

# Forensic Pathology Postgraduate Training in Malaysia



GUIDE FOR APPLICANTS

VERSION 1, 2023

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

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 Forensic 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).

## 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 single-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 Forensic Pathology

The NPMC for Forensic Pathology is intended to be applicable to the training of Forensic

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# Introduction

## Purpose of this guide

The purpose of this guide is to inform prospective applicants seeking a career in Forensic Pathology. It summarises the key aspects of the Forensic 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 Forensic Pathology

Forensic Pathology focuses on determining the cause of death by examining a corpse and is an application of medical jurisprudence. A forensic pathologist is a medical doctor who has basic training in anatomical pathology and has subsequently undertaken specialised training in forensic pathology. A post mortem is performed by a forensic pathologist, usually during the investigation of criminal law cases, and civil law cases in some jurisdictions. Forensic pathologists are also frequently asked to confirm the identity of a corpse.

Apart from clinical duties, Forensic Pathologists also work closely with scientific and technical staff in the supervision and management of the laboratory department.

## The Role of a Forensic Pathologist

The forensic pathologist performs autopsies to determine the cause and manner of death of the deceased. The autopsy report contains an opinion about the pathological process, injury, or disease that directly results in or initiates a series of events that lead to a person's death (also called the mechanism of death), the manner of death, the circumstances surrounding the cause of death, such as homicide, accidental, natural, suicide and undetermined. The autopsy also provides an opportunity for other issues raised by the death to be addressed, such as the collection of trace evidence or determining the identity of the deceased.

The forensic pathologist examines and documents wounds and injuries, at autopsy, at the scene of a crime and occasionally in a clinical setting, such as rape investigation or deaths in custody. Forensic pathologists collect and examine tissue specimens under the microscope (histology), to identify the presence or absence of natural disease and other microscopic findings. They collect and interpret toxicological specimens of body tissues and fluids to determine the chemical cause of accidental overdoses or deliberate poisonings. Forensic pathologists work closely with the medico-legal authority for the area concerned with the investigation of sudden and unexpected deaths i.e. the police. They serve as expert witnesses in courts of law testifying in civil or criminal law cases.

## Size of the Specialty

As of October 2022, there were a total of 892 pathologists registered on the NSR of which 48 are listed under Forensic Pathology. The projected number of Forensic Pathologists required by 2030 for the MOH, the main stakeholder, is 120. Furthermore, the increase in the number of teaching hospitals, private hospitals and laboratories and Ministry of Defence hospitals will also increase the demand for Forensic Pathologists. In recent years, the number of deaths due to fatal infectious outbreak such as Covid-19, has significantly expanded the scope and pivotal roles of Forensic Pathologists, further contributing to the increased demand. Considering all these factors, it is apparent that there is a major shortfall of Forensic Pathologists in Malaysia, especially when compared to countries such as Australia and the United Kingdom.

## Unique features of Forensic Pathology

Forensic pathology is the subspecialty of pathology that focuses on medico-legal investigations of sudden or unexpected death. Forensic pathologists have a critical and pivotal

role in death investigation, examining the body of the deceased to define the cause of death, factors contributing to death and to assist with the reconstruction of the circumstances in which the death occurred. As with all medical consultations the diagnostic process involves the forensic pathologist integrating evidence from the deceased's medical history, the supposed circumstances surrounding the death, the findings of post-mortem medical examination (autopsy), and the results of laboratory investigations undertaken as part of the autopsy. A post-mortem examination typically involves careful examination and documentation of the appearance of the body of the deceased and dissection of internal organs and structures.

A sound knowledge of normal anatomical findings and variants as well as anatomical pathology (including normal histological appearances and variants), is essential, particularly as microscopic assessment of body tissues is often needed to enable a precise diagnosis. Forensic pathologists work closely with other death investigators including coroners, police and forensic scientists, they may be required to attend scenes of death and are often required to testify in court.

### **Why choose Forensic Pathology as a career?**

As a Forensic Pathologist you will be amongst the few who will be engaged in/have the opportunity for:

- A close collaboration with range of agencies and individuals as well as government and non-government organisations including law enforcement agencies, courts, state department of health, legal practitioners, medical practitioners, insurance agencies, and private and public organisations.
- Provide 'Medico-Legal Death Investigation' services by providing expert opinions in the fields of forensic pathology, clinical forensic medicine and forensic science in Malaysia.
- A fast-developing field of medicine with rapidly progressing knowledge that integrates laboratory and clinical medicine.

- Research on the vast amount of archived case material in Forensic Pathology.

Forensic pathology is the work that is carried out to provide scientific and medical pathology information to the courts. It includes helping police, magistrates, the criminal courts and sometimes the civil courts in resolving critical medical issues, largely based around individuals who have died. Forensic pathologists focus on autopsies; the examination of deceased people with the intention of determining the causes of death and what those causes of death mean for the community.

