

(A) INTRODUCTION

Definition

The following is the outline of a structured, seamless post-graduate training programme in forensic pathology. It is intended to provide basic guidance to forensic trainees undergoing specialist training at the Forensic Medicine Division, Health Sciences Authority, up to the acquisition of a recognised consultancy (ie "exit") qualification.

Objective(s) of Training

This programme will be reviewed, periodically, to meet the increasing and changing demands of forensic medical practice and advances in forensic medicine.

(B) PROGRAMME OVERVIEW

Traineeship Duration For Seamless Training

5 years

(C) ADMISSION REQUIREMENTS

Entry Criteria/ Pre-requisites

Applicants must fulfill the following entry criteria/ pre-requisites as stated below:

Following qualification as a medical practitioner and completion of their housemanship, trainees (who should be fully, conditionally, or at least temporarily registered with the Singapore Medical Council) must first undergo a 6-month-long posting in forensic pathology at the Health Sciences Authority, so that their aptitude for the discipline may be assessed, prior to their application for a traineeship in this field.

(D) TRAINING SYLLABUS

Training in forensic pathology essentially consists of two phases:

Phase I (Year 1-3)

This preliminary phase consists of two stages:

1. An intensive *one-year initiation* in forensic pathology at the Forensic Medicine Division, with appropriate exposure to the forensic sciences (**Year 1**).

During this time, trainees will acquire the fundamental knowledge and skills related to the practice of forensic pathology. Guidelines for the first 6-months of their training are found in Annex A; the knowledge and skills initially acquired are to be consolidated over the remaining period, during which, trainees should also practise special dissection techniques, such as the removal of the spinal cord; anterior and posterior dissection of the neck; vertebral artery dissection; removal of the vertebrobasilar block; demonstration of the paranasal sinuses; pelvic en-bloc dissection; basic post-mortem radiological techniques (eg. coronary and vertebral artery angiography), etc.

Trainees are expected to read widely, especially about topics listed in Annex B; these subjects are to be integrated into a Continuing Medical Education (CME) Programme as described in Annex C. In addition, candidates are also expected to familiarise themselves with basic histopathology and general pathology, during this time. A basic reading list is found in Annex D.

Where possible, they should also accompany forensic pathologists to scenes of homicides and suspicious deaths, as well as observe (and, if feasible, assist in) the subsequent autopsies, from the fourth month of training onwards.

Trainees should also identify and document Coroner's cases suitable for inclusion in the requisite casebooks stipulated by the relevant examining authorities.

Where possible, trainees should engage or assist in departmental research activities under the supervision of a senior pathologist.

A 1-2-week-long attachment to the forensic science laboratories of the HSA may be arranged at an appropriate time, subject to exigencies of service.

2. A *training attachment of up to 2 years' duration (Year 2-3)* to accredited departments of pathology, for training in histopathology, leading to the successful completion of the FRCPath Part I, or the FRCPA Part I examinations, in order to
 - a. provide trainees with a firm grounding in histopathology, a prerequisite to the effective practice of forensic pathology, and
 - b. enable them eventually to acquire the relevant *consultancy ("exit")* qualifications, namely, the FRCPath or FRCPA in forensic pathology, or some similar qualification.

During this time, forensic trainees will be trained in all aspects of histopathology that are proper to, and necessary for, the acquisition of primary qualifications mentioned above. They will also be given periodic exposure to forensic pathology, ideally amounting to approximately 1 calendar month per year (inclusive of days spent on mortuary duty on Sundays and public holidays).

Extensions of this phase into **Year 4** may be permitted, subject to the approval of the Forensic Subcommittee of the Specialist Committee on Pathology.

Phase II (Year 4-5)

This is a phase of consolidation of the trainee's knowledge and skills in forensic pathology and would normally include a HMDP overseas fellowship for a period not exceeding 2 years.

During the second phase of their training, trainees should, where possible, participate in research activities of their respective host departments, in order to acquire the requisite research skills in forensic medicine.

