"This prospectus is made under the provisions of the Universities Act, the Postgraduate Institute of Medicine Ordinance, and the General By-Laws No. 1 of 2016 and By-Laws No. 2 of 2016 for Degree of Doctor of Medicine(MD) and Board Certification as a Specialist"

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

Prospectus

MD AND BOARD CERTIFICATION IN HISTOPATHOLOGY

(To be effective from the year 2016)

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POSTGRADUATE TRAINING PROGRAMME LEADING TO MD AND BOARD CERTIFICATION IN HISTOPATHOLOGY

1. NOMENCLATURE

Full title:	Doctor of Medicine and Board Certification in Histopathology
Abbreviated title:	MD (Histopath) and Board Certification
University:	University of Colombo
Institute:	Postgraduate Institute of Medicine
Department:	Board of Study in Pathology

2. BACKGROUND AND JUSTIFICATION FOR AMENDMENTS

The PGIM's postgraduate training programme in Pathology was commenced in 1980 with a two year course for the Diploma which included six months of training in each in the disciplines of Histopathology, Haematology, Chemical Pathology and Microbiology followed by a two year pre-MD training period and a year each for local and overseas training, leading to Board Certification in Pathology. In 2008 with the revision of the prospectus, each subspecialty was endowed with its own Diploma and MD with the selection exam and Course in Basic Laboratory Sciences as common features.

3. ELIGIBILITY FOR ENTRY INTO TRAINING PROGRAMME

Entry to the training programme will be based on passing the Selection Examination in Pathology. Prospective applicants must satisfy the following requirements.

3.1. A medical degree registered[1] with the Sri Lanka Medical Council.

3.2. Satisfactory completion of an internship acceptable to the Sri Lanka Medical Council.

3.3. One year of post internship in Medical/Clinical practice in a university/public/private sector institution in Sri Lanka acceptable to the PGIM.

3.4. The criteria prescribed in paragraphs (1) to (3) should have been satisfied by the applicants as at the date of closure of applications. Where a short-fall has occurred due to any reason (including sick, maternity or other leave), the doctor concerned should complete such shortfall in order to become eligible to apply for the Selection Examination.

Trainees will be selected from those who qualify in the selection examination. Applicants will be tested on the Pathology knowledge an undergraduate is expected to possess. This includes general and systemic pathology, basic haematology, basic chemical pathology and

[1]Foreign nationals who seek to apply to register for selection examinations should possess a medical degree which could be registered with the Sri Lanka Medical Council. The decision of the Board of Management will be final in all such applications.

basic microbiology. The content areas covered by the selection examination are shown in **Annexure 1.**

4. SELECTION EXAMINATION

The Selection Examination will be administered by a panel of examiners selected by the Board of Study in Pathology. It comprises of an MCQ paper and a Short Essay/Essay paper.

4.1 MCQ Paper

MCQ paper comprises of 45 questions to be answered in 2hours and 15 minutes:

General Pathology	10
Systemic Pathology	10
Haematology	10
Chemical Pathology	10
Microbiology	05

Each MCQ will have five responses of the True / False type. Each correct response will be awarded +1 mark; each incorrect response will be awarded -1 mark; and if no response is marked, zero. There will be no negative carry over, so that each question will carry a maximum of 5 marks, and minimum of 0.

Those who obtain 45% or more for the MCQ paper will be called for the Short Essay / Essay Paper.

4.2 Short Essay / Essay paper

The Short Essay/Essay paper comprises of 4 questions to be answered in two hours. The four questions will be from each of the following four specialties / areas; General Pathology, Haematology, Chemical Pathology and Systemic Pathology. Each question may have multiple components.

4.3 Requirements to pass the Selection Examination

The MCQ and the Essay papers contribute equally to the final mark (50% from each component). Candidates who have obtained 50% or more of the total aggregate shall be considered to have passed the Selection Examination.

4.4 Selection of the field of Pathology

Depending on the number of training slots available and the merit order of those who have been successful at the selection test, candidates will be selected to follow the postgraduate training in Pathology. In addition, those who wish to enter the training programme in Clinical Haematology or Chemical Pathology need to fulfill the additional criteria given in the respective prospectuses. **Therefore, the selection of the specialty will be done at the outset.** Those who are selected for the postgraduate training in Histopathology will be enrolled to follow the two year training programme of Pre MD Training for MD Part 1 in Histopathology.

5. NUMBER TO BE SELECTED FOR TRAINING

Available training opportunities will be indicated by the PGIM in the public circular for the MD in Histopathology Examination. The number of training slots will be predetermined each year by the relevant Board and approved by the Board of Management in consultation with the Ministry of Health. This predetermined number will be selected from among those who have passed the Selection Examination, in rank order of merit and in compliance with the General Regulations of the PGIM and relevant Examination Circulars.

There is no limitation on the number of attempts at the selection examination.

6. LEARNING OUTCOMES

The aim of the postgraduate training programme in Histopathology is to ensure that trainees are fully prepared to provide a high quality service at consultant level in a laboratory providing Histopathology and Cytopathology services.

7. STRUCTURE OF TRAINING PROGRAMME

7.1 Overview of the Course

The total duration of postgraduate training in Histopathology is six years. It includes training in surgical pathology, cytopathology and pathological postmortems. The postgraduate training takes place in two parts. Part 1 consists of two years of training in Histopathology, on completion of which the trainees are required to sit the Histopathology Part 1 Examination, which they must pass in order to proceed to the MD Part 2 training in Histopathology. This examination is considered a barrier examination. Part 2 consists of a further two years of training, on completion of which, the trainees will sit the MD Part 2 Examination in Histopathology. Those who pass the MD Part2 examination will undergo one year of training locally as a senior registrar and a further year of training at an overseas centre of excellence, approved by the Board of Study in Pathology. A summary of the Postgraduate Training Programme and Examinations is given in Figure 1.

7.2 Learning activities during pre-MD training

The learning takes place mostly in the form of day to day routine work in a laboratory setting under supervision of a Consultant Histopathologist who will give regular feedback to the trainee on the progress, standard of conduct and practice of Histopathology. Regular slide discussions, lectures, tutorials, seminars, laboratory based practical sessions, multidisciplinary meetings, journal clubs, scientific sessions and conferences of the relevant fields of medicine will be other opportunities for learning.

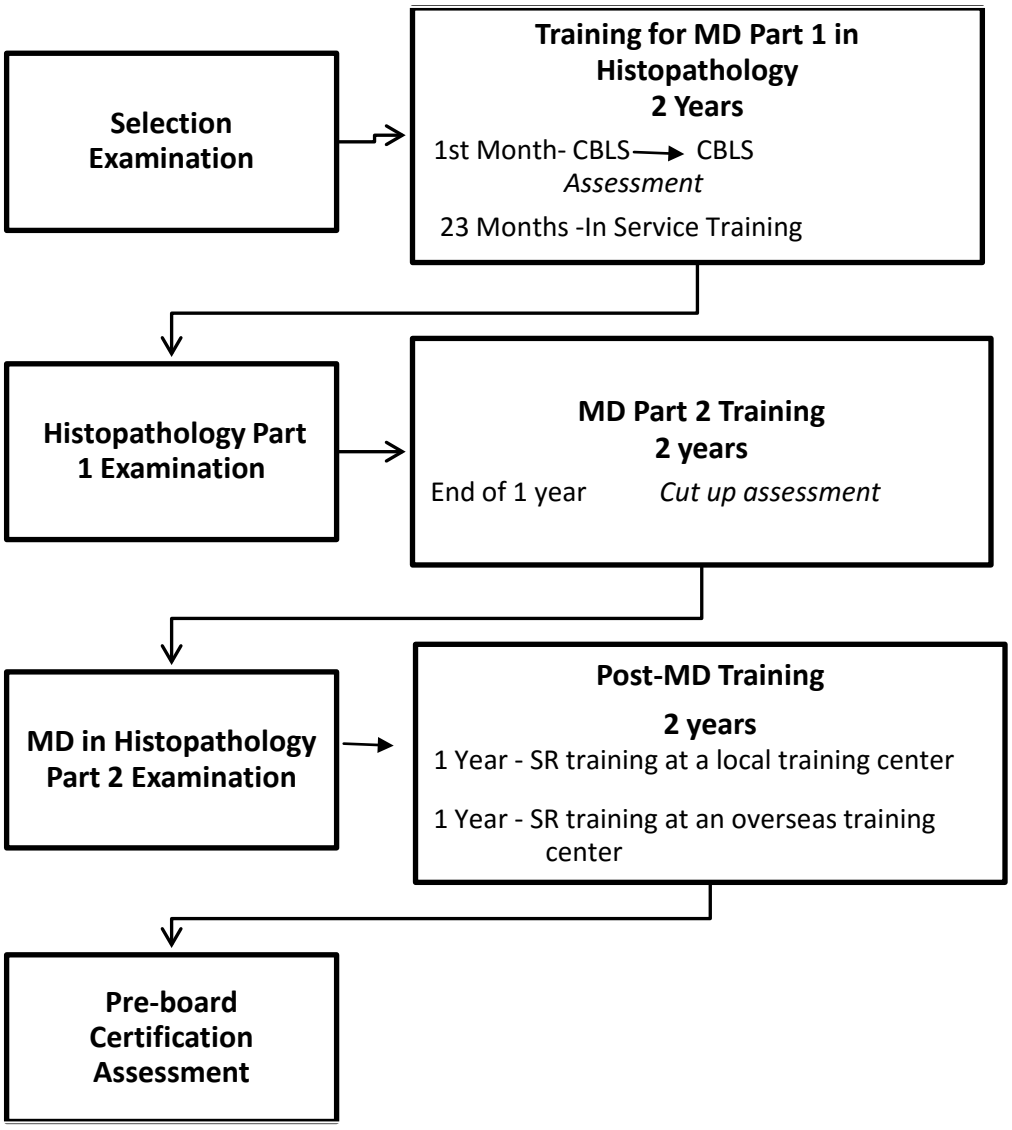
7.3 Training clusters and trainers

There are currently six training clusters comprising two units in each cluster. **(Annexure 2)** All stages of training takes place at these clusters. Trainees are allocated to these clusters

according to their preference based on the order of merit obtained at the Selection Examination. Trainees will be required to spend a minimum of 8 months in each training centre of the cluster during both Part 1 and Part 2 of MD training. Following the MD Part 1 Examination, the candidates who have been successful at the said examination will be given a chance to be trained at a different cluster depending on the order of merit obtained at the MD Part 1 Examination.