It is important to realise forensic pathologists don't just work with the dead. They work with and for the living, the families and loved ones of those who have died. Many families actually want to meet the person who last looked after their loved one. Much of the work carried out by forensic pathologists is looking for patterns and trends in causes of death to identify hazards in the community that can be prevented in the future. They provide that information to the Ministry of Health, who can evaluate the death statistic, and make recommendations that can be put in place to prevent similar deaths in the future. In fact, a large part of a forensic pathologist's role is to be a public health specialist.

# 1. The Forensic Pathology Programme

## Training Pathways

Currently, the Master of Pathology (Forensic 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 Forensic 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 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 1 FRCPA examination.

## Stages of Training

The Forensic Pathology 4-year programme is divided into two stages: Stage 1 and Stage 2. The programme focusses on the spiral acquisition of specialised knowledge and practical skills in forensic 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 forensic pathologist.

Stage 1 is of ONE (1) year in duration and focusses on foundational knowledge and practical skills in forensic pathology, which must be sound enough for the trainee to build upon as they enter into the more patient-centred and practice-focussed training of Stage 2. In summary, the trainee will attend an Orientation programme, undergo a one-

month foundation posting rotation to each of the other major specialties of Pathology, namely: Anatomic Pathology, Haematology, Medical Microbiology and Chemical Pathology, to familiarise themselves with the workings of these other specialties of Pathology. The trainee will undergo supervised competency-based training in Forensic Pathology for the rest of Stage 1. At the end of Stage 1, the trainee who has satisfactorily completed training will sit for an examination in Forensic Pathology (Part 1 Examination).

Stage 2 is of THREE (3) years duration, (years 2, 3 and 4), of the programme focusses on the spiral acquisition of specialised knowledge and practical skills in forensic pathology through handling of increasingly complex clinical cases. The trainee will undergo supervised competency-based training in Forensic Pathology with the aim of progression to Level 5 competence, and concurrent with this is the development of professional behaviour, conduct and character to achieve the competence level of a forensic pathologist. Some subspeciality areas will be introduced at this stage, including Forensic Toxicology, Forensic Anthropology, Forensic Odontology, Firearm Ballistic, Barotrauma and Aviation Medicine.

In Stage 2, the trainee will also be introduced to research methodology, data analysis and writing a research report/dissertation. With the guidance of the supervisors (academic/clinical/adjunct), the trainee will plan and undertake a research project and write up a research report/dissertation. To facilitate understanding of research methodology, all training universities will conduct a research methodology course and all trainees are required to attend the course.

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

Candidates wishing to apply for 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.

Applicants generally fall into the following groups:

1. MOH sponsored.
2. Non-MOH, government sponsored (e.g. Ministry of Defence).
3. Other sponsored trainees (e.g. sponsored by university or institutions).

### Essential criteria

Candidates who wish to pursue postgraduate training in Forensic Pathology have to meet the following requirements:

Component	Entry Requirement	Evidence
Medical Degree registrable with Malaysian Medical Council (MMC)	<b>Mandatory</b>	Original certificate
Full Registration with MMC	<b>Mandatory</b>	Certificate of registration
Clinical Experience	<b>Mandatory</b> 3 years of clinical experience (2 years housemanship and 1-year post housemanship) 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 in Forensic Pathology.	Authorised service record
Valid Annual Practising Certificate (APC)	<b>Mandatory</b>	Certificate
Clinical Skills and Knowledge as per Entry Essential Learning Activities (ELA)	<b>Mandatory</b>	Demonstrate the relevant knowledge, skills and attitudes as per the entry ELAs Letters of reference (Supervisor Letter)
Entrance Evaluation	<b>Mandatory</b>	Satisfactory performance

Component	Entry Requirement	Evidence
Additional requirements for International Candidates		
Good Standing	<b>Mandatory</b>	Letter of Good Standing from the Medical Council of country of current practice
Temporary Practice Certificate (TPC) or APC from MMC	<b>Mandatory</b>	Certificate
Clinical or laboratory attachment for a minimum of 3 months before joining the Pathology training programme	<b>Mandatory</b>	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)	<b>Mandatory</b>	Test of English as a Foreign Language (TOEFL) or other relevant transcripts which meets 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 Forensic Pathology. The Entry ELAs have been selected to represent the typical and basic day-to-day work in Forensic Pathology. 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 Forensic Pathology training:

ELA 1	Obtaining a general forensic history taking of the deceased.
ELA 2	Obtaining samples for forensic investigation.
ELA 3	Conducting an autopsy and communicating cause of death to next of kin.