Variations and flexibility in the precise duration and sequence of these phases is permitted, subject to the approval of the Forensic Pathology Subcommittee.

(E) INSTITUTIONAL REQUIREMENTS (FACILITIES & RESOURCES)

Teaching faculty to trainee ratios:

Minimum:	1:2
Preferred:	1:1

Requirements for facilities for study and training:

1. Access to a well equipped library containing the major reference texts in forensic pathology and the relevant fields of anatomical and systemic pathology.
2. Access to the major international forensic and pathology journals.
3. Comprehensive Internet access.
4. A well equipped and maintained mortuary suitable for the performance of forensic casework, with due attention being paid to the implementation of biosafety measures.
5. Access to comprehensive histological laboratory services.
6. International accreditation as a training centre in forensic pathology (eg by the RCPA).

(F) SUPERVISION OF TRAINEES

All trainees will be supervised by a designated consultant/supervisor but in general all the consultant staff will be duty bound to take an active part in teaching. Medical Officers/Trainees/Registrars are required to work under the supervision of forensic pathologists of the minimum grade of Associate Consultant. Assessment of progress and log should take place at least 6 monthly.

(G) ASSESSMENT AND FEEDBACK

Logbook

All trainees are expected to keep a log book which will be reviewed on a monthly basis by the main supervisor. The log book will have a record of cases managed or consulted. Notes should be made regarding difficult or complicated cases. CME activities should also be recorded.

All other teaching experiences e.g. conferences, seminars, papers presented should also be recorded.

Assessment

Trainees are progressively assessed by their Supervisors, in consultation with Heads of Departments. An assessment must be submitted within one month of completion of each posting.

Formative assessments will be conducted at appropriate times, while summative assessments will be in the form of the FRCPATH or FRCPA Parts I & II examinations.

Feedback

Six-monthly interviews or surveys with the trainees should be conducted to ensure that the training objectives for each rotation have been adequately met, as well as to monitor the occurrence of difficulties encountered in respect of the workload and training activities. Feedback forms should also be provided at the end of each posting, and the programme supervisor is responsible for collating the results and instituting the appropriate changes to the training programmes.

(H) EXIT EXAMINATION

Successful completion the FRCPATH Part II or FRCPA Part II, or the equivalent, in forensic pathology and the completion of the requisite 5-year-long period of training as stipulated above are deemed to be sufficient as exit certification criteria. There is no requirement for a further exit examination.

(I) GENERAL GUIDELINES

Please refer to Annex E for General JCST Guidelines on the following :

- Leave Guidelines
- Training Deliverables
- Retrospective Recognition
- Changes to Training Period
- Part-time Training
- Overseas Training
- Withdrawal of Traineeship
- Exit Certification

(J) APPLICATION FOR SEAMLESS TRAINEESHIP

Eligible doctors may enquire with the Joint Committee on Specialist Training (JCST) Secretariat on the next Seamless intake exercise.

Shortlisted applicants will be required to attend an interview.

All successful applicants will be issued with an offer letter of traineeship and are required to revert with their acceptance of traineeship offer to JCST. All successful applicants must be formally registered as a Trainee with the JCST Secretariat prior to commencement of traineeship.

GUIDELINES FOR MEDICAL OFFICERS/TRAINEES/REGISTRARS

1. The following guidelines apply to
 - (a) Medical Officers undergoing a 6-month-rotation in forensic medicine;
 - (b) trainees in histopathology (including Registrars), during their forensic attachment; and
 - (c) trainees in forensic pathology (including Registrars).

2. Whilst attached to the Forensic Medicine Division, all medical officers, irrespective of their status, should
 - (a) consider their exposure to forensic and Coroner's casework as an integral part of their post-graduate training;
 - (b) fully participate in the requisite professional work, in accordance with their level of competence;
 - (c) avail themselves of all related professional and academic activities and
 - (d) be prepared to undertake other tasks which may be assigned to them, such as assisting in research and simple administrative procedures.

