Anatomical Pathology Postgraduate Training in Malaysia

GUIDE FOR APPLICANTS

VERSION 1, 2022

Copyright

Published by:
Majlis Dekan Fakulti Perubatan Universiti Awam Malaysia
MERDU, Fakulti Perubatan, Universiti Malaya, 50603 Kuala Lumpur, Malaysia
npmcmy@gmail.com

First Publication, 2022

Perpustakaan Negara Malaysia Cataloguing-in-Publication Data

Anatomical Pathology Postgraduate Training in Malaysia : GUIDE FOR APPLICANTS.
VERSION 1, 2022
Mode of access: Internet
eISBN 978-967-0023-04-5
1. Medical education--Curricula--Malaysia.
2. Pathologists.
3. Government publications--Malaysia.
4. Electronic books.
610.7155

Acknowledgements

The steering group of the National Postgraduate Medical Curriculum Project would like to express their thanks to the following:

1. Professor Dr. Simon Frostick and Mr. David Pitts for the overall design of the curriculum templates, development of the Essential Learning Activities, editing of curriculum modules, consultation and coaching for writing groups.
2. Ministry of Higher Education for their funding support.
3. The Development Division, Ministry of Health for their valuable support and practical insights.
4. Members of the Medical Deans Council for their unequivocal support for the project.
5. Members of Specialty/Conjoint Boards who have facilitated the work of individual specialties.

Table of Contents

Preface

What is this document

The purpose of this document is to serve as a guide for prospective applicants by providing the following information:

1. Overview of the Anatomical Pathology postgraduate specialty
2. Outline of the Anatomical Pathology postgraduate training programme in Malaysia
3. Entry requirements
4. Application and entry process

The National Postgraduate Medical Curriculum

The National Postgraduate Medical Curriculum (NPMC) for Pathology, is part of the NPMC Project which is intended to cover the development of curricula for all clinical medical specialists in Malaysia. The development of the Curricula for Pathology is the joint and collaborative effort of the institutional members of the Jawatankuasa Bersama Sarjana Perubatan – Patologi (JBSP-Patologi) which is the National Conjoint Specialty Committee overseeing Pathology, appointed by Jawatankuasa Bersama Ijazah Lanjutan Perubatan (JBILP). JBSP-Patologi comprises of members from all the universities offering the Master of Pathology programmes, the Ministry of Health (MOH) and College of Pathologists, Academy of Medicine Malaysia (CPath-AMM).

The training of mono-discipline pathology specialists will be consolidated, and separate curricula will be developed for the disciplines of Anatomical Pathology, Haematology, Chemical Pathology, Medical Microbiology and Forensic Pathology.

The Curriculum for Anatomical Pathology

The NPMC for Anatomical Pathology is intended to be applicable to the training of diagnostic Anatomical Pathologists in Malaysia, for all postgraduate programmes however named. It serves as the guide for all University programmes (e.g. Master of Pathology), and the training centres involved in the delivery of these programmes. This will be the common curriculum for training in Anatomical Pathology to ensure that training is consistent and competency based, and meets the standards required by the respective national bodies and the National Specialist Register (NSR). It is envisaged that training through parallel pathways will be developed, and will utilise, incorporate and echo the principles and philosophy of Anatomical Pathology training embodied in this document.

National Curriculum Writing Group and Contributors

Core Writing Group (All Pathology Curricula)		
Name	Role	Institution
Distinguished Professor Datuk Dr. Looi Lai Meng	Chair	Universiti Malaya
Associate Professor Dr. Nazarina Abdul Rahman	Deputy-Chair	Universiti Malaya
Associate Professor Dr. Teoh Kean Hooi	Secretary	Universiti Malaya
Professor Dr. Cheah Phaik Leng	Anatomical Pathology Lead	Universiti Malaya
Associate Professor Dr. Subashini Chellappah Thambiah	Chemical Pathology Lead	Universiti Putra Malaysia
Dr. Madyhah Abdul Monir	Haematology Lead	Universiti Teknologi MARA
Associate Professor Dr. Azian Harun	Medical Microbiology Lead	Universiti Sains Malaysia
Professor Dr. Faridah Mohd Nor	Forensic Pathology Lead	Universiti Kebangsaan Malaysia

Anatomical Pathology Writing Group	
Professor Dr Cheah Phaik Leng (Lead)	Universiti Malaya
Associate Professor Dr Teoh Kean Hooi (Co-Lead)	Universiti Malaya
Distinguished Professor Datuk Dr Looi Lai Meng	Universiti Malaya
Dr Toh Yen Fa	Universiti Malaya
Professor Dr Noraidah Masir	Universiti Kebangsaan Malaysia
Professor Dr Reena Rahayu Md Zin	Universiti Kebangsaan Malaysia
Associate Professor Dr Sharifah Emilia Tuan Sharif	Universiti Sains Malaysia
Associate Professor Dr Md Salzihan Md Salleh	Universiti Sains Malaysia
Associate Professor Dr Maizaton Atmadini Abdullah	Universiti Putra Malaysia
Dr Fauzah Abd Ghani	Universiti Putra Malaysia
Associate Professor Dr Noor Kaslina Mohd Kornain	Universiti Teknologi MARA
Dr Arni Talib	Ministry of Health
Dr Salmi Abdullah	Ministry of Health
Dr Mukarramah Che Ayub	Ministry of Health
Dr Zanariah Alias	Ministry of Health

External Reviewers	
Professor Dato' Dr Adeeba Kamarulzaman	Universiti Malaya
Professor Dr Shahrul Bahyah Kamaruzzaman	Universiti Malaya
Professor Dr Jamunarani S Vadivelu	Universiti Malaya
Ms Yao Lu Yean (Secretariat)	Universiti Malaya

Introduction

Purpose of this guide

The purpose of this guide is to inform prospective applicants considering a career in Anatomical Pathology. It summarises the key aspects of the Anatomical Pathology curriculum (entry requirements, process, training structure, assessments, some documentation and exit criteria), and provides a guide as to how to prepare and proceed with the application.

What is Anatomical Pathology?