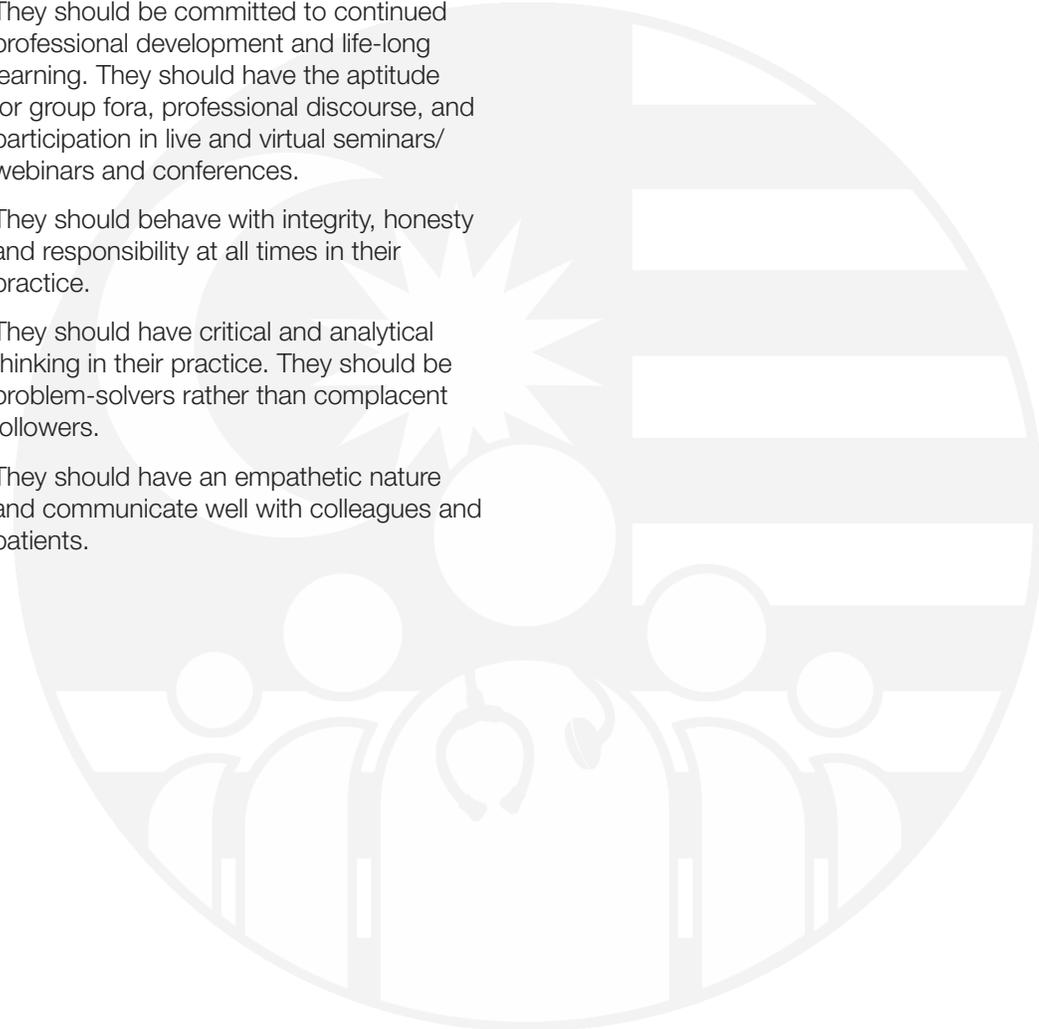
\*The list of entry ELAs is not exhaustive and may be updated according to programme requirements.

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

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## Personal Qualities

- Applicants should have an inclination for pathophysiology of diseases. They should have an interest in relating the laboratory investigations with the clinical history and other investigations to arrive at a diagnosis and in aiding patient management.
- 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 fora, 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 Forensic Pathology).

Candidates apply online either to the university of their choice (non-MOH, private Malaysian and international candidates), or through the Ministry of Health of Malaysia (MOH sponsored candidates). (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 and University sponsored candidates:**

Applications must be made to the Training Management Division, MOH or respective university. To be eligible for sponsorship from Ministry of Health (MOH), candidates must be currently serving in MOH and free from any disciplinary action by any health regulatory bodies. Any further enquiries should be directed to the Training Management Division, MOH.

### Essential Criteria

Event	Process
Document compilation	<p>Applicants must compile the following documents for presentation:</p> <ul style="list-style-type: none"> <li>• Sijil Pelajaran Malaysia (SPM) or its equivalent and any other pre-university certificates as evidence of education level</li> <li>• Basic medical degree certification</li> <li>• Certificate of registration with the MMC</li> <li>• Curriculum vitae with details of work experience</li> <li>• Evidence of previous training records</li> </ul>
<b>Application</b>	
MOH-sponsored candidates	<p>Applications can be made online at <a href="https://rb.gy/b2p3p">https://rb.gy/b2p3p</a></p> <p>Applications for pre-entrance evaluation are available at <a href="https://shorturl.at/eqvZ9">https://shorturl.at/eqvZ9</a></p>
Non-MOH sponsored candidates	<p>Applications can be made online at the postgraduate studies web link of the respective universities.</p>
<b>Entrance Evaluation</b>	<p>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.</p>

Event	Process
<b>Shortlisting</b>	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.
<b>Outcome</b>	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.
<b>Orientation</b>	Successful candidates will attend an Orientation/ Induction Programme at the respective training universities at the commencement of the academic year.