3. Medical Officers/Trainees/Registrars are required to work under the supervision of forensic pathologists of the minimum grade of Associate Consultant.

4. All Medical Officers/Trainees/Registrars must ensure that their
 - (a) autopsy, histological and other findings, if any, and
 - (b) autopsy and histopathology reports and other official correspondence, arising from forensic casework,are endorsed and countersigned, respectively, by forensic pathologists of the minimum grade of Associate Consultant.

Outline of Work Structure/Training Milestones

Period	Cumulative Tasks/Skills
Week 1	<ol style="list-style-type: none">1. Review police reports (NP303) and medical records pertaining to Coroner's cases, in order to assist Field Coroner in determining their proper disposition (ie. whether an autopsy is required).*2. Certify causes of death and perform external examinations of bodies in ("signed-up") cases where an autopsy is not required.*3. Observe and learn evisceration and post-mortem techniques.
Weeks 2-4	<ol style="list-style-type: none">4. Acquire autopsy skills, including basic evisceration techniques. Autopsies to be restricted to cases of death from natural causes.5. Acquire basic skills in histological diagnosis.
2nd Month	<ol style="list-style-type: none">6. Perform autopsies on straight-forward, unnatural deaths, such as simple falls, falls from a height and drowning.
3rd Month	<ol style="list-style-type: none">7. Enlarge scope of autopsies to include simple road, industrial and domestic accidents; drug overdose/poisoning; uncomplicated perinatal, infant and paediatric deaths.
4th-6th Month	<ol style="list-style-type: none">8. Progressively attempt autopsies on cases of suicidal hanging; uncomplicated perioperative, iatrogenic and maternal deaths; other unnatural deaths not included above.9. Participate in moot court proceedings as an "expert witness".10. Attend Coroner's and Subordinate Courts as forensic witness, if required.

* All decisions must be endorsed by a forensic pathologist of the minimum grade of Associate Consultant and ratified by the Field Coroner

PRINCIPAL SUBJECTS/TOPICS FOR DEPARTMENTAL TUTORIALS

- Methods to determine time of death
- Sudden cardiac death
- Sudden natural (non-cardiogenic) deaths
- Sudden unexpected nocturnal death in adults
- Asphyxia and compressive neck injury
- Perioperative and iatrogenic deaths
- Maternal deaths
- Forensic paediatric pathology:
 - sudden infant death syndrome/sudden unexpected deaths
 - non-accidental injury, child sexual abuse
- Forensic neuropathology
- Fire deaths
 - Death from firearms and explosive injuries
 - Deaths from electrical and lightning injuries
- Sexually-related deaths
- Forensic histopathology
- Forensic toxicology
- Forensic biochemistry
- Forensic radiology
- Forensic odontology
- Forensic anthropology/identification of skeletal remains
- Facial reconstruction/comparison
- Estimation of the age of wounds/lesions
- Clinical forensic examination
- Forensic serology/haemogenetics/DNA profiling
- Mass disaster management
- Medical negligence and medical ethics

DEPARTMENTAL CONTINUING EDUCATION PROGRAMME

This would consist of weekly teaching sessions per month that will mainly be conducted or co-ordinated by senior forensic pathologists subject to exigencies of service.

The sessions would include topical presentations, case discussions and journal reviews by the trainees, under the guidance of senior forensic pathologists, as well as periodic case reviews by the latter.

The actual structure and content of the CME may be varied, as circumstances require.

READING LIST

Essential Reading (particularly during the first phase of training)

(A) The latest editions of the following **major texts**:

Legal Aspects of Medical Practice (Bernard Knight; Churchill Livingstone)

Simpson's Forensic Medicine (B Knight; Edward-Arnold)

Forensic Pathology (B Knight; Edward-Arnold)

Pathology of Trauma (JK Mason, BN Purdue (eds); Edward-Arnold)

Forensic Medicine: Clinical and Pathological Aspects (J Payne James, Busuttill A, Smock W (eds): GMM)

The Essentials of Forensic Medicine (previously by CJ Polson, DJ Gee, B Knight (eds); Pergamon Press)