Anatomical Pathology is an exciting specialty at the forefront of patient diagnostics. It is mainly concerned with the diagnosis of diseases based on macroscopic and microscopic examinations of organs and tissues with the additional use of ancillary tests (histochemical, immunohistochemical and molecular), if required. Anatomical pathology services include histology (surgical pathology / histopathology) and cytology (cytopathology) examinations.

The Role of an Anatomical Pathologist

The Anatomical Pathologist works closely with other clinical colleagues and is an integral member of the patient management team. In addition, the Anatomical Pathologist has the advantage of working with other scientific and technical staff in developing and optimising many new technologies that have beneficial, useful and interesting implications in patient management. The Anatomical Pathologist is also trained to manage laboratory setups.

Size of the Specialty

As of 31 October 2021, there were 750 pathologists registered on the National Specialist Register of Malaysia (NSR). Of these, Anatomical Pathologists comprise the largest group, forming 37% (274) of all NSR-listed pathologists in Malaysia. However, currently only 66% of the positions for Anatomical Pathologists in Ministry of Health hospitals are filled. The continuing increase in numbers of teaching hospitals, private hospitals and laboratories and Ministry of Defence hospitals will heighten the shortage of Anatomical Pathologists. In recent years, the increase of knowledge and technological advances in the assessment of diseases (especially cancers), in the context of precision medicine, has significantly increased the scope and pivotal roles of anatomical pathologists, further contributing to the demand for Anatomical Pathologists. Considering that Anatomical Pathology is a highly hands-on specialty, it is clear that there is a major shortfall of Anatomical Pathologists in Malaysia, especially when compared to countries such as Australia and the United Kingdom. Anatomical Pathologists will continue be at a premium in medical diagnostics for many decades to come.

Unique features of Anatomical Pathology

Anatomical Pathology is a career for medical doctors who are inclined towards “getting down into the details and the foundational basis”, e.g. to see the details of a causative lesion from a macroscopic view down to the subcellular level. It is a profession most suited to doctors with an inclination for scientific detail, test-based investigation of disease and objective reporting. It is an integral part of direct patient care through tumour boards and the multidisciplinary team approach. In today’s era of precision and personalised medicine, the anatomical pathologist plays a key role not only in precise diagnosis, but also in the provision of prognostic and predictive information crucial for making treatment choices, best exemplified in the case of cancer management.

This specialty should attract curious minds with critical and analytical thinking, and those interested in making advances using mechanistic research of various disease conditions. Apart from the hard science, many of the lesions when viewed at cellular and subcellular levels, have interesting patterns on

which diagnoses are often based, and it should appeal to those who are somewhat artistically inclined and visually astute.

The use of and engagement with cutting-edge ever-evolving technology is stimulating for those who embrace technological advances e.g. artificial intelligence, molecular techniques, automation etc. These are increasingly utilised and embraced in Anatomical Pathology.

Anatomical Pathologists are trained to be leaders and decision makers, with management skills to supervise and run diagnostic laboratories.

Anatomical Pathology has many other unique roles in medical practice. It is a traditional gate-keeper of the healthcare service through providing objective data on disease patterns, resource utilisation and financing to inform clinical audit and policy decisions. Being the custodians of patient sample archives, the anatomical pathologist has strong roles in research and management of tissue banks, medical museums and cancer registries.

Why choose Anatomical Pathology as a career?

As an Anatomical Pathologist you will be among the few who will be immersed in / have the opportunity for:

- a close collaboration with many clinical disciplines in your daily work
- a fast-developing field of medicine with rapidly progressing and growing knowledge about the behaviour of tumours, pathophysiology of diseases etc.
- use of cutting-edge and rapidly developing technologies
- learning many new skills including audits, management, financing
- research on the vast amount of archived case material in Anatomical Pathology

While most other doctors are pressured by patients at their front desk waiting for consultation, the Anatomical Pathologist has the advantage of handling the caseload at hand within the constraints of a 24-hour day. The Anatomical Pathologist has the flexibility of reporting the daily caseload at their preferred time of day. More importantly, the Anatomical Pathologist has the flexibility to carry out literature searches and to read up the latest facts about the disease before reporting. It gives immense satisfaction to provide the best and most appropriate diagnosis based on the most up to date knowledge.

1. Training in Anatomical Pathology

Training Pathways

Currently, the Master of Pathology (Anatomical Pathology) of the Ministry of Higher Education (MOHE) is the main pathway for training. It is a postgraduate clinical coursework programme which involves supervised competency-based training in diagnostic Anatomical Pathology for a duration of a minimum of FOUR (4) years and a maximum of SEVEN (7) years.

Alternative (parallel) pathways of training such as for the Fellow of the Royal College of Pathologists, United Kingdom (FRCPath) or the Fellow of the Royal College of Pathologists of Australasia (FRCPA) have not been formalised with Institutional training providers, although individual arrangements may be made on an adhoc basis. These may require additional year(s) of training and can be carried out in laboratories accredited for training by the respective Royal Colleges in Malaysia. Notably, the Master of Pathology programme currently provides training that is recognised towards the FRCPath and the Master of Pathology degree is accepted by the FRCPA as providing exemption from the Basic Pathological Science paper and Part I FRCPA examination.

Stages of Training

The programme of study is divided into 2 stages, Stages 1 and 2.

Stage 1 is ONE (1) year in duration. In summary, the trainee will attend an Orientation/Induction programme, undergo a one-month Foundation posting rotation to each of the other major specialties of Pathology, namely: Haematology, Medical Microbiology and Chemical Pathology, to familiarise with the workings of these other specialities of Pathology. The trainee will undergo supervised competency-based training in Anatomical Pathology for the remainder of Stage 1. At the end of Stage 1, the trainee who has satisfactorily completed training will sit for an examination in Anatomical Pathology (Part I Examination).

Stage 2 is THREE (3) years in duration during which the trainee will undergo supervised competency-based training in Anatomical Pathology with the aim of progressing to specialist level competence (Level 5). Some subspeciality areas will be introduced at this stage, including medical liver biopsies, renal biopsies, nerve biopsies and muscle biopsies.

In Stage 2, the trainee will also be introduced to research methodology, data analysis and writing a research report. With the guidance of the supervisors (Educational/Clinical/Adjunct), the trainee will plan and undertake a research project and write up a research report. To facilitate the understanding of research methodology, all training universities will conduct a research methodology course which all trainees are required to attend. After satisfactory completion of training in Stage 2, the trainee sits the Final (exit) examination.