Histopathologists with at least 3 years of experience after Board certification as specialists will be eligible to be appointed as trainers. New training units are required to be accredited by the Board of Study in Pathology as suitable for training in Histopathology.

Figure 1. Postgraduate Training Programme and Examinations in Histopathology



7.4 Leave and attendance requirements

Refer to the PGIM General Regulations for stipulations regarding leave and attendance requirements.

8. MD PART 1 IN HISTOPATHOLOGY

8.1 Lecture Course in Basic Laboratory Sciences

The training for MD Part 1 in Histopathology commences with a Lecture Course in Basic Laboratory Sciences (CBLS) of 4 to 5 weeks duration.

8.1.1 Learning outcomes:

The aim of the lecture course is to ensure that basic knowledge of the services of all fields of Pathology is acquired to enable the use and interpretation of basic test results of those disciplines and to ensure sufficient basic background knowledge is acquired to proceed with a specialized training in Histopathology.

At the end of the lecture course in basic laboratory sciences, the trainees should be able to

1. describe the basic pathological processes in terms of pathogenesis, morphological changes and their application in clinical situations.
2. describe specimen collection, transport, processing and clinical applications with regard to Histopathological, Cytological, Haematological, Microbiological and Chemical Pathological investigations
3. discuss the basis, value and limitations of the Molecular Biological and other special tests in the diagnosis, management and screening of diseases.
4. discuss the value of good laboratory management in improving the Pathology laboratory services
5. discuss the uses of statistics in the practice of Pathology.

8.1.2 Course contents

Refer *Annexure 3* for the contents of the CBLS.
Immediately after the completion of the lecture course, an assessment will be held.

8.1.3 CBLS Assessment

An assessment will be held after the completion of the Course in Basic Laboratory Sciences. The aim is to assess the basic knowledge that the trainee should have acquired during the lecture course and possess at the commencement of the in-service training programme. The CBLS assessment comprises 45 multiple choice questions. It will be held at the PGIM under examination conditions. The composition of the CBLS Assessment is given in Table 3.

Table 3. The composition of the CBLS Assessment

Composition	Duration	Marks allocated
30 Multiple Choice Questions True/false type	2 hours	30x5=150

15 Single Best Answer type questions		15x3=45

Each MCQ of the True / False type will have five responses. Each correct response will be awarded +1 mark; each incorrect response will be awarded -1 mark; and if no response is marked, zero. There will be no negative carry over, so that each question will carry a maximum of 5 marks, and minimum of 0.
Each MCQ of the Single Best Answer type will also have 5 responses. Each correct response will be awarded +3 marks; incorrect responses and no responses will be awarded 0.

The total mark (out of 195 marks) will account for 10% of the final marks of the MD Part 1 Examination.

Trainees are expected to take the first available CBLS examination. Taking the CBLS assessment is compulsory before sitting the MD Part 1 Examination. A trainee will not be considered eligible to sit the MD Part 1 Examination without sitting for the CBLS assessment.

8.2 In-service training

On completion of the CBLS programme and assessment, trainees go on to 23 months of in-service training in Histopathology.

At the end of the twenty four month training programme leading to the MD Part 1 in Histopathology, the trainee should be able to:

1. competently handle Surgical Pathology specimens, appropriately interpret and write comprehensive reports on such specimens under the guidance of the supervising Consultant Histopathologist;
2. perform fine needle aspirations and interpret the basic changes in the smears of fine needle aspiration and other Cytology specimens under the guidance of the supervising Consultant Histopathologist;
3. explain the scientific basis of processing and staining of Histopathological and Cytological specimens including the special histochemical and immunohistochemical stains;
4. perform Pathological postmortems and write a comprehensive report under the guidance of the supervising Consultant Histopathologist.

8.3 Learning activities during in-service training

Trainees will be engaged full time in laboratory work based training and clinical work. The training will take place under one or more Consultant Histopathologists (trainers) at a PGIM accredited postgraduate training cluster. Laboratory work includes both Histopathology and Cytopathology. In addition, trainees are expected to perform pathological postmortems and

interpret the findings under the guidance of a consultant Histopathologist. Contents of the MD Part 1 training programme in Histopathology are given in *Annexure 4.*
Lectures, laboratory work based learning and clinical work in the form of pathological postmortems, performing fine needle aspirations, and multidisciplinary meetings will be the learning instruments. Journal clubs, scientific sessions and conferences of the relevant fields of medicine will be the other opportunities for learning.

If some areas of Histopathology/Cytopathology are not covered within the cluster, the trainer needs to arrange short appointments of sufficient duration at others clusters or at special centers. Neuropathology, gynaepathology and postmortems are some of the areas which may not be available in sufficient numbers for training, in all training clusters. The trainer need to assure that the Part 1 trainee undergoes training in such areas at least as short appointments.

8.4 Monitoring progress in training

8.4.1 Portfolio

A learning portfolio is included as evidence of learning from the activities that the trainees are involved in during the training period. It recognizes and encourages autonomous and reflective learning that is an integral part of professional development. The trainee has to compile a portfolio demonstrating how she/he has achieved the learning outcomes specified for the training for Part 1 in Histopathology*(see Annexure5*).The portfolio should be submitted to the PGIM one month before the examination. The BOS will assign the assessment of the portfolio to a trainer in another cluster. The board appointed trainer should assess it and send an evaluation report according to the assessment grid *(see Annexure 5)*to the Board of Study in Pathology and counsel the trainee if necessary. The assessor is expected to assess the portfolio and submit a report to the Board of Study in Pathology within 3 months following the examination. For further information refer the *Annexure 5*.

8.4.2 Progress reports

Monitoring of training will be done through progress reports received from the trainers for each trainee at regular six monthly intervals (at 6, 12 and 18 month). *(Annexure6)* If a trainer identifies a trainee's work or attendance (or any other parameters assessed according to the progress report) as not satisfactory, he/she should have a discussion with the trainee to find out reasons and take remedial actions. If the trainees work continues to be unsatisfactory (in any of the qualities assessed); this should be indicated in the next progress report. In such cases the BOS should take necessary remedial action by way of counseling the trainee. The Board of Study in Pathology will appoint a trainer from another cluster to counsel the trainee.
It is the trainee's responsibility to make sure that the progress reports reach the PGIM at above specified regular intervals.

8.5 MD Part 1 Examination

8.5.1 Eligibility to sit the MD Part 1 Examination

a. A minimum of 80% attendance during the two years of training.
b. Sitting the assessment of the Course in Basic Laboratory Sciences.
c. Satisfactory progress reports.
d. Submission of the Portfolio to the PGIM one month before the examination

8.5.2 Format of the MD Part 1 Examination

The examination comprises both theory(C1) and practical components(C2). A panel of examiners will be appointed by the Board of Study in Pathology. Criterion reference evaluation will be done against a predetermined model answer for each item of the components. Each question is marked independently by two examiners. In the case of a discrepancy of more than 15 marks out of 100 between the two examiners, the two examiners will re-assess the question. If the two examiners are unable to come to a consensus, it will be assigned to a third examiner by the chief examiner.

Table 4. Histopathology Part 1 Examination

Component	Composition of the component	Duration		Marks allocated	
Component 1 Theory	Paper 1				
	40 True/false type MCQs	2 hours	3 hours	200	25
	15 Single Best Answer questions	½ hour		45	
	15 Extended Matching Items	½ hour		45	
	Paper 2				
	4 compulsory essay questions which include one on General pathology	3 hours (all 4 questions carry equal marks)			25
Component 2 Practical	Practical 1				
	Histopathology slides 20 slides	3 hours		25	
	Practical 2				40

	Cytopathology and special stains (cytology [gynae and non gynae]special histochemical and immunohistochemical stains) 10 cases	2 hours	15	
Component 3 CBLS Assessment	Assessment following CBLS lecture course			10
	Total			**100**

8.5.3 Requirements to pass the MD Part 1 Examination

To pass the MD Part 1Examination,the candidate should have:

(i) 50% or more from the total aggregate mark

AND

(ii) 50% from Component 1

AND

(iii) 50% from Practical 1 of Component 2

AND

(iv) 50% from Practical 2 of Component 2

8.5.4 Unsuccessful candidates

A candidate who fails to meet all requirements necessary to pass the MD Part 1 examination will have to sit both component 1 and 2 at the next examination. The marks already obtained for the CBLS assessment will be counted for the next attempt as well.