Clinical Forensic Medicine (WDS McLay; Churchill Livingstone)

Pathologic Basis of Disease (RS Cotran, V Kumar, SL Robbins (eds); WB Saunders Company)

Oxford Textbook of Pathology (3 volumes) (JO McGee, PG Isaacson, NA Wright (eds); Oxford University Press)

Muir's Textbook of Pathology (RMN MacSween, K Whaley (eds); ELBS/Edward-Arnold)

(B) The following **periodicals**:

Medicine, Science and the Law

American Journal of Forensic Pathology and Medicine

Forensic Science International

Journal of Clinical Forensic Medicine

Suggested Reading

(A) Selective reading of the following **major texts**:

Gradwohl's Legal Medicine (FE Camps et al (eds); Bristol: John Wright and Son Ltd.)

Forensic Pathology (DJ DeMaio, VJM DeMaio; Elsevier)

Forensic Medicine: A Study in Trauma and Environmental Hazards (CG Tedeschi, WG Eckert, LG Tedeschi; WB Saunders Company)

Medical Toxicology: Diagnosis and Treatment of Human Poisoning (MJ Ellenhorn, DG Barceloux; Elsevier)

Gunshot Wounds: Practical Aspects of Firearms, Ballistics and Forensic Techniques (VJM DeMaio; Elsevier)

Cardiovascular Pathology (2 volumes) (MD Silver; Churchill Livingstone)

Pathology of the Lung (2 volumes) (H Spencer; Pergamon Press)

Textbook of Fetal and Perinatal Pathology (2 volumes) (JS Wigglesworth, DR Singer; Blackwell Scientific Publications)

Greenfield's Neuropathology (J Hume Adams, LW Duchen; Edward Arnold)

Forensic Neuropathology (JE Leestma; Raven Press)

Forensic Neuropathology (HL Whitwell; Hodder Arnold)

Closed Head Injury: Its Pathology and Legal Medicine (R Crompton; Edward Arnold)

Law and Medical Ethics (JK Mason, RA McCall Smith; Butterworths)

Medical Negligence (MA Jones; Sweet & Maxwell)

(B) The following **periodicals**:

Science and Justice (previously Journal of the Forensic Science Society)

Journal of Forensic Sciences

International Journal of Legal Medicine

The British Medical Journal

The Lancet

Journal of Clinical Pathology

Histopathology

Annals of the Academy of Medicine, Singapore

Journal of the American Medical Association

New England Journal of Medicine

GENERAL JCST GUIDELINES FOR BST/AST/SEAMLESS TRAINEES

1) Leave Guidelines

As a guide to ensure that trainees receive adequate training and are prepared for examinations in their 6-monthly posting, a trainee should not be away for more than 34 days (in totality) from training. For NS men, due to national service, they may be away for an additional 14 days from training.

In the event where excessive leave has been taken, the STCs/ SSTCs shall determine:

- if make-up training is required; and
- whether it is an essential posting that may render extension of traineeship, or
- can the make-up be carried out in future postings

The guidelines shall apply to postings with effect from November 2008.

Trainees are advised to discuss their training requirements with their supervisors before taking any extended leave. If extended leave needs to be taken, the trainees are required to seek approval from the Training Committee and JCST via JCST Secretariat.

2) Training Deliverables

All training units must provide all trainees, except for SAF sponsored trainees, (irrespective of the specialties pursued) with the training deliverables, as follows:

- a) at least one session (half day) of protected time per week to be dedicated to pure training/learning activities.
- b) 12 days of training leave per year for relevant structured training as approved by supervisors.

3) Retrospective Recognition Guidelines

With reference to the MOH's retrospective recognition framework, the basic trainees and advanced trainees may seek retrospective recognition of their Pre-Traineeship postings towards their BST/AST/Seamless training.