Training will be carried out in centres which are accredited for this purpose (Appendix 1).

2. Entry requirements

Applicants to the postgraduate training programme must meet the requirements detailed below both in terms of the entry as well as the funding criteria as appropriate.

Applicants funded by the MOH, and applying to University programmes must meet both the MOH and University requirements to be considered for an entrance evaluation.

Self-funded applicants only need to meet the requirements of the programme and institution to which they apply.

1. Ministry of Health (MOH) sponsored
2. Non-MOH, government sponsored (e.g. Ministry of Defence)
3. Other sponsored trainees (e.g. sponsored by University or private institutions)
4. Private – self funded trainees
5. International - non-Malaysian foreign trainees who may be self-funded or sponsored by a variety of agencies or government.

Essential criteria

Candidates who wish to pursue postgraduate training in Anatomical pathology have to fulfil the following requirements:

Component	Entry Requirement	Evidence
Medical Degree registrable with Malaysian Medical Council (MMC)	**Mandatory**	Original certificate
Full registration with MMC	**Mandatory**	Certificate of registration
Clinical Experience	**Mandatory** Three years of clinical experience after attainment of the basic medical degree, comprising of: a. satisfactory completion of housemanship, and b. post-housemanship clinical experience of at least 1-year duration	Authorised service record
Valid Annual Practising Certificate (APC)	**Mandatory**	Certificate
Clinical Skills and Knowledge as per Entry Essential Learning Activities (ELAs)	**Mandatory**	Demonstrate relevant knowledge and skills during entrance evaluation. Letters of reference
Entrance Evaluation	**Mandatory**	Satisfactory performance

Additional requirements for International Candidates		
Good Standing	**Mandatory**	Letter of Good Standing from Medical Council of country of current practice
Temporary Practice Certificate (TPC) or APC from MMC	**Mandatory**	Certificate
Clinical or laboratory attachment for a minimum of 3 months before joining the pathology training programme	**Mandatory**	Satisfactory supervisor's report
Proficiency in written and spoken English language (if basic degree is from an institution of higher learning where the medium of instruction for that degree is not the English language)	**Mandatory**	Test of English as a Foreign Language (TOEFL) or other relevant transcripts which meet requirements of training university

Important:

1. Any falsification of documents will result in the application being rejected and the applicant will be reported to the MMC.
2. Any adverse reports such as an investigation by the MMC must be declared to the Selection Committee.

Entry Essential Learning Activities (ELAs)

Entry ELAs are clinical activities that prospective trainees should be able to perform in a trustworthy manner by the time they enter postgraduate training in Anatomical Pathology. The Entry ELAs have been selected to represent appreciation of the role of Anatomical Pathology in patient care. They indicate the knowledge, skills and attitudes that the trainees need to be aware of when carrying out the tasks and responsibilities. They also serve as learning opportunities for prospective trainees when they are tasked to undertake the activities and then receive feedback regarding their performance.

All prospective applicants are required to fulfil the following entry level ELAs prior to entry into Anatomical Pathology training:

ELA 1	Requesting for histopathological/ cytopathological examination of samples
ELA 2	Communicating cause of death to kin and arranging for an autopsy

*The list of entry ELAs is not exhaustive and may be updated according to programme requirements

A full description of the Entry ELAs is included in Appendix 2.

Personal Qualities

- Applicants should have an inclination for morphological and microscopical details of tissue. They should have a liking for the use of the microscope, photomicrography and digital imagery.
- They should be committed to self-learning and have the aptitude for searching online pathology education resources.
- They should be committed to continued professional development and life-long learning. They should have the aptitude for group for professional discourse, and participation in live and virtual seminars/ webinars and conferences.
- They should behave with integrity, honesty and responsibility at all times in their practice.
- They should have critical and analytical thinking in their practice. They should be problem-solvers rather than complacent followers.
- They should have an empathetic nature and communicate well with colleagues and patients.

3. Entry Process

Calls for applications will be advertised, and entrance evaluations conducted by the relevant bodies, (e.g., Conjoint Specialty Committee for Anatomical Pathology).

Eligible applicants may apply either through MOH (government-MOH sponsored candidates) or directly to the university of their choice (private Malaysian and international candidates).

Applicants are required to go through a selection process following which they are informed of the outcome of their application by the MOH and the university respectively.

MOH sponsored candidates:

Applications must be made to the Training Management Division, MOH. Any further enquiries should be directed to the Training Management Division, MOH.

Private candidates (Malaysian/ International):

Applications can be made directly throughout the year through the website of any university that is offering the training programme. Candidates may apply to more than one university and should refer to the university's postgraduate studies administrative office for further application details.

Essential Criteria

Event	Process
Document compilation	Applicants must compile the following documents for presentation: • Sijil Pelajaran Malaysia (SPM) or its equivalent and any other pre-university certificates as evidence of education level • Basic medical degree certification • Certificate of registration with the MMC • Curriculum vitae with details of work experience • Evidence of previous training records
Application	
MOH-sponsored candidates	Applications can be made online at http://ehlp.moh.gov.my Applications for pre-entrance evaluation are available at https://bit.ly/3B8XJui
Non-MOH sponsored candidates	Applications can be made online at the postgraduate studies web link of the respective universities.
Entrance Evaluation	An entrance evaluation which can take the form of an entrance examination e.g. Medical Specialist Pre-Entrance Examination (MedEx) [see Appendix 3] or an interview.
Shortlisting	MOH-sponsored candidates and non-MOH sponsored candidates, on satisfactory performance at the Entrance Evaluation will be shortlisted by their respective sponsors (if relevant) and the list of potential candidates presented to the participating training universities.
Outcome	The universities will select the candidates for training based on the number of training positions available. Successful MOH-sponsored candidates will be informed by the Training Division of MOH. Non-MOH sponsored candidates will be informed of the outcome by the respective universities.
Orientation	Successful candidates will attend an Orientation/ Induction Programme at the respective training universities at the commencement of the academic year.

Orientation/Induction Process

The Orientation/Induction process is a set of steps put in place to orientate the trainee to the institution, curriculum and training requirements.