### 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.

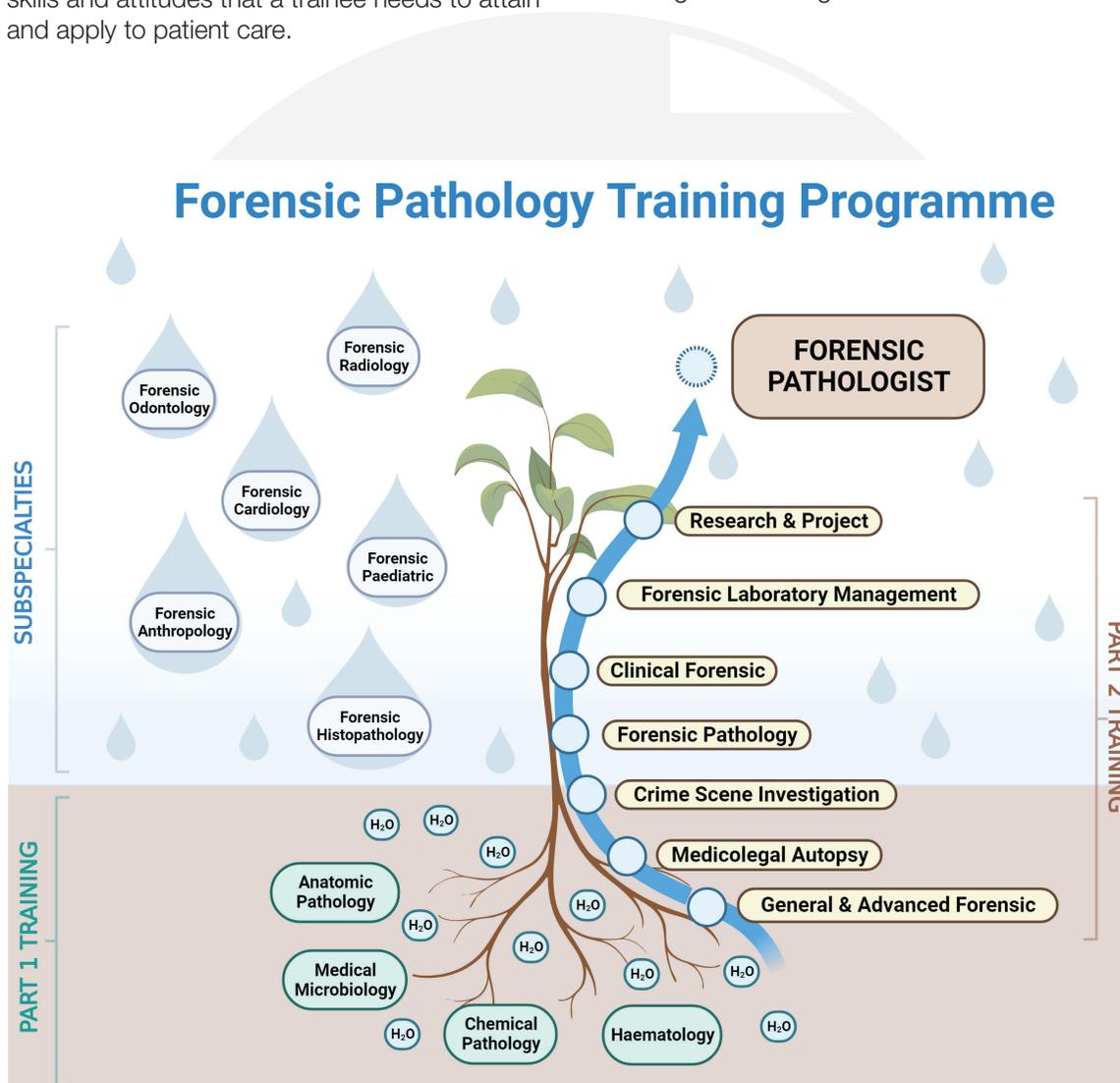


Figure 1: The water uptake and transpiration process illustrates the relationship between various domains in the Forensic Pathology training programme, incorporating foundation, core and subspecialty areas.

The syllabus is based on supervised competency-based training in Forensic 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 Forensic Pathologist.

The syllabus is extensive. While acquiring knowledge, skills and professional values to function as a competent Forensic Pathologist, the trainee will not only be exposed to core areas of Forensic Histopathology, Forensic Anthropology, Forensic Cardiology, Paediatric Forensic Pathology, Forensic Radiology and Forensic Odontology, 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 training guidebooks of the Master of Pathology Programmes and the Royal Colleges of Pathologists of Australasia 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 focuses on foundational knowledge and practical skills in Forensic Pathology. This must be sound enough as the basis on which to build on, prior to entry into the more 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, which must be satisfactorily passed in order to progress to Stage 2.