A maximum of six attempts within a period of eight years from the 1st attempt at the examination are allowed for a candidate to pass the MD Part 1 Examination, as per General PGIM rules.

9. MD PART 2 IN HISTOPATHOLOGY

This is a twenty four month training programme in Histopathology, which places emphasis on the practical and professional aspects of training whilst continuing to highlight the importance of a solid theoretical background.

9.1 Eligibility to enter the training programme

Only those trainees who are successful at the MD Part 1 Examination will be eligible to commence the MD Part 2 training in Histopathology.

9.2 Learning Outcomes

At the end of the twenty four months of training, the trainee will

1. be able to demonstrate a sound knowledge and skills to take correct, safe decisions in histopathological and cytopathological diagnosis.
2. be able to solve diagnostic problems by applying sound knowledge in basic principles and to decide when to seek advise/second opinion from a colleague
3. integrate clinical, radiological and pathological data for accurate diagnosis.
4. be able to perform pathological post mortems at a high level of competence, be competent in identifying morphological abnormalities, interpret them based on clinical findings and write comprehensive postmortem reports.
5. demonstrate commitment to continuous professional and self development.
6. demonstrate the ability to liaise effectively with colleagues and the rest of the team who contribute to patient care.
7. conduct original quality research that makes a significant contribution to development of the discipline, satisfies peer review and merits publication.

9.3 Content areas

The content areas for the MD Part 2 training programme are provided in *Annexure 7*.

9.4 Structure of training programme

9.4.1 In-service training

Laboratory work based learning is the major learning tool. Additionally, clinical work in the form of pathological postmortems (both adult and neonatal), fine needle aspiration cytology and participation in multidisciplinary team meetings are also included as essential tools of learning. Journal clubs, study days, scientific sessions and conferences of the relevant fields of medicine will be the other opportunities for learning.

The training will take place under one or more consultant histopathologists (trainers) at a PGIM accredited postgraduate training cluster. It is a complete in-service training where the trainee engages in the routine work up of cases that a histopathologist is required to undertake. The trainer guides the trainee at every point of specimen processing until a report is written. All areas of Histopathology need to be covered during the two year training period. The trainee will have exposure to training at different centers within the cluster of training. Gaps in certain areas of Histopathology should be covered by allocating the trainee to other clusters/special centers for short periods (short appointments).

9.4.2 Short Appointments and Study Days

The short appointments and study days are meant to cover the subspecialty areas which may not be covered sufficiently within the clusters. Therefore the supervisors will arrange short appointments for each MD Part 2 trainee if the number of specimens received in the cluster is insufficient. At the time of application for the MD Part 2 in Histopathology Examination, the supervisor needs to confirm that the trainee had sufficient exposure at

her/his training enter or/and undergone short appointment training in the areas specified below. The PGIM will maintain a record of attendance at study days.

1. Neuropathology: 4 weeks at NHSL, TH Kandy or TH Karapitiya
2. Respiratory Pathology: 2 weeks at National Hospital for Respiratory Diseases, Welisara
3. Renal Pathology: 2 weeks at Departments of Pathology, Universities of Colombo or Peradeniya or Sri Jayewardenepura General Hospital
4. Gynaecological Pathology: 1.5 months at Castle Street Hospital for Women or TH Mahamodara
5. Onco-pathology: 1.5 months at National Cancer Institute , Maharagama
6. Muscle Pathology: One study day at Dept of Pathology, University of Peradeniya
7. Ophthalmic Pathology: One study day at National Eye Hospital, Colombo, or TH Kandy, or TH Karapitiya
8. Paediatric Pathology: 1 weeks/study day at one of the following centers; Lady Ridgeway Hospital for Children, Sirimavo Bandaranaike Hospital for Children, Kandy, Department of Pathology Faculty of Medicine, Colombo, TH Mahamodara, Castle Street Hospital for Women
9. Pathological postmortem: 1 month
10. Perinatal Postmortem: One study day

Study days will be organized by the BOS in Pathology in concurrence with the said centers. Details of expected learning outcomes for each of the above training components are provided in *Annexure 8*.

8.5 Monitoring progress

9.5.1 Pre-MD Learning Portfolio

The trainee should maintain a portfolio during the entire period of histopathology training. Please refer to *Annexure 5* for details of required portfolio entries, including the case report component. The MD Part 2 Portfolio should be submitted to the PGIM one month before the examination.

9.5.2 Progress Reports

Monitoring of training will be done through progress reports received from the trainers for each trainee at regular 6 monthly intervals (6, 12 and 18 month of training)*(Annexure6).* If a supervisor identifies a trainee's work or attendance or any other parameters assessed according to the progress report as not satisfactory, he/she should have a discussion with the trainee to find out the reasons for this and remedial action should be taken. If the trainees work continues to be unsatisfactory in any of the qualities assessed, this should be indicated in the next progress report. In such cases the BOS should take necessary remedial action by way of counseling the trainee. The BOS will appoint a trainer from another training cluster for this purpose.

It is the trainee's responsibility to make sure that the progress reports reach the PGIM at above specified regular intervals.

9.5.3 Practical Cut-up Assessment

A practical assessment on cut-up procedures will be held after 12 months of MD Part 2 training. The aim is to test the trainees' ability in initial handling of histology specimens, their knowledge on general principles of gross examination and method of taking sections for processing, especially with regard to malignant tumours. The trainee is expected to have a thorough knowledge in handling specimens such as mastectomy, nephrectomy, colectomy specimens, hysterectomy specimens, thyroidectomy, gastrectomy and ovarian tumours.

The trainee will be examined by 2 examiners appointed by the Board at a centre notified by the Board. 5% of the total marks for the MD Part 2 examination will be from the cut-up assessment which is a compulsory component of the MD Part 2 Examination.

9.6 MD Part 2 Examination in Histopathology

9.6.1 Eligibility to sit for the MD Part 2 Examination in Histopathology

a. Satisfactory completion of Pre MD Part 2 training with a minimum of 80% attendance
b. Submission of the Portfolio
c. Satisfactory progress reports
d. Completion of the cut-up assessment

9.6.2 Format of the MD Part 2 Examination in Histopathology

A panel of examiners including an external examiner is appointed by the Board of Study in Pathology. Criterion referenced evaluation will be done against a predetermined model answer for each item of the exam components outlined in Table 5.Each question is marked independently by two examiners. In the case of a discrepancy of more than 15 marks out of 100, between the two examiners, the two examiners will re-assess the answer. If the two examiners are unable to come to a consensus, the answer will be assigned to a third examiner by the chief examiner.

Table 5. Format of the MD Part 2 Examination in Histopathology

	Composition of the component	**Duration**	**Marks allocated**	
Component 1	15 Histopathology slides	3 hours		30
Component 2	15Cytology slides	2 hours 30 minutes		15
Component 3	15 OSPE cases	3 hours		30
Component 4	Part 1 Postmortem	3 hours including 30 minutes question time	05	25
	Part 2 Clinico-pathological Conference – two cases	2 hours including 20 minute viva	10	

	Part 3 Viva voce	20 minutes	05	
	Part 4 Cut up Assessment	45 minutes	05	
	Total			100

Component 1. Histopathology Slides

A detailed description with the diagnosis, possible differential diagnoses and any prognostically important information is expected for each slide/case. If the diagnosis is not obvious by morphology alone, the steps that should be taken to arrive at a diagnosis should be mentioned in the right order.

Component 2. Cytology Slides

Fifteen cases/slides of cytology will be rotated among the candidates allowing 10 minutes per case/slide which include time for writing the report.

Component 3. Objective Structured Practical Examination

There will be 15 OSPE stations. Macroscopic specimens/photo images, endoscopic biopsies; Tru-cut biopsies, slides/photo images of special investigations and special stains (Histochemistry, Immunohistochemistry, Immune fluorescence, Electron Microscopy etc.), laboratory safety issues and slide artifacts etc. will be tested in the OSPE.

Component 4.

Part I. Postmortem examination

The candidate will be allowed two hours and thirty minutes for the dissection and macroscopic examination at the post mortem examination. A discussion will be held thereafter for 30 minutes. The candidate will be questioned on the case by 2 examiners.

Part 2. Clinico-pathological conference

Two cases with a clinical history, relevant investigation findings and photographs/images of macroscopic and microscopic appearances, and/or microscope slides will be given to the candidate to assess and diagnose at the Clinico-pathological Conference. A discussion of 10 minutes per case will follow with a panel of two examiners for each case.

9.6.3 Requirements to pass the MD Part 2 Examination in Histopathology

In order to pass the MD Part 2 Examination, candidates are expected to attend all assessment components and subcomponents as listed in Table 5 AND obtain:

i. An overall aggregate mark of 50% or more from Components C1, C2, C3 and C4 as described above
   AND

ii. 50% or more for each slide, for at least 10 out of 15 slides of Component 1 (Histopathology)
AND
iii. 50% or more for each slide, for at least 10 out of 15 slides/cases of Component 2 (Cytology)
AND
iv. 50% or more for each station, in at least10 out of 15stationsofComponent 3 (OSPE)
AND
v. 50% or more for Component 4

A candidate who fails the examination will have to sit all 4 components except the cut-up assessment at the next examination. The marks already obtained for the cut-up assessment will be counted for the next attempt as well.