Each university is responsible for the organisation and conduct of the programme for its own candidates.

The Induction programme covers the following aspects:

- Registration process
- Payment of fees
- Details of the programme of study to be followed
- Learning opportunities that will be provided
- Assessments used and their purpose
- Location of training centres
- The duties of a trainee
- Guidelines and protocols in the workplace
- Support provided in the workplace
- Role of trainers
- Continuous Professional Development (CPD) requirements
- Attendance during training
- Disciplinary processes
- Processes to report concerns about training
- Systems for supporting a trainee in difficulty

Attendance and participation in the Induction programme is compulsory. Failure to attend the Induction programme will result in the trainee not being able to commence training.

4. Syllabus

Overview

The syllabus defines what will be taught and learned throughout the training programme in Malaysia. It outlines the domains and competency levels to be achieved in each stage of the training programme. It details the generic and specialty-specific breadth of knowledge, skills and attitudes that a trainee needs to attain and apply to patient care.

The syllabus provides a framework for the:

1. structure of the training programme.
2. competencies expected in the domains of knowledge, skills and professional behaviours.
3. expected levels of competency at different stages of training.

Trainees in Anatomical Pathology will encounter a wide range of disease conditions. To reflect this, the topics and relationships between the domains in the syllabus are described in the diagram as below.

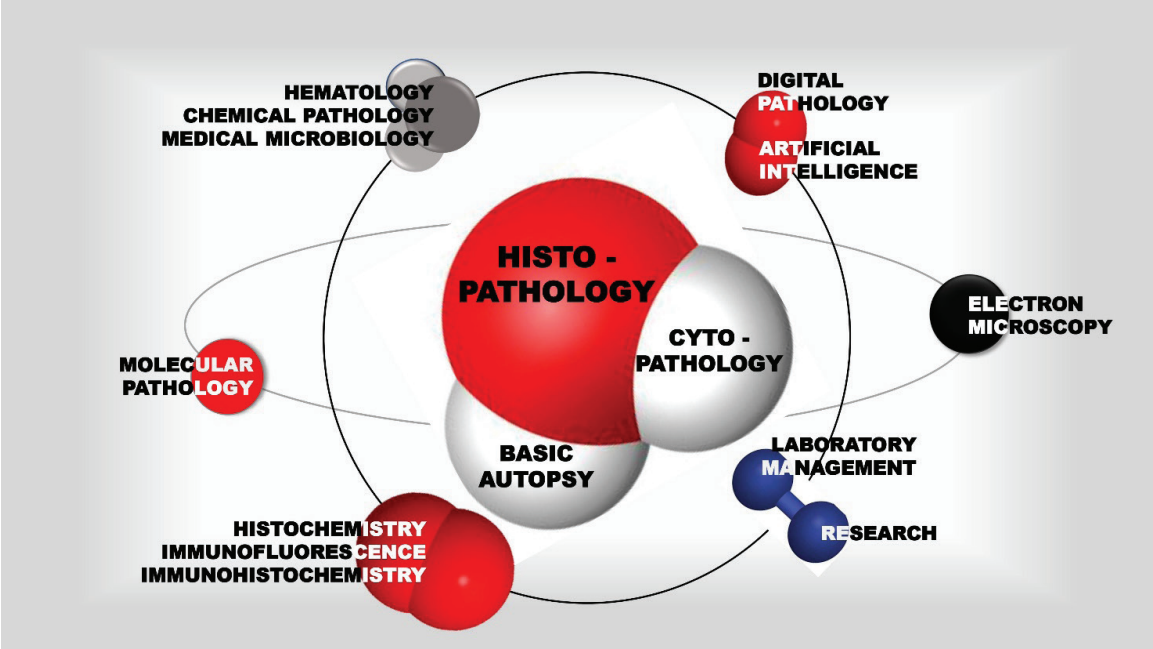

Figure 1: The Anatomical Pathology Training Molecule, depicting the interaction of various knowledge, skills and technologies in the training of an Anatomical Pathologist.

The syllabus is based on supervised competency-based training in diagnostic Anatomical Pathology. The approach is one where the trainee undergoes a spiral progression of competence achievement and the trainee is expected to progressively acquire a range of knowledge, skills and values during the period of training, bringing them from an "observer" to a fully-competent independent Anatomical Pathologist.

The syllabus is extensive. While acquiring knowledge, skills and professional values to function as a competent Anatomical

Pathologist, the trainee will not only be exposed to core histopathology, cytopathology and basic autopsy practices, but many other state-of-the-art skillsets that will enable the trainee to become a competent, well-rounded, confident leader in the field. Candidates are referred to the training guidebooks of the Master of Pathology Programmes and the Royal Colleges of Pathologists of Australasia and United Kingdom for details (Appendix 4).

Training Structure

This is a fully-supervised 4-year programme structured as TWO (2) Stages, offered by local Universities accredited to provide the programme.

Stage 1 (year 1) of the programme focusses on foundational knowledge and practical skills in Anatomical Pathology. This must be sound enough for the trainee to build on prior to entry into the more patient-centred and practice-focused training of Stage 2. To assess that the required level has been achieved, there is a formal Part I examination at the end of Stage 1 to evaluate the suitability of a trainee for a career in Anatomical Pathology.

Stage 2 (years 2, 3 and 4) of the programme focusses on spiral acquisition of specialised knowledge and practical skills in Anatomical Pathology through the handling of increasingly complex clinical cases. Concurrent with this is the development of professional behaviour, conduct and character to achieve the competence level of a specialist Anatomical Pathologist. A formal Final examination at the end of Stage 2 serves as the exit assessment.

Competency Indicators

The competence levels, which reflect a combination of knowledge and skills achievements, are as below. At each level, knowledge would precede and usually exceed skills but should always be appropriate and adequate to support skills competence.

Level	Description
1	Observer status only
2	Assistant status
3	Able to perform under close and direct supervision
4	Able to perform under indirect supervision
5	Able to perform unsupervised

Syllabus (MOHE pathway)

The following table provides a high level outline of the programme with competency levels. The trainee must progress in both knowledge and skills throughout the training programme.

