (Medical Microbiology, Anatomic Pathology, Chemical Pathology, Haematology)	48*						
4) Assessments (Standard 2.2.1)	Assessments should i. Employ appropriate methods and levels that are well-aligned with learning outcomes. These include a variety of methods and tools such as written assessments, clinical assessments, supervisor's report, logbook, attendance, training attended, research report, communication skills including methods appropriate to assess ethics and professionalism. ii. Include formative and summative assessments throughout each rotation, semester, or year of study. iii. Include clear criteria for progression to next year of study. iv. Include an exit examination/evaluation						
5) Additional requirements for completion of training (Standard 1.2.4)	i. Completion of graduate-level research or clinical audit project.						
6) List of competencies to be acquired	<u>Generic competencies</u>						

upon completion of training (Standard 1.1.4)	Able to: i. Diagnose, investigate and manage common medical microbiology cases whilst considering social, health economics and preventive aspects. ii. Work independently and in teams competently and professionally. iii. Practice good ethical conduct. iv. Practice good and effective communication skills. v. Perform critical review, plan and conduct scientific research. vi. Exemplify self-advancement through continuous academic and/or professional development including digital health. vii. Apply evidence-based medicine in the field of medical microbiology. viii. Demonstrate exemplary leadership qualities in the multi-disciplinary team management of medical microbiology cases. ix. Demonstrate an entrepreneurial mindset, creative problem-solving and resilience. <u>Specific specialty competencies</u> i. Manage laboratory procedures in medical microbiology, including virology and immunology. ii. Interpret and appraise microbiology tests and results and discuss with healthcare providers involved in patient care. iii. Illustrate the rationale of antimicrobial treatment for infectious diseases and Antimicrobial Stewardship. iv. Outline the management of healthcare-associated infections, including Infection Prevention and Control. v. Conduct quality management in the medical microbiology laboratory.
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Note: These criteria represent the minimum standards. Each educational programme provider may exercise their autonomy to state criteria above and beyond these minimum standards.

**Specialty-Specific Minimum Requirements for Training
Centres and Head of Programme (Based on Areas 3-6 of
Malaysian Standards for Medical Specialist Training) -
Medical Microbiology**

Item No	Specialty-Specific Requirements (Reference Standard)	Criteria						
4	Trainer-to-trainee ratio (Standard 3.1.3)	1 : 4						
5	Minimum qualifications and experience of trainers (Standard 4.1.2)	i. Registered with National Specialist Register. ii. Completed training-of-trainer course/equivalent						
6	Minimum requirements for educational resource (Standard 5.1.1)	The diagnostic facilities and equipment requirement of the programme training centres must collectively be able to accommodate the following minimum requirement: i. Physical facilities: <table><tr><th>Physical facilities</th></tr><tr><td>Infrastructure for electronic communication</td></tr><tr><td>Seminar/ tutorial rooms</td></tr><tr><td>Trainee workspace</td></tr><tr><td>Computer room</td></tr><tr><td>Library of reference books or journals (physical and/or virtual).</td></tr></table> ii. Service areas: The laboratory(ies) must be accepted or approved by relevant body(ies) for diagnostic microbiology laboratory or equivalent services.	Physical facilities	Infrastructure for electronic communication	Seminar/ tutorial rooms	Trainee workspace	Computer room	Library of reference books or journals (physical and/or virtual).
Physical facilities								
Infrastructure for electronic communication								
Seminar/ tutorial rooms								
Trainee workspace								
Computer room								
Library of reference books or journals (physical and/or virtual).								

		Areas	Services
		Laboratory	Microscopy and staining methods (eg Gram stain, acid-fast stains, India ink, spore stains), cell counts
			Culture and identification tests: -aerobic and anaerobic cultures for clinical specimens -bacterial identification methods using biochemical tests, immunological tests and identification kits -automated blood culture systems -automated identification systems
			Antimicrobial susceptibility tests (AST) eg disc diffusion method, E-test, broth dilution, automated AST.
			Serological tests for important infectious diseases including Hepatitis B, Hepatitis C, HIV, Dengue, Syphilis.
			Serology diagnostic methods for antigen and antibody detection including -rapid diagnostic tests

			-immunoassays eg enzyme (EIA), chemiluminescence (ECLIA)
			Viral culture method (optional)
			Immunofluorescence / UV microscopy
			Molecular diagnostic techniques
			Molecular / viral load tests by real-time-PCR eg HIV, Hepatitis B and C
			Immunology tests -routine tests eg RF, ANA, anti-dsDNA -specialised tests eg ASMA, AMA, ANCA, ENA -immunoglobulins, complements -tests for primary immunodeficiency (optional)
			Mycology -microscopy for fungal identification -culture and identification tests -non-culture methods eg antigen detection, molecular, automated identification methods. -anti-fungal susceptibility testing

			Parasitology tests for infections such as malaria, filariasis, intestinal helminths, intestinal protozoa
			Cultures and other tests for environmental specimens regarding the control of hospital infection.
			Sterilisation and disinfection
			Media preparation (optional)
			Laboratory Information System
		Others	Hospital infection prevention and control programme

iii. Equipment:

Equipment
Biosafety Cabinet Class II
Microscopes
Incubator
Laboratory grade refrigerators for specimen and reagent storage
Freezers -20°C, -70°C
Automated blood culture system
Automated identification system (optional)
Densitometer (optional)
Autoclave and sterilizers
Fume hood
pH meter

		Pipettors						
		Spectrophotometer						
		Automated analyzer for serological tests						
		Molecular / PCR set-up						
		Centrifuge						
		Vortex						
		Balance (optional)						
		Shakers / rotator (optional)						
		Electrophoresis apparatus (optional)						
		Water bath (optional)						
		UV-viewer (optional)						
iv. Case load: The case load of the programme training centres must collectively be able to accommodate the following minimum requirements:								
<table><tr><th>Areas</th><th>Minimum Quantity (cases/ trainee/ year)</th></tr><tr><td>Cultures</td><td>1000</td></tr><tr><td>Serological tests</td><td>500</td></tr></table>			Areas	Minimum Quantity (cases/ trainee/ year)	Cultures	1000	Serological tests	500
Areas	Minimum Quantity (cases/ trainee/ year)							
Cultures	1000							
Serological tests	500							
The case mix shall include Bacteriology, Virology, Immunology, Mycology and Parasitology cases.								
<table><tr><th>Areas</th><th>Minimum Quantity (cases/ trainee / year)</th></tr><tr><td>Cases discussions or consultations</td><td>200</td></tr></table>			Areas	Minimum Quantity (cases/ trainee / year)	Cases discussions or consultations	200		
Areas	Minimum Quantity (cases/ trainee / year)							
Cases discussions or consultations	200							

7	Minimum qualifications and experience of Head of Programme (Standard 6.2.2)	i. 5 years or more of working experience after national specialist registration. ii. Experience in administration and/or academic management.
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Note: These criteria represent the minimum standards. Each educational programme provider may exercise their autonomy to state criteria above and beyond these minimum standards.

Glossary for Lab Based

*Relevant body(ies) refers to Department of Standards Malaysia, SIRIM and etc.

ACKNOWLEDGEMENT

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