9.6.4 Qualification awarded

Those who pass the MD Part 2 examination in Histopathology are eligible for award of the degree MD in Histopathology.

10. POST MD TRAINING

This will consist of 12 months of training locally as a Senior Registrar, and a further 12 months of training at a BOS approved center of excellence overseas. Attendance of minimum 80% for both stages is essential. The objectives for both the local post-MD training and the overseas post-MD training are given below.

10.1 Learning outcomes

During the post MD training period the trainee should take steps to enhance the knowledge, skills and attitudes they have acquired, in order to achieve the ability and professionalism expected from an independently practicing specialist in histopathology.

At the end of the two year post-MD training period the trainee should demonstrate

- the ability to provide specialist opinion on cases encountered in routine Histopathology and Cytopathology practice
- skills in managing a Histopathology laboratory with emphasis on the following
  - Human resource management pertaining to all members of the team in the laboratory setting.
  - Laboratory procurement procedures pertaining to calling quotations giving specifications, technical evaluation and recommendations for purchase of both equipment and consumables.
  - Problem solving in the laboratory setting pertaining to laboratory equipment and procedures.

  - Laboratory safety measures as specified by accreditation agencies.
  - Quality assurance programmes ensuring the quality of the service offered by the laboratory.
- research skills and skills in critical appraisal of journal articles by
  - conducting journal clubs on a regular basis
  - Designing and conducting research in histopathology and related areas and presenting/publishing the findings in appropriate for a/journals.
- contribution to the development of the Histopathology service by
  - arranging and conducting multidisciplinary meetings on a regular basis
  - participating and contributing to postgraduate educational meetings.
  - participating in teaching and learning activities of junior postgraduate trainees and allied staff
  - educating and motivating of hospital staff to adhering to proper procedures in specimen collection and transport.
  - conducting audits and improving existing laboratory practices based on the results.
  - contributing to development of best practice guidelines and standard operating procedures(SOP) at the respective training centers
- good working relationships with colleagues and the other team members (medical staff, technical officers, cyto-screeners, laboratory attendants, orderlies and laborers) and the appropriate communication skills required for the practice of histopathology as a team, in order to achieve excellence in service.

10.2 Research Project

At the beginning of the MD Part 2training programme, the trainee together with the trainer should identify a research topic. Refer ***Annexure 10*** for the aims and objectives of the research project and a brief guidance for the assessors.

A project proposal should be submitted to the Board of Study. All trainees should present their project proposal in a PowerPoint format to the Review Panel on a date allocated by the PGIM.The trainees should submit the finalized proposal to the BOS accommodating the suggestions made by the Review Panel after obtaining ethical approval.

Thereafter the trainees can collect data and present the findings and analysed data with the conclusions to the Review Panel on a date allocated by the PGIM after the MD Part 2 Examination.

The final project report should be submitted incorporating the suggested changes by the Review Meeting before overseas training. The trainer/supervisor should closely supervise the project throughout.

Alternatively, instead of submitting a research proposal and a report, publication of the research findings as an **original full paper**(not case reports) in a **peer-reviewed indexed journal** with the trainee as first author can be accepted. No further evaluation is required on the premise that a paper which is already peer-reviewed. These publications should be on Histopathology / cytopathology / postmortems and should have been done during the pre

MD training period (either Part 1 or Part 2). Published case reports will not be considered for this exemption.

10.3 Monitoring progress

10.3.1 Progress reports

The trainers of local and overseas training need to submit progress reports to the PGIM, at regular 6 monthly intervals **(*Annexures11&12).*** Certification of satisfactory completion of local and overseas training should be forwarded to the Director, PGIM by the respective trainers.

10.3 Eligibility for Pre-Board Certification Assessment

Following completion of the 2 years of post MD training a trainee can apply for Pre-Board Certification Assessment provided that the following criteria have been fulfilled.

1. Completion and acceptance of the Research Project
2. Submission of the post-MD portfolio
3. Completion of the two years of Post MD training.
4. Satisfactory progress reports during the post MD training

10.4 Format of Pre-Board Certification Assessment (PBCA)

PBCA is based on the adoption of the following broad outcomes for specialist training:

1. Subject expertise
2. Teaching
3. Research and audit
4. Ethics and medico-legal issues
5. Information technology
6. Life-long learning

Assessment tool

The PBCA will be based on assessment of a portfolio maintained by the trainee during the period of post-MD training. The contents of the portfolio should encompass all of the above learning outcomes and contain evidence of achievement of these outcomes by the trainee. Although some of these may have been evaluated before the MD examination, the portfolio assessed at the PBCA should mainly contain evidence of achievements during post-MD training, either locally or overseas. All sections need not be of equal weight – for example, the section on Subject Expertise may be much more detailed than the others.

Contents of portfolio

The contents of the portfolio should be divided into sections according to the outcomes stated above, followed by a final section that contains evidence of reflective practice.

The following list sets out the type of evidence that may be relevant to each section. The components mentioned in bold letters are considered essential items of the portfolio

1. Subject expertise:
    - progress reports from supervisors (essential, should be according to prescribed format)
    - **A minimum of two peer/trainer feedback per year**.
    - log of procedures carried out
    - results of any work-place assessments conducted
    - **evidence of special training/exposure which the trainee had during the local and overseas training**
2. Teaching
    - undergraduates
    - postgraduates
    - ancillary laboratory staff
3. Research and Audit relevant to specialty
    - **MD Project proposal and report**
    - Research papers published or accepted for publication
    - abstracts of presentations
    - Audits
    - **Critical appraisal of journal articles, at least 2 during the 2 years of training.**
4. Ethics and Medico-legal Issues
    - Completed Professionalism Observation Forms (from integrated learning component of Professionalism Strand)
    - Completed PTR forms during post-MD training
5. Information Technology
    - Participation in training programmes / workshops
    - Evidence of searching for information and application of findings in practice
6. Life-long learning
    - Participation in conferences and meetings
7. Reflective practice
    - **narration of at least one learning event experienced by the trainee**, in relation to each of the above outcomes, with reflection on what and how the trainee learned from this experience

Portfolio assessment

The portfolio should be reviewed at least every 6 months by the local supervisor(s), with regular feedback to the trainee on how the portfolio may be improved. When the trainee is

eligible for PBCA, 3 copies of the completed portfolio should be submitted to the PGIM Examinations Branch.

The PBCA will take the form of a final, summative assessment of the trainee's portfolio, carried out by 3 independent examiners appointed by the Board of Study and approved by the Senate of the University of Colombo. The 3rd examiner will be from outside the discipline to improve objectivity.

The trainee will be called for an oral examination (20 minutes), during which he/she will be questioned on the portfolio. The trainee is required to start with a presentation of 10 minutes, on the post-MD training.

In order to pass the PBCA, each of the 6 main sections has to be deemed satisfactory by the panel of examiners.

11. BOARD CERTIFICATION

A trainee who has successfully passed the Pre-Board Certification Assessment is eligible for Board Certification as a Specialist in Histopathology on the recommendation of the Board of Study in Pathology.

The board certification will be deferred if the candidate is unsuccessful in the PBCA. Such candidates should be counseled and sit for the assessment again within a minimum period of 3-6 months. On successful completion at the first attempt after counseling, the date of Board Certification could be backdated. If unsuccessful, the candidate is required to follow further training for a minimum period of six months in a cluster selected by the Board of Study. The date of Board Certification will then be recorded as the date of passing the subsequent assessment.

12. RECOMMENDED READING

Refer to Annexure 14 for recommended reading.

13. CONTRIBUTORS TO DEVELOPMENT OF THE PROSPECTUS

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ANNEXURE 1–Content areas for Selection Examination

Reference: Basic Pathology by Kumar, Cotran and Wheaters Functional Histology
Subject Content for Selection Examination in Pathology

1. Normal histology
2. Cell injury, Cell death, and Adaptations
3. Acute and Chronic Inflammation
4. Tissue Repair: Regeneration, Healing, and Fibrosis
5. Hemodynamic Disorders , Thrombosis, and Shock
6. Diseases of the Immune System
7. Neoplasia
8. Genetic and Pediatric Diseases
9. Environmental and Nutritional Diseases
10. General Pathology of Infectious Diseases
11. The Blood Vessels
12. The Heart
13. The Hematopoietic and Lymphoid System
14. The Lung
15. The Kidney and Its Collecting System
16. The Oral Cavity and Gastrointestinal Tract
17. The Pancreas
18. The Male Genital System
19. The Female Genital System and Breast
20. The Endocrine System
21. The Musculoskeletal System
22. The Skin
23. The Nervous System
24. Classification and types of anaemia
25. Leukaemia & myelodysplastic disorders
26. Myeloproliferative neoplasms
27. Multiple myeloma
28. Defects of Haemostasis
29. Disorders of water and electrolytes
30. Disorders of Acid Base Balance
31. Diabetes mellitus
32. Disorders of Lipid Metabolism
33. Plasma Proteins and Enzymes
34. Biochemical Investigations for Renal Disorders
35. Biochemical Investigations for Liver Disorders
36. Endocrine Disorders (Pituitary, Adrenal, Thyroid and Gonadal)
37. Disorders of Calcium and Phosphate Metabolism
38. Biochemical analysis of body fluids
39. Morphology and nature of micro-organisms
40. Classification, identification and typing of micro-organisms
41. Bacterial growth, physiology and death
42. Antimicrobial agents
43. Virus-cell interaction
44. Immunological pinciples
45. Immunity to bacteria and viral infections
46. Bacterial, viaral and fungal pathogens and associated diseases
47. Diagnosis, treatment and control of infections