ANATOMICAL PATHOLOGY KNOWLEDGE/SKILLS				
	Year 1	Year 2	Year 3	Year 4
TARGET COMPETENCE LEVEL	2	3	4	5
Core Components • Histopathology • Cytopathology (including FNA) • Basic Autopsy **Ancillary Components** • Molecular pathology • Electron Microscopy • Staining Techniques e.g. Histochemistry, Immunofluorescence, Immunohistochemistry • Digital Pathology and Artificial intelligence • Laboratory Management • Research • Foundation in Haematology, Chemical Pathology and Medical Microbiology	Able to attend to most simple cases and assist in more difficult cases	Able to attend to more difficult cases	Able to attend to some complex cases Able to supervise junior trainees on simple cases	Able to attend to most complex cases Able to supervise junior trainees on most cases

Learning outcomes

Stage 1

1. To acquire basic theoretical knowledge in General and Anatomical Pathology.
2. To attain basic competence in the macroscopic and microscopic examination, interpretation and reporting of “non-complex” histopathology cases.
3. To attain basic competence in the microscopic examination, interpretation and reporting of “non-complex” cytopathology cases.
4. To acquire basic competence in the conduct of non-complicated autopsies.
5. To acquire knowledge of the principles of techniques involved in the preparation and staining of paraffin and frozen sections.
6. To apply basic understanding of other specialties i.e., Haematology, Medical Microbiology and Chemical Pathology in relation to Anatomical Pathology.
7. To apply standard operating procedures in laboratory management including laboratory organisation, quality assurance, laboratory safety and infection control.
8. To demonstrate an understanding of medico-legal implications of Anatomical Pathology reports.

Stage 2

1. To attain level 5 competence in macroscopic and microscopic pathology (histopathology).
2. To attain level 5 competence in cytopathology.
3. To attain level 5 competence in conducting clinical autopsies and at least level 4 competence in medico-legal autopsies, both of which will be considered as attaining level 5 in basic autopsy practice.
4. To attain level 5 competence in interpretation of frozen sections and at least level 4 in specialised pathology (i.e. liver, renal, nerve and muscle biopsies)
5. To attain level 5 competence in employing best practices in the selection and utilisation of molecular genetics assays and the appropriate interpretation and reporting of assay results in the context of optimised patient care. However, the trainee is expected generally to reach level 3 competence only in the total field of Basic Molecular Pathology.
6. To acquire level 4 competence in the management and organisation of the diagnostic anatomical pathology laboratory services.
7. To acquire level 4 competence in the planning, conduct and write-up of a simple research project report.
8. To understand quality assurance and how to implement it.
9. To participate in Quality Assurance Programmes (QAPs).
10. To behave as a competent anatomical pathologist in training; in diagnosis and clinical pathology consultations.

The knowledge and skills syllabi will support the development of the trainee in the various modalities of Anatomical Pathology throughout the training programme.

A summary description of the Syllabus and the competency level for each stage is included in Appendix 5. A full description can be found in the NPMC Anatomical Pathology Curriculum document.

Professional Behaviours

Professionalism is 'placing the interests of the patient above those of the specialist, setting and maintaining standards of competence and integrity, and providing expert advice to society on matters of health'. Therefore, the highest standards of professional behaviour must be instilled in and practised by all trainees.

Domains	Positive behaviours
Responsibility	Punctuality Conscientiousness Industriousness Accurate documentation
Relationships with and respect for patients	Maintenance of patient confidentiality Appropriate behaviour Respect of boundaries Respect of cultural differences Effective communication Courtesy in all interactions
Probity and honesty	Ethical decision-making based on best evidence Transparency Integrity
Self-awareness and capacity for reflection	Constructive attitude to feedback Willingness to learn from experiences of self and others Regular audit of outcomes
Collaboration and working with colleagues	Teamwork and collaboration Effective communication Appropriate behaviour Avoidance of negative behaviours, such as bullying and harassment Respect of diversity and boundaries Promotion of a positive workplace culture

References:

1. ABIM Foundation, ACPeASIM Foundation, European Federation of Internal Medicine. Medical professionalism in the new millennium: a physicians' charter. Lancet 2002;359:520e2
2. Rogers W, Ballantyne A. Towards a practical definition of professional behaviour. J Med Ethics. 2010 Apr;36(4):250-4. doi: 10.1136/jme.2009.035121

Research syllabus

Anatomical Pathologists must be trained in applying the principles of evidence-based medicine in clinical practice in order to offer the best available care to their patients, while accounting for local resources and cultural expectations.

The postgraduate training syllabus includes the requirement for completion of a research project leading to a report. Trainees are also exposed to journal clubs, symposia and scientific conferences, to improve and expand their understanding of research principles.

The research syllabus consists of the following:

Clinical research design

1. Understanding the value of clinical research
2. Formulating the research question
    - literature review
    - tools for managing your references
3. Choosing the right study design for the research question
4. Assessing feasibility
5. Ethics approval - considerations and the application process
6. Funding – sourcing, application and increasing their chances of success

Statistics and other methods of data analysis

1. Quantitative methods
2. Qualitative methods
3. Sample size and power calculation
4. Sampling methods

Good clinical practice

1. Defining Good Clinical Practice
2. Collaborators' roles in clinical research
    - investigator-initiated studies
    - sponsor-initiated studies
3. Institutional research boards (IRB) and institutional ethics committees (IEC)
4. Protocol deviations
5. Informed consent
6. Safety management

Scientific writing

1. Principles of scientific writing
2. Converting data into a manuscript
3. Plagiarism, and how to use plagiarism checkers
4. Choosing a journal
5. Journal formats
6. Writing an abstract
7. Writing a cover letter

Research presentation skills

1. Designing slide presentations and posters
2. Capturing an audience - verbal and non-verbal skills
3. Defending your work
4. Concluding strongly

5. Assessment tools

Introduction

This section outlines the assessment methods and modalities, their utility, and timing in Anatomical Pathology training. Formative and summative assessments are carried out to assess all domains in which the modern Anatomical Pathologist is expected to be competent. Assessments serve the following key functions:

1. To track the trainee's achievement of the required competencies, facilitate the provision of feedback, and identify opportunities for improvement.
2. To ascertain if the trainee has met the learning requirements and competencies expected from a placement/rotation as a precursor to progressing to the next placement and/or stage of training.