Stage 2 (years 2, 3 and 4) of the programme focuses on the spiral acquisition of specialised knowledge and practical skills in Forensic Pathology through the handling of increasingly complex medicolegal cases. Concurrent with this is the development of professional behaviours, conduct and character to achieve the competence level required of a specialist

Forensic Pathologist. There is a formal Part II (Final) examination at the end of Stage 2 that 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

### Knowledge and Skills Syllabus

The syllabus broadly covers THREE (3) major focus areas; clinical, technical and management aspects of Forensic Pathology, in which the trainee must progress in both knowledge and skills throughout the training programme.

Focus Areas	Topics
Theoretical aspects	<ul style="list-style-type: none"> <li>• Crime scene examination</li> <li>• Death due to heat and burn</li> <li>• Death due to natural causes</li> <li>• Death related to sexual assault</li> <li>• Abortion, infanticide and maternal death</li> <li>• Forensic aspects of non-accidental injury</li> <li>• Electrocution</li> <li>• Expert witness and court procedures</li> <li>• Forensic post-mortem and certification of death</li> <li>• Forensic toxicology</li> <li>• Gunshot and explosion deaths</li> <li>• Identification</li> <li>• Injuries and wounds</li> <li>• Introduction of forensic pathology</li> <li>• Mass disaster</li> <li>• Negligence and anesthetic death</li> <li>• Post-mortem changes</li> <li>• Road traffic accident</li> <li>• Asphyxial death and drowning</li> <li>• Laboratory management including laboratory systems, leadership, management, communication, quality management systems, biosafety and biosecurity, disease surveillance and outbreak investigation, emergency preparedness, response and recovery and research</li> </ul>
Technical aspects	<ul style="list-style-type: none"> <li>• Autopsy technique and dissection of organs</li> <li>• Neck dissection for hanging and strangulation cases, gunshot wound cases, stab/ slashed/ incised wounds</li> <li>• Written reports including gross and microscopic findings and final diagnosis</li> <li>• Clinico-pathological correlation</li> <li>• Verbal presentation of autopsy findings</li> <li>• Special autopsy techniques and stains e.g.               <ul style="list-style-type: none"> <li>• Demonstration of pneumothorax</li> <li>• Demonstration of oesophageal varices</li> <li>• Demonstration of cerebral aneurysm</li> <li>• Demonstration of coronary artery narrowing</li> <li>• Histopathology stains (PAS, Oil Red O, Congo Red, Sudan Black, Grocott, AFB)</li> </ul> </li> <li>• Use of relevant clinical information and laboratory data</li> </ul>

## Learning outcomes

### Stage 1

1. To apply basic theoretical knowledge in General and Forensic Pathology.
2. To apply basic competence in the macroscopic and microscopic examination, interpretation and reporting of “non-complex” histopathology cases.
3. To perform basic competence in the conduct of non-complicated autopsies.
4. To apply the basic understanding of other specialties i.e. Anatomical Pathology, Haematology, Medical Microbiology and Chemical Pathology in relation to Forensic Pathology
5. To apply basic knowledge in laboratory management including laboratory organisation, quality control and laboratory safety.
6. To relate the medico-legal implications in Forensic Autopsy Reports.

### Stage 2

1. To integrate the appropriate competencies in performing forensic autopsies and justify the autopsy findings.
2. To integrate the appropriate competencies in interpreting the scene of the crime and justify with the autopsy findings.
3. To design the management and organisation competencies for the Forensic Pathology laboratory services.
4. To develop appropriate competencies in the planning, conduct and write-up of a simple research project.
5. To develop the quality assurance and implement laboratory management including laboratory organisation, quality control and laboratory safety.
6. To practice as a competent forensic pathologist in training and in medicolegal consultations.

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

A full description of the Syllabus and the competency level for each stage is included in Appendix 5.

## 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

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## Research syllabus

Forensic Pathologists must be trained in applying the principles of evidence-based medicine in forensic practice in order to be competent in serving the law and justice, whilst accounting for local resources and cultural expectations.