ANNEXURE 2 - Training Clusters

1.	Colombo Cluster	Departments of Pathology of the National Hospital of Sri Lanka and Faculty of Medicine, University of Colombo, Colombo 8
2.	Colombo North Cluster	Departments of Pathology of North Colombo Teaching Hospital and Faculty of Medicine, University of Kelaniya, Ragama
3.	Colombo South Cluster	Departments of Pathology of Colombo South Teaching Hospital and Faculty of Medical Sciences, University of Sri Jayewardenepura, Nugegoda
4.	Maharagama Cluster	Departments of Pathology of National Cancer Institute, Maharagama and Sri Jayewardenepura General Hospital, Thalapathpitiya
5.	Kandy Cluster	Departments of Pathology of Teaching Hospital Kandy and Faculty of Medicine, University of Peradeniya, Peradeniya
6.	Galle Cluster	Departments of Pathology of Teaching Hospital Karapitiya and Faculty of Medicine, University of Ruhuna, Galle

ANNEXURE 3 -Contents of the Lecture Course in Basic Laboratory Sciences

Histopathology

1. Cellular response to stress and toxic insult; cellular injury, adaptation and death
2. Acute and chronic inflammation
3. Tissue renewal, regeneration and repair
4. Haemodynamic disorders, thrombo-embolic disease and shock
5. Neoplasia
6. Environmental and nutritional diseases
7. The scientific basis of histopathological and cytological investigations, specimen collection and transport

Haematology

1. The scientific basis of the basic Haematological investigations
2. A basic knowledge on the common Haematological diseases
3. Venesection and collection of blood samples for Haematological tests
4. Preparation and staining of blood films
5. Maintenance of laboratory registers and clinic registers
6. Interpretation of basic changes in a blood film
7. Laboratory safety and quality control
8. Detection of laboratory errors
9. Interpretation of analyzer reports
10. Communication with patients, laboratory staff and ward staff and the concept of team work

Chemical Pathology

1. A basic understanding of disease processes where Chemical Pathology tests are more commonly used
2. Principles of quality assurance and application of this knowledge in the Chemical Pathology laboratory
3. Venesection and collection of venous blood for routine Chemical Pathology tests
4. Giving instructions on preparation of patients for tests in Chemical Pathology
5. Giving instructions on specimen transport and processing
6. Basic steps involved in performing routine tests in Chemical Pathology
7. The range of tests available in a Chemical Pathology laboratory
8. A basic knowledge on the usage of basic laboratory equipment
9. Interpretation of results of routine Chemical Pathology tests
10. Laboratory safety
11. Effective communication with the laboratory staff, patients and ward staff and the concept of team work

Immunology

1. Normal Immunological mechanisms
2. The Patho-physiological basis of immune mediated diseases including autoimmune disease and hypersensitivity reactions
3. The HLA system and Immuno-pathological reactions involved in graft rejection
4. A basic knowledge on primary and acquired immune deficiency syndromes

Microbiology and Parasitology

1. Identification and classification of micro organisms
2. The normal flora of the human body
3. Clinical presentation and diagnosis of common infections.
4. Contribution of the laboratory to the diagnosis and management of infections.
5. Limitations of Microbiology laboratory investigations in patient management.
6. Safe laboratory practices.
7. Main hospital acquired infections and control of such infections

Genetics & Molecular Biology

A. Basic knowledge of genetics

1. Cytogenetics (Chromosomal structure)
2. Molecular genetics (DNA, RNA, etc.)
3. Patterns of inheritance.
4. Genetic nomenclature (HUGO nomenclature)
5. Genetic data bases, resources, etc.

B. Genetic basis of normal cell regulation and development of disease states

1. Regulation of the cell cycle
2. DNA damage and repair mechanisms
3. Molecular mechanisms of aging and cell death
4. Mutagenesis – causes / mechanisms and its importance in disease
5. Oncogenic mechanisms including epigenetic mechanisms (Histone methylation, DNA de acytylation, etc.)

C. Genetic disorders

1. Cytogenetic abnormalities (inherited and acquired clonal abnormalities)
2. Molecular genetic abnormalities (inherited and acquired clonal abnormalities)

D. Laboratory identification of genetic defects

1. Chromosomal abnormalities (karyotyping techniques, molecular cytogenetic techniques, microarrays, etc.)
2. Molecular genetic abnormalities (PCR, ARMS-PCR, PCR/RFLP, DNA Sequencing, Triplet Repeat Expansions - PCR/Fragment Analysis, Deletion Duplication Analysis - Multiplex PCR, MLPA, etc)
3. Newer Techniques - Next Generation sequencing (Whole Genome and Whole Exom)

E. Practical issues in genetic testing

1. Specimen collection & transport
2 Ethical issues (consent & counseling)
3. Quality Assurance

Statistics

1. The uses of research and statistics in biomedical sciences
2. Definitions of the following terms: Quality assurance, quality control, standard, control material, accuracy, precision, descriptive statistics, inferential statistics, reference interval, random error, systematic error, dispersion, delta check, confidence interval, inter and intra observer variation, standard normal distribution
3. Calculation of the following: sensitivity, specificity, efficiency, predictive value, mean, mode, median, range, correlation, variance and standard deviation.
4. The basic concepts of sampling and sampling methods and significance testing.

Embryology

1. Introduction to developmental Biology
   a. The fundamentals in developmental Biology
   b. The key terminology in developmental Biology
   c. The key developmental mechanisms
2. Molecular developmental Biology
   a. The tests that should be requested and other resources that could be utilized to investigate development anomalies encountered in a clinical setting.

Laboratory Management

1. The basic concepts of management of laboratory resources
2. Definition of quality management
3. The components of quality management
4. The value of quality policy statement for a laboratory
5. A basic understanding of quality manual and its contents
6. The value of internal quality control and external quality assessment
7. Basic concepts of laboratory accreditation
8. Pre-analytical and post analytical phases of quality assurance
9. The value of maintaining electronic records of patient data in terms of maintaining confidentiality and continuation of care (Laboratory informatics)
10. The components of a formal laboratory safety programme

ANNEXURE 4. MD Part 1 in Histopathology -Contents

Subject Specific Knowledge

1. Basic principles of Histochemical and Immunohistochemical, special staining methods and their value and limitations
2. Sufficient knowledge in the macroscopy, microscopy and a general clinical knowledge of common diseases encountered in the Histopathology and Cytopathology practice

Practical Aspects

1. Knowledge of the basic principles of specimen dissection, macroscopic description and block selection in neoplastic and non neoplastic diseases
2. Interpretation of macroscopic and microscopic features in the context of clinical data to diagnose or to give a differential diagnosis
3. Steps taken in situations where a diagnosis is not possible.
4. Fine needle aspiration and handling of Cytology samples.
5. Interpretation of Cytology smears of Fine needle aspirations and Exfoliative cytology smears (Gynaecological and Non-Gynaecological Cytology).
6. Basis of special stains, relevant technical aspects and interpretation of the special stained slides with the Histological features.
7. Presentation of a case at a Clinico-Pathology meeting.
8. Different techniques used in Pathological postmortems and interpretation of the findings.

ANNEXURE 5–Guidelines for Pre-MD Learning Portfolio in Histopathology

Trainees undergoing Postgraduate training in Histopathology should maintain a portfolio during the total training period. Therefore it will be made up of 3 components (MD Part 1, MD Part 2 and post MD training). The first two components (MD Part 1 & 2) should be submitted one month before the corresponding examinations. The 3rd component (post MD component) should be submitted for the pre-board certification assessment.

A panel of examiners will assess the portfolio and assign a grade. The grade obtained will not be counted for the r MD Part 1 & Part 2 examinations. However trainees should demonstrate their learning by obtaining a Pass grade. Submission of the portfolio before the deadline will be one of the requirements to sit the MD in Histopathology Part 1 & Part 2 Examinations and to obtain board certification (pre-board certification assessment).

The trainer will be the mentor of the trainee in preparing the portfolio. The trainer(Head of Department/nominee) should review the progress of the trainee with regard to the development of the portfolio during the training period at each level.

The basic structure of the portfolio should be

1. A title page, giving the name, post, level of training and name of the supervising pathologist. At centers with more than one trainer, the Head of the Department will be the supervisor.
2. A contents page, listing what is in the portfolio with page reference.
3. A list of learning outcomes ; the portfolio should demonstrate the achievement of these
4. Activities with a short reflective overview
5. The evidence of activities completed/done, grouped together into the areas contained in the learning outcomes.

Evidence should be given in the form of letters, articles, presentations, critical incident reviews, case based studies, audit reports, critical appraisal of current literature, DOPS(Direct Observation of Procedural skills), feedback from different levels etc.