Training Placements for Stages 1 and 2

Stage 1

1. A one-month Foundation posting rotation to each of the other major specialties of Pathology, namely: Haematology, Medical Microbiology and Chemical Pathology, to familiarise themselves with the workings of these other specialties of Pathology.
2. Failure to obtain a "Satisfactory" grade in a trainee placement will result in the trainee having to undertake remedial activity.
3. The trainee will undergo supervised competency-based training in Anatomical Pathology for the remainder of Stage 1.
4. Trainees must obtain a "Satisfactory" grade for this main placement in Anatomical Pathology. Failure to obtain a "Satisfactory" grade for this placement will disqualify the trainee from the Part I examination. Failure to sit for the Part I examination for this reason may be considered a failed attempt at the examination.

Stage 2

1. The trainee will undergo supervised competency-based training in Anatomical Pathology with the aim of progressing to Level 5 competence. Some subspecialty areas will be introduced at this stage, including medical liver biopsies, renal biopsies, nerve biopsies and muscle biopsies. .
2. Trainees are also required to complete and submit a research report SIX (6) months prior to the Final examination.
3. A satisfactory completion of a research project is evidenced by a pass assessment of a research report. A pass re-evaluation after remedial action can replace an unsatisfactory/failed initial evaluation.

Trainees are required to pass the Final examination to complete the training programme.

Formative Assessments

Formative assessments in Anatomical Pathology training will be largely workplace-based assessments (WBAs). This is the appraisal of the trainee's professional skills and attitudes that evidences their actual performance in the workplace. These are for the continuous provision of feedback and identification of areas for improvement, and are carried out throughout the training period. The assessment tools for workplace-based assessment include Directly Observed Practical Skills (DOPS), Case-Based Discussion (CBD), Evaluation of Clinical Events (ECE) as well as Multi-Source Feedback (MSF).

The assessment methods for WBAs include:

WBA		Description
DOPS	Directly Observed Practical Skills	The emphasis of DOPS assessments is provision of feedback that supports the development of competency and proficiency. The assessment typically takes 15-20 minutes, with an additional 5 minutes for feedback.
CBD	Case-Based Discussions	CBDs provide the trainer the means of reviewing a trainee's practice or their thoughts about practice. It enables trainers to explore the thinking of their trainee, share understanding, and develop professional thinking. Each assessment should typically take 15-20 minutes with an allowance of an additional 5-10 minutes for feedback provision by the assessor.
ECE	Evaluation of Clinical Events	A tool used for assessing the trainee in the performance of their duties in complex tasks, often involving teamworking or interacting with other professional staff.
MSF	Multi-Source Feedback	Feedback provision from wide range of staff in multiple roles who have had engagement with the trainee.

Assessment Objectives and Tools for Assessment

	Assessment Objective	Tools for Assessment
1	Demonstrate the trainee's achievement of knowledge and skills as appropriate to each phase of training	DOPS, CBD, SA
2	Identify and ensure the candidates' suitability for progress in training in anatomical pathology	SA-1
3	Provide the trainee with feedback about progress	DOPS, ECE, CBD, MSF
4	Ensure the trainee is ready to progress to next stage of training	DOPS, ECE, CBD
5	Ensure the trainee at the end of the training program can practice as an independent general anatomical pathologist.	DOPS, ECE, CBD, MSF, SA-2
6	Demonstrate the development of the skill for effectively training and teaching of undergraduates and postgraduates in the field of anatomical pathology	DOPS, ECE, MSF
7	Demonstrate the development of the skill for research in anatomical pathology	DOPS, ECE
8	Demonstrate management skills for running the laboratory	DOPS, ECE, CBD, MSF
9	Demonstrate familiarity with laboratory accreditation	CBD
10	Demonstrate the ability to act professionally at all times	ECE, MSF

Summary of the Assessment Strategy for all Anatomical Pathology Trainees

Element	Details	End of attachment	End of year	End of training	Comments
Portfolio	Record of professional learning, WBAs, supervisor reports, reflections, and development activities	N/A	Satisfactory completion of the year (at Annual Review)	Satisfactory completion of training (at Annual Review)	The Portfolio is a record of all training activities and forms an integral part of the evidence to demonstrate professional development. Subsequently used for NSR registration.
Research / Audit	Evidence of project management	N/A	Conducted throughout years 2-4. Progress to be demonstrated	Submitted as part of the evidence for completion of training	Application of the scientific approach including formulating an idea, literature reviewing, interpretation and analysis OR an audit / a quality improvement exercise.
Workplace-based assessments	DOPS ECE CBD MSF	Minimum 1 DOPS every 3 months Minimum 1 CBD and 1 ECE every 4 months	Minimum 4 DOPS every year (years 2-4) Minimum 3 CBDs and 3 ECEs every year 1 MSF for every year (but more frequently if needed)	Minimum 12 DOPS Minimum 9 CBDs and 9 ECEs Minimum 4 MSF Evidence of 1 consultation to clinician in managing / resolving a case	WBAs provide an opportunity for feedback and reflection. They will also be used as part of the evidence for the end of year / training Portfolio review.
Educational and Clinical Supervisor Reports	Summary of progress through postings and learning sessions	Satisfactory completion of attachment			Part of the Portfolio
Courses, Workshops and Conferences	Developing knowledge and skills				Part of the Portfolio

Summative Assessments

There are 2 major summative assessments (SA) i.e. Part I Examination (SA-1) and the Final exit examination (SA-2). The trainee who has satisfactorily completed training will sit for an examination in Anatomical Pathology (Part I Examination) at the end of Stage 1 (end of Year 1). After satisfactory completion of training in Stage 2 (end of Year 4), the trainee sits the Final exit examination.

Summary of the Examination for all Anatomical Pathology Trainees:

Part	Examinations	When	Components	Occurrence	Comments
SA-1	Anatomical Pathology (Part I Examination)	End of Stage 1 (end of Year 1)	MCQ, Essay and OSPE	Once per year.	A trainee is allowed a maximum of 2 repeat examinations to pass the Part I examination.
SA-2	Anatomical Pathology (Final Examination)	End of Stage 2 (end of Year 4)	Essay, Practical and Viva Voce	Once per year.	A trainee is allowed a maximum of 4 repeat examinations. The maximum duration permitted for the completion of the entire programme is 7 years.