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

The research syllabus consists of the following:

<p><b>Clinical research design</b></p> <ol style="list-style-type: none"> <li>1. Understanding the value of clinical research</li> <li>2. Formulating the research question                             <ul style="list-style-type: none"> <li>• literature review</li> <li>• tools for managing your references</li> </ul> </li> <li>3. Choosing the right study design for the research question</li> <li>4. Assessing feasibility</li> <li>5. Ethics approval - considerations and the application process</li> <li>6. Funding – sourcing, application and increasing their chances of success</li> </ol>
<p><b>Statistics and other methods of data analysis</b></p> <ol style="list-style-type: none"> <li>1. Quantitative methods</li> <li>2. Qualitative methods</li> <li>3. Sample size and power calculation</li> <li>4. Sampling methods</li> </ol>
<p><b>Good clinical practice</b></p> <ol style="list-style-type: none"> <li>1. Defining Good Clinical Practice</li> <li>2. Collaborators’ roles in clinical research                             <ul style="list-style-type: none"> <li>• investigator-initiated studies</li> <li>• sponsor-initiated studies</li> </ul> </li> <li>3. Institutional research boards (IRB) and institutional ethics committees (IEC)</li> <li>4. Protocol deviations</li> <li>5. Informed consent</li> <li>6. Safety management</li> </ol>

### **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 Forensic Pathology training. Formative and summative assessments are carried out to assess all domains in which the modern Forensic 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 as a precursor to progressing to the next phase 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, Chemical Pathology and Anatomical 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 repeat the training placement.
3. Trainees must obtain a "Satisfactory" grade for these placements immediately preceding the date of the Part I examination. Failure to obtain a "Satisfactory" grade for these placements 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.
4. The trainee will undergo supervised competency-based training in Forensic Pathology for the remainder of Stage 1.

Trainees are required to pass the Part I examinations before progressing to Stage 2.

#### Stage 2

1. The trainee will undergo supervised competency-based training in Forensic Pathology with the aim of progressing to Level 5 competence. Some subspecialty areas will be covered at this stage, including Forensic Histopathology, Forensic Anthropology, Paediatric Forensic Pathology, Forensic Cardiology, Forensic Neurology, Forensic Radiology and Forensic Odontology.
2. Trainees are also required to complete and submit a research report SIX (6) months prior to the Final examination.
3. The satisfactory completion of a research project is evidenced by a pass assessment of a research report. A pass re-evaluation after remedial action can supersede an unsatisfactory/failed initial evaluation.

Trainees are required to pass the Final (exit) examinations to complete the training programme.

### Formative Assessments

Formative assessments in Forensic 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 Forensic Pathology Autopsy Assessment (FPAA), Directly Observed Practical Skills (DOPS), Case-Based Discussion (CBD) as well as Observed Professional Activity (OPA).

The assessment methods for WBAs include:

WBA		Description
FPAA	Forensic Pathology Autopsy Assessment	FPAA is an assessment of the ability to perform a forensic autopsy and give diagnostic opinions on the full range of issues and cases encountered by a specialist forensic pathologist in daily practice.
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.
OPA	Observed Professional Activity	The purpose is to indicate the trainee's ability to perform a range of professional activities that are required of forensic pathologists. OPA assessments provide feedback to trainees regarding their progress by highlighting strengths and areas for improvement.

Summary of the Assessment Strategy for all Forensic 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	FPAA DOPS CBD OPA	Minimum 1 DOPS and 1 FPAA every 3 months  Minimum 1 CBD and 1 OPA every 4 months	Minimum 4 DOPS and 4 FPAAs every year (years 2-4)  Minimum 3 CBDs and 3 OPAs every year	Minimum 12 DOPS and 12 FPAA  Minimum 9 CBDs and 9 OPAs	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

Summary of the Examination for all Forensic Pathology Trainees:

Part	Examinations	When	Components	Occurrence	Comments
I (SA-1)	Forensic 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.
II (SA-2)	Forensic 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:

- Autopsy logbook
- ALL WBAs
- All research report progress evaluations
- End of Posting evaluation reports
- Proof of attendance of CPD activities

and allow for the provision of feedback and suggestions to overcome any 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 (exit) 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 supercede an unsatisfactory/failed initial evaluation.

### Research Report Progress Evaluations

Research report progress is evaluated SIX (6) monthly. This meeting is attended by trainees, supervisors, and programme coordinators in Stage 2 of training. Progress evaluation meetings aim to identify potential problems

## 6. Appendices

### Appendix 1: Accredited Training Centres

#### The list of training centres accredited for Forensic Pathology Training by the National

Conjoint Specialty Committee – Pathology (as of 31<sup>st</sup> December 2020)

##### University Centres

Pusat Perubatan Universiti Malaya  
Pusat Perubatan Universiti Kebangsaan  
Malaysia  
Hospital Universiti Teknologi MARA

##### Ministry of Health

Hospital Kuala Lumpur  
Hospital Tengku Ampuan Rahimah, Klang  
Hospital Serdang  
Hospital Sg Buloh  
Hospital Sultanah Aminah, Johor  
Hospital Tengku Ampuan Afzan, Kuantan  
Hospital Pulau Pinang  
Hospital Raja Permaisuri Bainun, Ipoh  
Hospital Tuanku Ja'afar, Seremban  
Hospital Queen Elizabeth, Sabah



## Appendix 2: Entry Level ELAs

All items on the tables below are examples, and they do not constitute an exhaustive list in any aspect.