Evidence of participation at workshops, conferences, scientific sessions, special training/exposure to new techniques relevant to histopathology, cytopathology and autopsy and evidence of conducting and participating in multi disciplinary team meetings also can be included.

At least one audit should be done during the training period and included at any one of the 3 levels of portfolio

The Peer Assessment Form included in the annex can be used to obtain feedback from the peers and trainers.

6. Measures taken to overcome the deficiencies identified at the MD Part 1 & 2 portfolio assessment should be included in the MD Part 2 and Pre-Board certification Portfolios respectively.

7. Three case reports written according to the guidelines given below should be included in the MD Part 2 Portfolio.

Case report component of the MD Part 2 Portfolio

The portfolio should contain 3 cases (one each in histopathology, cytology and post-mortem)

The case should have importance in at least one of the following aspects and should have a sufficient diagnostic work up done.

1. Important diagnostic lesson
2. Findings which suggest a new aetiology
3. Learning from errors
4. Unusual presentation of a common disease
5. A very rare disease
6. A disease with unusual histopathological/cytopathological features

Structure of the case report

1. Title of the case
2. Summary (up to 250 wordssummarising the case presentation and outcome)
3. Background-Why you think this case is important – why did you write it up
4. Presentation-Presenting features, medical/social/family history
5. Investigations- any other investigations. eg biochemical, haematological, radiological etc.
6. Macroscopy – if relevant
7. Microscopy
8. Differential diagnosis- Describe in detail how you reached your working diagnosis.
9. Clinicopathological correlation, can be incorporated in the discussion ot can be separately discussed.
10. Outcome and follow up details, if relevant
11. Discussion
12. Learning points in brief (listed)
13. Photographs of macroscopy and microscopy with legends
14. References (reference style should be the same for all cases eg. Vancouver or Harvard)

The total number of words should not be more than 2000 and not less than 1500.

Assessment

The Portfolio at MD Part 1 level should be submitted to the PGIM within one month of the MD Part 1 Examination. The BOS will send it to a trainer in a different cluster to assess. The allocated trainer should assess it and send an evaluation (according to the assessment grid given below) to the Board of Study in Pathology and counsel the trainee if necessary.

Assessment of MD Part 2 portfolios of trainees will be done at a viva voce examination conducted by a panel of three board nominated trainers/examiners. The viva will be conducted within 3 months following the corresponding MD Part 2 examination. The examiners could question the trainee in relation to the submitted portfolio. A consensus overall grading will be given and the shortcomings and merits of the submitted portfolio will be discussed with the candidate.

If the trainee fails to obtain a pass grade he/she is required to draw up a plan with the assistance of the supervisor based on the feedback given by the examiners. The plan to overcome the deficient areas should be submitted to the BOS for approval. How the trainee has overcome the deficiencies should be included with evidence in the MD Part 2/Pre-board certification portfolio.

Grading of portfolio	
Grade	Marks
Merit	≥70
Pass	≥50
Fail	<50

Marking scheme for Portfolio			
Domain Assessed		**Examples of activities/evidence which will demonstrate learning in the stated domain of learning**	Marks out of
Application of knowledge		Three Case Reports	15
		Case discussions, MDT, Problem solving skills	10
Attitudes		Feedback/evaluation by the supervisor, trainers/peers, critical incident review, any other	15
Skills			
	Procedural Skills	DOPS	12
	Writing skills	reports, research papers,	5
	Communication skills	Presentations ,MDT, Education of peers, patients, staff (lab ,ward) reflective writing, feedback/evaluation form	8
	Continuous professional development	Journal club, black boxes/ case presentations , scientific sessions , conferences, study days	5
	Managerial skills	Audits, preparation of duty rosters, management strategies of critical incidents, organizational skills	5

	Research skills	Research project, any other research and critical evaluation of journal articles	10
	Personal development	Time management, supervisor's evaluation	5
	Dissemination of knowledge	Teaching; peers, lab staff, lay people	5
	Innovations and creations	Development of new techniques to improve the lab work etc.	5

The assessment of learning portfolio will be based on whether the trainee has achieved the knowledge, attitudes and skills expected for the level of training (MD Part 1& Part 2).

Portfolio – MD in Histopathology Part 1

Essential items

1. A minimum of 12 DOPS (at least 6 per year)
2. A minimum of 2 trainer/peer feedback per year (Assessment form given below)
3. A reflective overview; reflective remarks should be included along with each activity.

Portfolio – MD in Histopathology Part 2

Essential items:

1 3 cases should be included in the portfolio from the components of Histolopathology, Cytology and a Postmortem
2 A minimum of 2 trainer/peer feedback per year (Assessment form given below)
3 A minimum of 12 DOPS (at least 6 per year)
4. A reflective overview; reflective remarks should be included along with each activity .

Direct Observation of Procedural Skills (DOPS)

This workplace based assessment tool is included as a formative assessment to ensure that the trainee acquires competence in performing essential procedures which are not feasible to be assessed at diploma and MD examinations. **It will be the responsibility of the trainee to get the required number of DOPS done. The trainee should make the arrangements for such activities under the guidance of the trainer.**

The assessment procedure generally expected to require 15 minutes of observation and 5 minutes to feedback to the trainee. The DOPS form annexed should be used for this purpose.

The types of procedures that can be assessed include

1. Setting up a microscope
2. Specimen cut-up eg.:oesophagectomy, gastrectomy, colectomy, thyroidectomy, mastectomy, ovarian cyst, hysterectomy etc.
3. Obtaining a fine needle aspiration eg.: thyroid, lymph node, breast etc.

Trainees should complete a minimum of 6DOPS/year. **They should be able to demonstrate acquisition of procedural skills and sustainment of acquired skills and competence.**

Postgraduate Institute of Medicine
Board of Study in Pathology

WORKPLACE-BASED ASSESSMENT FORM
HISTOPATHOLOGY

Direct observation of practical skills (DOPS)

Trainee's name :		Diploma	Year		MD	Year	
			1	2		1	2
Assessor's name :		Designation of the assessor					
Number of DOPS done previous by the candidate on the same procedure							
Brief outline of procedure, indicating focus for assessment Tick category of case or write in space below.							

☐ Specimen cut up (state specimen or scenario)
☐ Autopsy procedures (need not be the full autopsy) (state the aspect)
☐ Set up and use of microscope
☐ Systematic assessment of biopsy / cytology case (state type)
☐ Reporting procedures
☐ Taking a fine needle aspirate

Please specify

Complexity of procedure	☐	Low	☐	Average	☐	High	☐

Please grade the following areas using the scale provided. This should relate to the standard expected for the end of the appropriate stage of training:

		Below expectations		Borderline	Meets expectations	Above expectations	Unable to comment	
		1	2	3	4	5	6	
1	Understands principles of procedure							
2	Demonstrate appropriate preparation prior to the procedure							
3	Ensures patient safety (identification checks, adheres to guidelines etc)							
4	Complies with health and safety requirements (eg: assessment of risk, use of personal protective equipment, aseptic technique where appropriate)							
5	Technical ability and correct use of equipment							
6	Communication skills (written and/ or verbal)							
7	Consideration of patient focus and professional issues (e.g. respect for patient dignity, consent)							
8	Seeks help where appropriate							

9	Overall ability to perform procedure						
Please comment to support your scoring:							
Suggested developmental work: (particularly areas scoring 1-3)							

Outcome:	Satisfactory Un satisfactory (Please circle as appropriate)	Date of assessment	
Signature of assessor:		Signature of trainee:	

Reference: Workplace based assessment form – Histopathology; prepared by the Royal College of Pathologists, United Kingdom

Postgraduate Institute of Medicine
Board of Study in Pathology

Workplace based assessment
Histopathology
Peer Assessment Form

Trainee's name :		MD Part 1	Year 1	Year 2	MD Part 2	Year 1	Year 2
Training Centre:		Circle the cages above and below as appropriate					
Assessor's name :		Trainer	Trainee	MD Part 1	MD Part 2	Post MD	

	Please grade the following areas using the scale provided. This should relate to the standard expected for the end of the appropriate stage of training: How would you rate this doctor in his/her	Below expectations		Borderline	Meets expectations	Above expectations	Unable to comment	
		1	2	3	4	5	6	
1	ability to diagnose on histological samples							
2	ability to diagnose on cytological samples							
3	Willingness and effectiveness in seeking additional information necessary for diagnosis							
4	awareness of his/her own limitations							
5	ability to manage time effectively							
6	procedural skills							
7	willingness to/effectiveness in training juniors							
8	communication with patients							
9	communication with laboratory staff							
10	communication with peers							
11	reliability as a member of the team							
12	Overall assessment							

Signature of assessor:		Date :	

** Peer assessment should be based on direct observation of routine performances and not on a specific encounter.
This form could be utilized by the trainees as evidence of feedback on their performance to be included in the portfolio. This form can be used for peer as well as trainer feedback. The trainee may attach a reflective account on the feedback received and set a plan of action for him/herself.