*SA: Summative Assessment; MCQ: Multiple Choice Question; OSPE: Objective Structured Practical Examination

Maintenance of Trainee Portfolio

The Trainee Portfolio is a compilation of training / learning events and formative assessments activities throughout training. The Trainee Portfolio should contain the following documents:-

- Learning agreements
- Procedure logbook
- **ALL** Workplace Based Assessments
- All research project report progress evaluation reports
- End of Posting evaluation reports
- Proof of attendance of continuing professional development activities

Research Report Progress Evaluations

Research report progress is evaluated SIX (6) monthly. This meeting is attended by trainees in Stage 2 of training, supervisors, and programme coordinators. This exercise aims to identify potential problems and allows for the provision of feedback and suggestions to overcome problems identified. Each evaluation is recorded in a research report progress evaluation form. This form must be kept in the Trainee Portfolio with a copy provided to the office of the programme administrators.

Trainees are required to submit the completed research report SIX (6) months before the Final Examination. A satisfactory completion of a research project is evidenced by a pass assessment of a research report. A pass re-evaluation after remedial action can replace an unsatisfactory/failed initial evaluation.

6. Appendices

Appendix 1. Accredited Training Centres

The list of training centres accredited for Anatomical Pathology Training by the National Conjoint Specialty Committee – Pathology (as of 31st December 2020)

University Centres

Pusat Perubatan Universiti Malaya

Pusat Perubatan Universiti Kebangsaan Malaysia

Hospital Universiti Sains Malaysia

Ministry of Health

Hospital Kuala Lumpur

Hospital Sultanah Aminah, Johor

Hospital Tengku Ampuan Afzan, Kuantan

Hospital Sultanah Nur Zahirah, Kuala Terengganu

Hospital Raja Perempuan Zainab II, Kota Bharu

Hospital Queen Elizabeth, Kota Kinabalu

Hospital Sultanah Bahiyah, Alor Setar

Hospital Pulau Pinang

Hospital Raja Permaisuri Bainun, Ipoh

Hospital Selayang

Hospital Tuanku Ja'afar, Seremban

Hospital Melaka

Hospital Umum Sarawak

Hospital Serdang

Hospital Tengku Ampuan Rahimah, Klang

Private centres

Ramsay Sime Darby Med Centre, Selangor

Appendix 2: Entry Level ELAs

Entry Essential Learning Activity 1		
Activity	Requesting for histopathological/cytopathological examination of samples	
Description (if necessary)		
All items on the table below are examples, they do not constitute an exhaustive list in any aspect		
Knowledge Know, Facts, Information	**Skill** Do, Practical, Psychomotor, Techniques	**Attitudes + Values** Feel, behaviours displaying underlying values or emotions
Able to explain the reasons for histopathological/ cytopathological testing requests and the procedures relevant to the test. Able to describe the importance of correct sample labelling. Able to explain the necessity for obtaining appropriate clinical history to be filled into the request form. Able to explain the procedure and requirements of using the appropriate fixative (type and amount) for samples. Able to describe the safety measures for sample transport.	Ensures the sample is correctly labelled and identified to the correct patient. Able to convey relevant and salient clinical history and findings to the pathologist in the request. Ensures the correct fixative is used and that the amount is sufficient for the sample. Ensures safety issues are not compromised during transport of the sample e.g. leakage of blood, leakage of fixatives, use of hazard labels whenever necessary.	Careful and understands the gravity of non-compliance to standard operating procedures which can affect patient care and safety of colleagues. Careful in ensuring patient confidentially.

Behavioural Markers		
Positive Things that should be done, correct techniques or practices, things a trainee might do right	**Negative** Things that should not be done, incorrect techniques or practices, things a trainee might do wrong	**Negative Passive** Things that may be forgotten or omitted that constitute incorrect or substandard care, things a trainee forgets to do
Diligent in checking that correct and necessary information are conveyed in the request form. Double checking that the request form is correctly matched to the patient sample. Checking that the sample is correctly labelled. Checking that the correct fixative is used for the sample.	Does not correct errors in the request form. Fails to provide relevant clinical history and findings in the request form. Mislabelling of the specimen.	Neglects to take action when a sample has not been despatched to the laboratory at the appropriate time. Fails to act when a sample container is leaking.
Assessment/Evidence		
Workplace transcripts Logbook Supervisor/ referee report Entrance evaluation		

Entry Essential Learning Activity 2		
Activity	Communicating cause of death to kin and arranging for an autopsy	
Description (if necessary)		
All items on the table below are examples, they do not constitute an exhaustive list in any aspect		
Knowledge Know, Facts, Information	**Skill** Do, Practical, Psychomotor, Techniques	**Attitudes + Values** Feel, behaviours displaying underlying values or emotions
Able to describe the basics of cadaveric dissection using an example of at least one autopsy that has been observed. Able to explain the indication for an autopsy, including its contributions and limitations. Able to describe the procedures of arranging for an autopsy. Able to describe the procedures for infection control related to autopsy practice.	Able to explain the need for an autopsy to the next of kin. Able to explain the steps of the procedures in arrangement for an autopsy. Able to convey cause of death to next-of-kin following investigation.	Is empathetic to next-of-kin. Is respectful and helpful in handling of the deceased. Appreciates the contribution of the autopsy to medical knowledge and training.
Behavioural Markers		
Positive Things that should be done, correct techniques or practices, things a trainee might do right	**Negative** Things that should not be done, incorrect techniques or practices, things a trainee might do wrong	**Negative Passive** Things that may be forgotten or omitted that constitute incorrect or substandard care, things a trainee forgets to do
Converses empathetically and patiently with next-of-kin of the deceased. Has no aversion to conducting an autopsy. Anticipates the needs of next-of-kin and offers to help.	Is uncaring in tone and choice of words in conversation with next-of-kin. Unwilling to help when information on funeral arrangements is sought.	Unaware of distress of the next of kin. Avoids contact with next-of-kin.
Assessment/Evidence		
Workplace transcripts Logbook Supervisor/ referee report Entrance evaluation		

Appendix 3. The Medical Specialist Pre-Entrance Examination (MedEx) – Pathology component

The salient features of the Pathology entrance examination are:

1. Two true-false Multiple Choice Question papers relating to understanding of basic anatomical pathology, haematology, chemical pathology, medical microbiology, forensic pathology, medical genetics and immunology.
2. Marking system: A computerised marking system is used. There is negative marking within the question and the minimum score for each question is ZERO (0) i.e. there will be no carryover of negative marks.
3. Selection of candidates for entry into the Master of Pathology programme will be based on the best performing candidates of the year's cohort.