Entry Essential Learning Activity 1		
<b>Activity</b>	Obtaining a general forensic history taking of the deceased.	
<b>Description (if necessary)</b>	Antemortem history taking from the investigating police officer, next-of-kin or acquaintance.	
All items on the table below are examples, they do not constitute an exhaustive list in any aspect		
<b>Knowledge</b> <i>Know</i> , Facts, Information	<b>Skill</b> <i>Do</i> , Practical, Psychomotor, Techniques	<b>Attitudes + Values</b> <i>Feel</i> , behaviours displaying underlying values or emotions
Able to demonstrate the importance of a complete background history prior to autopsy.	Prepare a history summary from the next-of-kin or acquaintance.	Explain the autopsy procedure to the relative to alleviate guilt amongst family members and offering reassurance.
Able to explain the importance of autopsy to the relatives.	Prepare a report on information obtained from the investigating police officer to assist in the autopsy.	Demonstrate empathy and respect to the next-of-kin especially in cases with religious sensitivities.
Behavioural Markers		
<b>Positive</b> Things that should be done, correct techniques or practices, things a trainee might do right	<b>Negative</b> Things that should not be done, incorrect techniques or practices, things a trainee might do wrong	<b>Negative Passive</b> Things that may be forgotten or omitted that constitute incorrect or substandard care, things a trainee forgets to do
Performing with a systematic approach in collecting information from the relative regarding past medical illness and other related history.	Failure to obtain important information during history taking.	Failure to obtain a complete history from the family and acquaintances in an autopsy.
Providing directions to the police on the collection of evidence for forensic investigation.	Failure to explain to the family on the standard operating procedure of an autopsy.	Failure to show empathy and respect to the next-of-kin and relatives.
Assessment/Evidence		
Logbook		
Report from the supervisor at their workplace in the hospital, prior to entering the programme.		

Entry Essential Learning Activity 2		
<b>Activity</b>	Obtaining samples for forensic investigation.	
<b>Description (if necessary)</b>		
All items on the table below are examples, they do not constitute an exhaustive list in any aspect		
Knowledge <u>Know</u> , Facts, Information	Skill <u>Do</u> , Practical, Psychomotor, Techniques	Attitudes + Values <u>Feel</u> , behaviours displaying underlying values or emotions
<p>Able to discuss the reasons for laboratory testing requests and the procedures relevant to the test.</p> <p>Able to describe the importance of correct sample labelling and sealing to maintain a chain of custody.</p> <p>Able to explain the necessity for obtaining the appropriate clinical history to be filled in on the request form.</p> <p>Able to describe the safety measures for transportation of sample.</p>	<p>Able to collect the appropriate samples in suitable containers with appropriate fixatives for forensic investigation.</p> <p>Ensures the sample is correctly labelled, sealed, identified to the deceased person and handed over to the investigating police officer.</p> <p>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.</p>	<p>Careful and understands the gravity of non-compliance to standard operating procedures which can affect the chain of custody and safety of colleagues and police officers.</p> <p>Careful in ensuring a record of chain of evidence is maintained.</p>
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
<p>Diligent in checking that the correct and necessary information is conveyed on the request form.</p> <p>Double checking that the request form is correctly matched to the deceased's sample.</p> <p>Checking that the sample is correctly labelled.</p> <p>Checking that the correct fixative is used for the sample.</p>	<p>Fails to collect appropriate samples during autopsy.</p> <p>Fails to provide relevant information on the request form.</p> <p>Mislabelling of the specimen.</p>	<p>Ignores taking action when a sample has not been despatched to the laboratory at the appropriate time.</p> <p>Disregards acting when a sample container is leaking.</p>
Assessment/Evidence		
<p>Workplace transcripts</p> <p>Logbook</p> <p>Supervisor/ referee report</p> <p>Entrance evaluation</p>		