Clinical postings for retrospective accreditation are required to be substantiated by the following:

- a) A logbook of cases managed during the posting
- b) Good performance report(s)/ testimonial (s) endorsed by the supervisors and Heads of Departments

Postings prior to May 2008 may be considered for retrospective accreditation based on the performance report(s)/testimonial (s).

Please refer to the specialty training guide for additional retrospective accreditation criteria relating to the specialty.

Any retrospective accreditation request (where applicable) is to be submitted together with the relevant supporting documents to the RACs/STCs/SSTCs through the JCST Secretariat within 3 months from the commencement of traineeship for the RACs/STC/SSTC and JCST's review. No request will be entertained after the 3-months deadline.

4) Changes to Training Period

Specialty training should be continuous. If a training programme is interrupted for any reason whatsoever, the RAC/STC/JCST may, at its discretion, require the trainee to undergo a further period of training in addition to the minimum requirements of the programme or terminate the traineeship altogether.

All trainees are required to conform to the traineeship period and training plan as approved by RAC/STC and JCST. If the trainee wishes to change to part-time training or defer traineeship, approval is to be sought prospectively from JCST through RAC/STC.

Deferment of training will only be allowed up to a maximum of 1 year except in special circumstances.

5) Part-Time Training

Although basic and seamless specialist training should be undertaken full-time, part-time training is an acceptable option, subject to the approval of the RAC/STC/JCST and provided that the position is equivalent to at least half of a full-time position. The duration of training will be increased to provide the same overall training time as for full-time basic trainees. However, all part-time training must meet the same standards as for full-time training. The total period for part-time training is 3 years. This part-time training can be counted towards a maximum of 1.5 year full-time equivalent training. The 1.5 year full-time equivalent training is to be defined by the STC and approved by JCST. Any changes to the part-time training programme is to be submitted to RAC/STC and JCST for approval before actual implementation.

Guidelines on Part-time training :

- A part-time trainee should engage in a minimum of 0.5 FTE in training.
- The duration of the part-time training should not exceed 3 years.
- The entire traineeship should not be done on a part-time basis as the trainee would still need to meet the basic requirements.
- Trainees on part-time training should fulfill the same or more requirements than trainees on full-time training, e.g. number of calls.
- The traineeship should be completed within the stipulated time period as specified by the RAC/STC.

6) Overseas Training

(Ref : JCST Cir114-14)

With effect from 1st January 2015, **ALL** overseas attachment / postings during AST or Senior Residency Training are not permitted with the exception of Radiation Oncology, Neurosurgery, Forensic Pathology and Intensive Care Medicine.

For those who have already made firm arrangements approved by your institutions for overseas attachment / posting to start before 1st January 2015, the trainees must seek **APPROVAL IMMEDIATELY** from the (a) respective RAC and (b) JCST. Any application received after 31st May 2014 will be rejected. The following documents are required to be submitted together with the application:

- a) Training details of the overseas training including curriculum and requirements;
- b) Proposed overseas supervisor(s) and the curriculum vitae of the supervisor(s)

Upon return of the overseas' attachment / posting, the supervisor's report(s) and logged cases at the overseas training centre should be presented to RACs/STCs/SSTCs and JCST to assess. Otherwise, these overseas' attachment / posting will not be recognized as part of the training.

Radiation Oncology, Neurosurgery, Forensic Pathology and Intensive Care Medicine trainees/residents are required to seek prospective approval on their overseas postings at least 3 months before commencement of overseas postings.

7) Withdrawal of Traineeship

Upon appointment as trainee, should you decide to withdraw from traineeship, you are required to submit a withdrawal letter to JCST indicating your reasons for withdrawal. There is no automatic re-instatement of traineeship. The candidate has to re-apply in the next traineeship exercise.

8) Exit Certification

On successful passing of the exit exam, completion of all training requirements and the mandatory SMA's Medical Ethics, Professionalism and Health Law Course, trainees are required to submit the pass letter/scroll to the JCST secretariat. Upon RAC/STC's review and recommendation and JCST certification for exit from specialist training, the doctor may apply to SAB and SMC for specialist accreditation and specialist register.