Please refer to the MedEx website for updates on the examination: https://bit.ly/3KVvqoV

Appendix 4: References to Anatomical Pathology Trainee Guides

1. Master of Pathology Guide to Trainees and Trainers, Revised October 2016. National Conjoint Specialty Committee - Pathology.
2. Royal College of Pathologists (UK) Curriculum for Specialty training in Histopathology
   https://bit.ly/3KzXpJC
3. The Royal College of Pathologists of Australasia Trainee Handbook
   https://bit.ly/3pkn9CD

Appendix 5: Summary Knowledge and Skills Syllabi in Anatomical Pathology

Summary of Knowledge and Skills Syllabus Anatomical Pathology	
Topic	
HISTOPATHOLOGY	General Pathology Systemic Pathology Skin Oral Cavity and Oropharynx Mandible and Maxilla Nasal Cavity, Paranasal Sinuses, Nasopharynx Larynx and Trachea Pleura Lung Mediastinum Peritoneum, Retroperitoneum, and Related Structures Thyroid Parathyroid Gland Oesophagus Stomach Small Intestine Appendix Large Intestine Salivary Glands Liver Gallbladder and extrahepatic Bile Ducts Pancreas and Ampullary Region Adrenal Gland and Paraganglia Urinary Tract Male Genitalia Female Genitalia Breast Lymph Nodes Spleen and Bone Marrow Bones and Joints Soft Tissues Cardiovascular System Central Nervous System Eye and Ear Principles of H&E staining Principles of special histochemistry Principles of immuno-histochemistry Principles of immunofluorescence Principles of enzyme histochemistry Principles of specimen fixation, embedding, tissue processing from trimming to slide preparation Principles of laboratory quality management systems Pre-examination of surgical specimens

Summary of Knowledge and Skills Syllabus Anatomical Pathology	
Topic	
	Skills Content
	Pre-examination of surgical specimens Macroscopy Microscopy techniques Post-examination of surgical specimens Laboratory information system (LIS) Macroscopic and microscopic examination • Simple, uncomplicated specimens e.g. products of conception, inflamed appendix, epidermal cysts, nasal polyp, heart valves, fallopian tubes, vas deferens for sterilisation • Diagnostic biopsies that do not require orientation of specimen e.g. trucut, punch, pipelle sampling • Biopsies which require orientation of specimen e.g. skin biopsies • Medium sized specimens which do not require/require minimal excision margin study e.g. gall bladders removed for calculi, benign breast lumps, orchidectomy in prostatic carcinoma, thyroidectomies, simple ovarian cysts, prostatic chips for benign prostatic hyperplasia, diabetic ulcers, uterine fibroids • Medium sized specimens which require careful examination of excision margins e.g. cervical cones, removal of breast lumps with hook wire in-situ
	• Large specimens e.g. laryngectomy, pneumonectomy, simple mastectomy, gastrectomy, gut resection, nephrectomy, TAHBSO, amputated limbs (except for diabetes) • Radical resections requiring study of multiple excision margins and lymph node status e.g. radical neck dissection, mastectomy with lymph node clearance, Whipple's, Wertheim's, vulvectomy with lymphadenectomy • Renal biopsies • Muscle biopsies • Nerve biopsies • Transplants • Medical liver biopsies

Summary of Knowledge and Skills Syllabus Anatomical Pathology	
Topic	
CYTOPATHOLOGY	Cytology preparatory techniques Interpretation Fine needle aspiration cytology (FNA) Use of special stains and special techniques (refer to Histopathology)
BASIC AUTOPSY	Autopsy technique and dissection of organs Written report including gross and microscopic findings and final diagnosis Clinico-pathological correlation Verbal presentation of autopsy findings Special autopsy techniques and stains e.g. Use of relevant clinical information and laboratory data
BASIC MOLECULAR PATHOLOGY	Basic understanding Use of Common molecular techniques in histopathological samples
FOUNDATION HAEMATOLOGY	Basic understanding Practical understanding of use of Haematology techniques and tests
FOUNDATION MEDICAL MICROBIOLOGY	Basic understanding Practical understanding of use of microbiology techniques and tests
FOUNDATION CHEMICAL PATHOLOGY	Basic understanding Practical understanding of use of Chemical Pathology techniques and tests

Glossary of Terms

APC	Annual Practicing Certificate
CBD	Case-Based Discussion
CPath-AMM	College of Pathologists, Academy of Medicine of Malaysia
CPD	Continuous Professional Development
DOPS	Directly Observed Practical Skills
ECE	Evaluation of Clinical Events
ECSMQ	Evaluation Committee for Specialist Medical Qualifications
ELA	Essential Learning Activities
FRCPA	Fellow of the Royal College of Pathologists of Australasia
FRCPath	Fellow of the Royal College of Pathologists, United Kingdom
JBILP	Jawatankuasa Bersama Ijazah Lanjutan Perubatan
JBSP	Jawatankuasa Bersama Sarjana Perubatan - Patologi
MCQ	Multiple Choice Questions
MedEx	Medical Specialist Pre-Entrance Examination
MMC	Malaysian Medical Council
MOD	Ministry of Defence
MOH	Ministry of Health
MOHE	Ministry of Higher Education
MSF	Multi-source Feedback
NPMC	National Postgraduate Medical Curriculum
NSR	National Specialist Register
OSPE	Objective Structured Practical Examination
SA	Summative Assessment
SPM	Sijil Pelajaran Malaysia
UKM	Universiti Kebangsaan Malaysia
UM	Universiti Malaya
UPM	Universiti Putra Malaysia
USM	Universiti Sains Malaysia
UiTM	Universiti Teknologi MARA
WBA	Workplace-based assessment

Contact

National Postgraduate Medical Curriculum
npmcmy@gmail.com

e ISBN 978-967-0023-04-5