Entry Essential Learning Activity 3		
<b>Activity</b>	Conducting an autopsy and communicating cause of death to next of kin.	
<b>Description (if necessary)</b>		
All items on the table below are examples, they do not constitute an exhaustive list in any aspect		
<b>Knowledge</b> <u>Know</u> , Facts, Information	<b>Skill</b> <u>Do</u> , Practical, Psychomotor, Techniques	<b>Attitudes + Values</b> <u>Feel</u> , behaviours displaying underlying values or emotions
<p>Able to describe on basic autopsy procedures.</p> <p>Able to explain the indication for an autopsy, including its contributions and limitations.</p> <p>Able to describe the procedures for infection control related to autopsy practice.</p>	<p>Able to explain the need for an autopsy to the next of kin.</p> <p>Able to explain the steps of the procedures for an autopsy.</p> <p>Able to convey cause of death to next-of-kin following investigation.</p>	<p>Is empathetic to next-of-kin.</p> <p>Is respectful and helpful in handling of the deceased.</p> <p>Appreciates the contribution of the forensic autopsy to medical knowledge and training.</p>
Behavioural Markers		
<b>Positive</b> Things that should be done, correct techniques or practices, things a trainee might do right	<b>Negative</b> Things that should not be done, incorrect techniques or practices, things a trainee might do wrong	<b>Negative Passive</b> Things that may be forgotten or omitted that constitute incorrect or substandard care, things a trainee forgets to do
<p>Converses empathetically and patiently with next-of-kin of the deceased.</p> <p>Has no aversion to conducting an autopsy.</p> <p>Anticipates the needs of next-of-kin and offers to help.</p>	<p>Is uncaring in tone and choice of words in conversation with next-of-kin.</p> <p>Unwilling to help when information on funeral arrangements is sought.</p>	<p>Oblivious of specific autopsy procedures.</p> <p>Disregards to discuss autopsy findings and cause of death with next-of-kin.</p>
Assessment/Evidence		
<p>Workplace transcripts</p> <p>Logbook</p> <p>Supervisor/ referee report</p> <p>Entrance evaluation</p>		

### **Appendix 3: The Medical Specialist Pre-Entrance Examination (MedEx) – Pathology component**

The salient features of the MedEx - Pathology are:

- a. TWO (2) true-false MCQ papers relating to the understanding of basic Anatomical Pathology, Haematology, Chemical Pathology, Medical Microbiology, Forensic Pathology, Medical Genetics and Immunology.
- b. 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.
- c. 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://rb.gy/i58dv>

### **Appendix 4: References to Forensic Pathology Trainee Guides**

1. Master of Pathology Guide to Trainees and Trainers, Revised October 2016. National Conjoint Specialty Committee - Pathology.
2. The Royal College of Pathologists of Australasia Trainee Handbook 2022 for Forensic Pathology <https://rb.gy/3phg0>



## Appendix 5: Knowledge and Skills Syllabi in Forensic Pathology

Summary of Syllabus in Forensic Pathology	
Topic	Content
Forensic pathology	<ul style="list-style-type: none"> <li>• The Forensic Autopsy</li> <li>• The Pathophysiology of Death</li> <li>• The establishment of identity of human remains</li> <li>• The pathology of wounds</li> <li>• Head and spinal injuries</li> <li>• Self-inflicted injury</li> <li>• Gunshot and explosion deaths</li> <li>• Transportation injuries</li> <li>• Torture: deaths in custody</li> <li>• Burns and scalds</li> <li>• Electrical fatalities</li> <li>• Complication of injury</li> <li>• Suffocation and asphyxia</li> <li>• Fatal pressure on neck</li> <li>• Immersion deaths</li> <li>• Neglect, starvation and hypothermia</li> <li>• Deaths associated to sexual offences</li> <li>• Deaths associated to pregnancy</li> <li>• Infanticide and stillbirth</li> <li>• Sudden death in infancy</li> <li>• Fatal child abuse</li> <li>• Deaths associated with surgical procedures</li> <li>• Dysbarism and barotrauma</li> <li>• The pathology of sudden death</li> <li>• Forensic dentistry for the pathologist</li> <li>• Poisoning and the pathologist</li> <li>• Forensic aspects of alcohol</li> <li>• Carbon monoxide poisoning</li> <li>• Poisoning by medicines</li> <li>• Death from narcotic and hallucinogenic drugs</li> <li>• Corrosive and metallic poisoning</li> <li>• Death from organic solvents</li> </ul>

# Glossary of Terms

APC	Annual Practicing Certificate
BPL	Bahagian Pengurusan Latihan (Training Management Division)
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 Pathologist, United Kingdom
HO	House Officer
JBILP	Jawatankuasa Bersama Ijazah Lanjutan Perubatan
JBSP	Jawatankuasa Bersama Sarjana Perubatan - Patologi
MCQ	Multiple Choice Questions
MEC	Medical Education Committee
MedEx	Medical Specialist Pre-Entrance Examination
MMC	Malaysian Medical Council
MO	Medical Officer
MOD	Ministry of Defence
MOH	Ministry of Health
MOHE	Ministry of Higher Education
MQA	Malaysian Qualifications Agency
MQF	Malaysian Qualifications Framework
MSF	Multi-source Feedback
NPMC	National Postgraduate Medical Curriculum
NSR	National Specialist Register
OSPE	Objective Structured Practical Examination
PEO	Programme Educational Objectives
PLO	Programme Learning Outcomes
QAD	Quality Assurance Division of the Ministry of Higher Education
SA	Summative Assessment
SPM	Sijil Pelajaran Malaysia
SSCs	Specialty Sub-Committees
UKM	Universiti Kebangsaan Malaysia
UM	Universiti Malaya
UPM	Universiti Putra Malaysia
USM	Universiti Sains Malaysia
UiTM	Universiti Teknologi MARA
WBA	Workplace-based assessment

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