Reference: Norcini John, Burch Vanessa. Workplace-based assessment as an educational tool:AMEE Guide No.31. Medical Teacher 2007;29:855-871

ANNEXURE 6 - Progress Report (MD Part 1 & 2 Training in Histopathology)

Postgraduate training in Histopathology

Progress Report(MD Part 1 & 2 Training)

(To be filled by the trainer)

Name of the trainee: **:**

Postgraduate training course/ programme **:**

Institution

Period covered: **:** from to

	Excellent	Good	Average	Poor
Attendance & punctuality				
Attitudes				
Communication skills				
Honesty & integrity				
Team player skills				
Self motivation				
Presentation skills				
Application of knowledge				
Overall professional competence				
General/Specific comments:				

Procedures

Cutup .....

Fine Needle Aspirations .....

Postmortems .....

Reporting .....

Knowledge .....

(Please comment on research project): .....

.....

.....

.....

Name of the trainers/supervisors:

Signature :

Date:

ANNEXURE 7- Contents of MD Part 2 in Histopathology Training Programme

Subject Specific Knowledge

1. A general clinical knowledge of the diseases encountered in the Histopathology and Cytopathology practice and a sound knowledge of macroscopic and microscopic changes in tissues/organs in these diseases.
2. Grading, staging and classification of malignant tumours according to the classifications systems/grading and staging systems currently in use.
3. The value, advantages and disadvantages of such systems.
4. Principles and the process of all investigations related to Histopathology –
   eg; Histochemistry, Immunohistochemistry, Immune fluorescence, Electron Microscopy, Molecular Biology.
5. Scope and limitations of the above investigations.
6. Pathological mimics of various different disease entities and how these interpretive problems are resolved in daily practice.
7. Principles of audit, internal quality control and external quality assurance and accreditation of Histopathology and Cytopathology laboratories.

Practical aspects

1. Writing comprehensive/interpretive Pathology reports on all surgical Pathology specimens.
2. Conducting Clinicopathological meetings, Journal clubs and case discussions.
3. Reporting on any unusual cases and carrying out research projects and audits.
4. Critical evaluation of case reports and original papers published in journals.
5. Planning and conducting a research project and analysis of data.
6. Pathological postmortems; conducting, interpretation and writing comprehensive reports.
7. Describe the principles of safe laboratory practices and educate the laboratory staff on health and safety issues.
8. Ethical aspects of Histopathology laboratory practices.
9. The value of information technology in Histopathology practice.
10. Carrying out an audit in the Histopathology laboratory

The overall subject specific knowledge and practical aspects described above should be applied in the context of specified aspects and anatomical sites listed below.

Gross techniques in surgical pathology

Initial handling of specimen, fixation, general principles of gross examination, tissue contamination (floaters)

Handling the most common and important surgical specimens

Special techniques in surgical pathology

Special stains, electron microscopy, immunohistochemistry, flow cytometry

Other methods for analysis of cell proliferation cytogenetics, molecular pathology

Surgical pathology and cytopathology of neoplastic and non-neoplastic lesions of the following sites

Skin – Dermatoses - Tumours and Tumor like conditions
Oral cavity and oropharynx, mandible and maxilla
Respiratory tract
Nasal cavity, paranasal sinuses and nasopharynx
Larynx and trachea, lung and pleura
Mediastinum
Thyroid gland
Parathyroid gland
Gastrointestinal tract
Esophagus, stomach, small bowel, appendix, large bowel, anus
Major and minor salivary glands
Liver
Non-neoplastic diseases
Tumours and tumorlike conditions
Gallbladder and extrahepatic bile ducts
Pancreas and periampullary region
Adrenal gland and other paraganglia
Urinary tract
Kidney, renal pelvis, and ureter, bladder
Male reproductive system
Prostate and seminal vesicles, testis, testicular adnexa, penis and scrotum
Female reproductive system
Vulva, vagina, cervix, uterinecorpus, fallopian tubes, ovary, placenta
Breast
Lymph nodes
Spleen
Bone marrow
Bone and joints
Soft tissues
Peritoneum, retro peritoneum and related structures
Cardiovascular system
Heart, arteries, veins, lymph vessels
Neuromuscular system
Central nervous system
Peripheral nerves
Skeletal muscle
Pituitary gland

ANNEXURE 7. SHORT APPOINTMENTS AND STUDY DAYS

1. Neuropathology

Duration: 4 weeks

Centers: NHSL, TH Kandy, TH Karapitiya

Learning Outcomes

At the end of the rotation in neuropathology, the trainee will be able to

1. identify the normal histology of CNS
2. identify cellular reactions of neurons and glial cells to injury in a histological section/cytology preparation
3. identify pathological changes in a stereotactic brain biopsy and other neuro surgical specimens
4. interpret macroscopic and microscopic features together with available clinical data of CNS tumours and give the diagnosis or a differential diagnosis
5. classify CNS tumours according to the WHO classification
6. identify IHC markers and cytogenetics needed to confirm /grade a CNS tumour
7. prepare and interpret crush smears of CNS lesions
8. interpret frozen sections
9. interpret sections stained with special stains for myelin and nerve fibers

2. Respiratory Pathology

Duration: Two weeks

Center: National Hospital for Respiratory Diseases , Welisara

Learning Outcomes

At the end of the rotation in respiratory pathology, the trainee will be able to

1. discuss the indications and contraindications for fine needle aspiration of lung lesions
2. describe the basic radiological appearances of lung lesions
3. interpret cytological and histological preparations of the common lung lesions, both benign and malignant
4. classify lung and mediastinal tumours according to the latest WHO classification
5. identify the value of immunohistochemistry and other ancillary techniques in the diagnosis of lung and mediastinal tumours.
6. identify the adequacy of a cytological sample for interpretation.
7. cut up and rationally select sections from a peumanectomy and other surgical specimens
8. stage lung tumours.
9. diagnose or to give a differential diagnosis for lung and mediastinal tumours on cytology and histology samples.

3. Renal Pathology

Duration: Two weeks

Centers: Department of Pathology Universities of Colombo and Peradeniya, Sri Jayewardenepura General Hospital

Learning Outcomes

At the end of the rotation in Renal Pathology the trainee will be able to

1. identify the following.
    a. normal glomerulus, tubules, interstitium and blood vessels, juxta glomerular apparatus and macula densa
    b. glomerular basement membrane thickening, spikes, double contouring, wire loop lesions
    c. mesangial hypercellularity, increase in matrix, deposits in matrix, mesangial nodules
    crescents, cellular and fibrous
    d. infarcted and sclerotic glomeruli, tuft adhesions, inflammatory cells, karryorhectic debris, fibrin thrombi and necrotizing foci within glomeruli
    e. tubular necrosis, tubular atrophy, tubular casts, tubulorrhexis
    f. interstitial fibrosis, periglomerular fibrosis, inflammatory cell infiltration, granulomas
    g. fibrinoid necrosis, thrombosis, vasculitis, intimal thickening, hyalinosis of blood vessels
2. interpret silver stains, PAS, trichrome and amyloid stains in renal biopsies.
3. describe basic features of slides stained with the immunofluorescence stain for immune deposits.
4. diagnose, non proliferative and proliferative types of glomerular nephritis, crescentic glomerular nephritis, diabetic nephropathy, renal amyloidosis, interstitial nephritis, acute tubular necrosis, cortical necrosis, hypertensive disease and SLE
5. identify basic features of renal transplant biopsies and list the different categories of rejection based on the Banff classification for renal transplant rejection

4. Gynaecological Pathology

Duration: 1.5 months

Centers: Castle Street Hospital for Women, TH Mahamodara

Learning Outcomes

At the end of the rotation in Gynaecological Pathology the trainee will be able to

1. perform appropriate dissection and sampling of gynaecological specimens

2. identify common non-malignant lesions of cervix, uterus, fallopian tubes and ovaries including inflammation with special emphasis on
    a. Cervix – Metaplasia and reactive changes of the lining epithelium
    b. Ovaries – Benign ovarian cysts
    c. Endometriosis and diagnostic problems
    d. Endometriosis and diagnostic problems
3. interpretation of endometrial currettings
    a. Dating
    b. Inflammations
    c. Metaplasia
    d. Drug induced changes
    e. Dysfunctional bleeding
    f. Hyperplasia
    g. Artifacts
    h. Neoplasia
    i. Premalignant lesions
4. diagnose malignant lesions of cervix, endometrium, myometrium and ovaries
5. discuss relevant Immunohistochemical stains in diagnosing gynaecological malignancies and differential diagnosis
6. Identify products of conception and trophoblastic disease
7. dissect placenta and identify common placental abnormalities
8. Interpretation of cervical smears

5. <u>Onco-pathology</u>

Duration: 1.5 months

Centers: National Cancer Institute, Maharagama

Learning Outcomes

At the end of the rotation in Oncopathology the trainee will gain competence in

1) Handling oncology specimens such as
    a) Oro-maxillary resections – Hemimandibulectomy, Glossectomy, Maxillectomy
    b) Block dissections – Cervical /Inguinal
    c) Bowel resections
    d) Breast specimens- Needle localized excisions, wide local excisions,breast conservation surgeries
    e) Pelvic excenterations
    f) Limb disarticulations –
    g) Gynaecologial specimens-Eg: Radical hysterectomy
2) Macroscopic description of specimens
    Inking and sampling of surgical/ resection margins

Apical node sampling

3) Reporting of
Primary tumours
Recurrences
Post neoadjuvent therapy specimens
Surgical margin clearance
Staging

4) Handling of sentinel lymph nodes –
Imprints
Frozen sections

5) explain
- Principles of immuno staining
- Antigen retrieval
- Interpretation of markers
- Effects of treatment
- Identification of artifacts
- Identification of non specific staining
- Appropriate selection of markers for a given case
- Diagnosis / Discussion

6) contributing as a histopathologist at multidisciplinary meetings

6. <u>Muscle Pathology</u>

Duration: One study day

Center: Department of Pathology, University of Peradeniya

Learning Outcomes

At the end of the study day in muscle pathology, the trainee will be able to

1. identify fibre atrophy,hypertrophy, fibre necrosis, degeneration, regeneration, mitochondrial densities, inclusion bodies in a muscle biopsy
2. Identify vasculitis in a muscle biopsy
3. instruct the clinical colleagues regarding handling and transport of muscle biopsyspecimens to the lab
4. describe
    i. fixing of muscle in isopentone cooled in liquid nitrogen
    ii. Fibre orientation under dissecting microscope
    iii. Cases of muscular dystrophy, inflammatory myopathy and neurogenic atrophy

7. Ophthalmic pathology

Duration: One study day

Centers: National Eye Hospital, Colombo, TH Kandy, TH Karapitiya

Learning Outcomes

At the end of the study day in Ophthalmic pathology the trainee will be able to

1. identify normal histology of the components in the eye
2. identify and diagnose inflammatory and other benign lesions in the eye
3. Identify and diagnose pigmented lesions in the eye
4. identify common tumours arising in and around the eye
5. explain cut up of exenteration specimens of eye globe
6. cut up ,select blocks and identify tumours in the eye

8. Paediatric Pathology

Duration: 1 weeks/study day

Centers: Lady Ridgeway Hospital for Children, Sirimavo Bandaranaike Hospital for Children, Kandy, Department of Pathology Faculty of Medicine, Colombo, TH Mahamodara, Castle Street Hospital for Women

Learning Outcomes

At the end of the rotation in Paediatric Pathology, the trainee will be able to

1. identify the basic clinical, radiological and genetic information required for correct histopathological diagnosis in paediatric age group.
2. cut up and select necessary blocks from benign and malignant lesions commonly occurring in paediatric age group.
3. identify the microscopic features of normal tissue and disease processes of the paediatric age group

9. Pathological postmortem

Duration: 1 month

Minimum number : 10

Learning Outcomes

At the end of the rotation in pathological postmortem the trainee will be able to

1. identify the cases for which a pathological postmortem can be done and which is not within the perview of the histopathologist.
2. perform an autopsy using the right techniques to demonstrate pathological changes.
3. select appropriate blocks for microscopy.
4. identify the cases which need the support of ancillary techniques to diagnose and collect samples for such tests.

5. identify pathological changes and distinguish them from postmortem changes.
6. interpret the findings in the light of clinical information.
7. write a comprehensive pathological postmortem report.

10. Perinatal Postmortem

Duration: One Study Day

At the end of the Study Day in perinatal postmortem, the trainee will be able to

1. identify special techniques applicable to a perinatal postmortem identify basic structural abnormalities
2. interpret the findings in the light of clinical information.
3. write a comprehensive pathological postmortem report.

ANNEXURE 8 – Supervisor Consent Form- MD Research Project

Postgraduate Institute of Medicine
Board of Study in Pathology
SUPERVISOR CONSENT FORM
MD Research Project

1. Name of Trainee :

2. Training Centre :

3. Supervisor :

4. Title of Project :

5. Institution(s) where work would be carried out:

6. Institution from where the ethical approval will be /has been obtained:

Recommendation of supervisor: ……

Signature: …….. Date: ……

ANNEXURE 9 -Guidance for Research Project for MD Histopathology

Research is an integral component of professional practice. A research project is included as a learning process in the MD Histopathology training programme for the trainee to engage in acquiring new knowledge by a process of establishing facts, considering new ideas and postulating new theories to update expertise. This will help the trainee to keep abreast with ever-changing medical knowledge.

Aim:

To enable trainees to develop the knowledge, skills, attributes and competence required to conduct basic scientific research in the field of histopathology and cytopathology

Learning Outcomes:

Upon completion of the project, trainees will be able to

a. write up a scientific project proposal
b. Demonstrate competence in conducting a literature search and select references relevant to a particular topic.
c. Develop appropriate methodology and conduct a practical research.
d. Relate research findings to pre-existing information.
e. appreciate significance and limitations of the results
f. draw conclusions on the results and make recommendations

Assessment

All project proposals and reports should be scrutinized and forwarded to the BOS by the supervisor.

The project proposal will be assessed by a panel of 2 examiners appointed by the BOS and the project report will be assessed by the same examiners.

The following can be used as guidelines for the examiners to evaluate the acceptability of the project report. If the project report is unacceptable, the examiners/assessors should give necessary instructions for corrections/ amendments. The corrected project report should be scrutinized by the supervisor. The trainee should submit it through the supervisor to the BOS for re-assessment.

1. **Introduction**: A satisfactory introduction with the following
   The problem to be examined is clearly explained with sufficient justification.

2. **Literature Review**: Satisfactory literature review with
   1. Historical and contemporary understanding on the topic.
   2. data pertaining to the local/global setting

3. **Materials and methodology**
   1. The study and the research methodology are appropriate to the objectives set out.

2. The research has been conducted systematically and accurately within an accepted ethical frame as stated in the proposal.
3. A statistical method appropriate to the achievement of objectives of the study has been used.

4. Results

1. Results are well presented
2. Self explanatory tables and figures with appropriate legends are used satisfactorily and appropriately.

5. **Discussion and conclusions**

1. Sufficient and valid interpretation of results
2. Conclusions are drawn on the results of the study.
3. Recommendations are based on the results and interpretation of results.
4. Limitations of the study have been identified.

(Please refer the Annexures of **Generic Guidance to Boards of Study/Specialty Boards for Evaluation of Research Proposals for MD Programmes document issued by the PGIM)**

ANNEXURE 10- Progress Report (Post MD Training in histopathology)

Postgraduate training in Histopathology

Progress Report (Local Post MD Training)

(To be filled by the trainer/supervisor)

Name of the trainee: :

Postgraduate training course/ programme :

Institution

Period covered: : from to

	Excellent	Good	Average	Poor
Attitude to staff & patients				
Reliability & punctuality				
Commitment				
Communication skills				
Leadership skills				
Motivation				
Independent decision making				
Striving for improvement				
Overall professional competence				

General/Specific comments(Please comment on research project):

Name of the trainers/supervisors:

Signature:

Date:

ANNEXURE 11 -Progress Report on Post MD Overseas Training – Histopathology

Name of the trainee :
Period of Training :
Hospital & Unit :
Supervisor :

	Excellent	Good	Average	Poor
Knowledge (Theory)				
Decision making in histopathology practice				
Ability to cope with the workload				
Independent and rational thinking				
Skills in diagnostic decision making				
Awareness of own diagnostic limitations				
Quality and timeliness of pathology reporting				
Contribution to clinicopathological/multi disciplinary meetings				
Professional relationship with patients				
Attitudes towards working as a team				
Leadership qualities				
Availability / punctuality				
Communication skills				
Dedication to work				
Reliability				
Overall professional competence				

Additional Remarks:

Signature of the Supervisor:

Date :

ANNEXURE 12 – RECOMMENDED READING

TEXTBOOKS

1) Robbins Pathologic Basis of Disease –Cotran, Fausto and Abbas
2) Rosai and Ackermans Surgical Pathology –Juan Rosai and Lauren V Ackerman
3) Diagnostic Histopathology of Tumours- Christopher Fletcher
4) The Art and Science of Cytopathogy (Exfoliative Cytology) - Richard M de May
5) The Art and Science of Cytopathogy (Aspiration Cytology) - Richard M de May
6) Diagnostic Cytopathology- Gracy Mckee
7) Books on histopathology of specific organs (E.g. Blausteins Pathology of the Female Genital Tract, Skin Pathology- David Weedon, Soft Tissue Tumours - Enziger and Weiss etc)
8) WHO fascicles on
    a. Pathology and Genetics of Tumours of the Urinary System and Male Genital Organs
    b. Pathology and Genetics of Tumours of the Breast and Female Genital Organs
    c. Pathology and Genetics of Tumours of the Digestive System
    d. Pathology and Genetics of Tumours of the Nervous System
    e. Pathology and Genetics of Tumours of Soft Tissue and Bone
    f. Pathology and Genetics of Tumours of Haematopoetic and Lymphoid Tissue
    g. Pathology and Genetics of Tumours of Endocrine Organs
    h. Pathology of and genetics of Tumours of the Lung, Pleura, Thymus and Heart
9) Pathology Diagnostic Immunohistochemistry – David J Dabbs
10) Laboratory Safety in Infection Control Manual by the Sri Lanka College of Microbiologists.

WEBSITES & Journals

1) Journal of Clinical Pathology –jcp.bmj.com
2) Web Path: The Internet Pathology LaboratoryJournals
3) American Journal of Surgical Pathology
4) Diagnostic Histopathology
5) Histopathology
6) Cytopathology

NOTE

Above information is only meant as a guide to reading. Trainees are not expected to restrict themselves to above mentioned reading material only. Trainees are expected to read the current journals and the latest editions of the books.