

## **Specialty Training Requirements (STR)**

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| Name of Specialty:  | Chemical Pathology  |
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| Date of submission: | 27 August 2026      |

### Table of Contents

|                                                                                  |    |
|----------------------------------------------------------------------------------|----|
| Scope of Chemical Pathology .....                                                | 2  |
| Purpose of the Residency Programme .....                                         | 2  |
| Admission Requirements .....                                                     | 2  |
| Selection Procedures.....                                                        | 3  |
| Less Than Full Time Training .....                                               | 3  |
| Non-traditional Training Route .....                                             | 3  |
| Separation .....                                                                 | 3  |
| Duration of Specialty Programme.....                                             | 4  |
| “Make-up” Training.....                                                          | 4  |
| Learning Outcomes: Entrustable Professional Activities (EPAs).....               | 4  |
| Core Competencies, Sub-competencies and Milestones .....                         | 5  |
| Other Learning Outcomes.....                                                     | 7  |
| Curriculum .....                                                                 | 7  |
| Learning Methods and Approaches: Scheduled Didactic and Classroom Sessions ..... | 8  |
| Learning Methods and Approaches: Clinical Experiences .....                      | 8  |
| Learning Methods and Approaches: Scholarly / Teaching Activities .....           | 9  |
| Learning Methods and Approaches: Documentation of Learning .....                 | 10 |
| Summative Assessments.....                                                       | 17 |

### Scope of Chemical Pathology

Chemical Pathology is a medical discipline within Pathology dedicated to the diagnosis and management of disease through the use of biochemical tests on body fluids and tissues. Pathologists in chemical pathology possess in-depth knowledge of disease pathophysiology, the diagnostic utility of clinical biochemistry tests, and laboratory operations. They work at the clinical interface and collaborate with multidisciplinary teams to provide expert consultation on laboratory test interpretation and patient management.

Pathologist-led clinical biochemistry laboratories perform a broad spectrum of specialised, rapid, and time-sensitive diagnostic tests, maintaining stringent standards in quality governance, assurance, and process optimisation. Together, the expertise of pathologists in chemical pathology and the performance of clinical biochemistry laboratories are essential to the timely diagnosis, prognosis, monitoring, and screening of disease, ultimately supporting optimal patient care.

### Purpose of the Residency Programme

The objective of the programme is to train pathologists in chemical pathology:

- a) To lead and manage a competent, effective and reliable clinical biochemistry laboratory so that maximum benefit may be gained for patient care; and
- b) To effectively contribute to the investigation and management of patients, especially in the area of metabolic medicine.

### Admission Requirements

At the point of application for this residency programme,

- a) Applicants must be employed by employers endorsed by Ministry of Health (MOH); and
- b) Residents who wish to switch to this residency programme must have waited at least one year between resignation from his / her previous residency programme and application for this residency programme.

At the point of entry to this residency programme, residents must have fulfilled the following requirements:

- a) Hold a local medical degree or a primary medical qualification registrable under the Medical Registration Act (Second Schedule);
- b) Have completed Post-Graduate Year 2 (PGY2);
- c) Have completed 6 months of clinical non-laboratory posting post Postgraduate Year 1 (PGY1); and
- d) Have a valid Conditional or Full Registration with Singapore Medical Council.

### Selection Procedures

Applicants must apply for the programme through the annual residency intake matching exercise conducted by MOH Holdings (MOHH).

Selection should be conducted via a virtual platform in the event of a protracted outbreak whereby face-to-face on-site meeting is disallowed and cross institution movement is restricted.

### Less Than Full Time Training

Less than full time training is not allowed. Exceptions may be granted by Specialist Accreditation Board (SAB) on a case-by-case basis.

### Non-traditional Training Route

The programme must only consider the application for mid-stream entry to residency training by an International Medical Graduates (IMG) if he / she meets the following criteria:

- a) He / she is an existing resident or specialist trainee in the United States, Australia, New Zealand, Canada, United Kingdom and Hong Kong, or in other centres/countries where training may be recognised by the SAB; and
- b) His / her years of training are assessed to be equivalent to the local training by Joint Committee on Specialist Training (JCST) and / or SAB.

*Applicants may enter residency training at the appropriate year of training as determined by the Programme Director (PD) and RAC. The latest point of entry into residency for these applicants is Year 1 of the senior residency phase.*

### Separation

The PD must verify residency training for all residents within 30 days from the point of notification for residents' separation / exit, including residents who did not complete the programme.

### Duration of Specialty Programme

The training duration must be 60-months, comprising 36 months of junior residency and 24 months of senior residency.

*Maximum candidature: All residents must complete the training requirements, requisite examinations and obtain their exit certification from JCST not more than 36 months beyond the usual length of their training programme. The total candidature for Chemical Pathology is 60 months Chemical Pathology residency + 36 months candidature.*

### “Make-up” Training

“Make-up” training must be arranged when residents:

- Exceed days of allowable leave of absence / duration away from training; or
- Fail to make satisfactory progress in training.

The duration of make-up training should be decided by the JCC and should depend on the duration away from training and / or the time deemed necessary for remediation in areas of deficiency. The JCC should review residents’ progress at the end of the “make-up” training period and decide if further training is needed.

Any shortfall in core training requirements must be made up by the stipulated training year and / or before completion of residency training.

### Learning Outcomes: Entrustable Professional Activities (EPAs)

Residents must achieve level 4 of the following EPAs by the end of residency training:

|              | Title                                                                |
|--------------|----------------------------------------------------------------------|
| <b>EPA 1</b> | Managing Laboratory Quality Assurance Practices                      |
| <b>EPA 2</b> | Implementing a New Test and/or a New Assay Formulation               |
| <b>EPA 3</b> | Providing Routine Biochemistry Clinical Consultations                |
| <b>EPA 4</b> | Assisting the Implementation of Laboratory Safety Management Systems |

#### **Entrustment Level**

**Level 1:** Be present and observe, but no permission to enact EPA

**Level 2:** Practice EPA with direct supervision

**Level 3:** Practice EPA with indirect supervision (supervisor present within the healthcare facility)

**Level 4:** Unsupervised practice allowed (supervisor is not present in the healthcare facility, but available on call to provide supervision remotely)

**Level 5:** May provide supervision for the practice of this EPA

### Core Competencies, Sub-competencies and Milestones

The programme must integrate the following competencies into the curriculum, and structure the curriculum to support resident attainment of these competencies in the local context.

Residents must demonstrate the following core competencies:

#### 1) Patient Care and Procedural Skills

Residents must demonstrate the ability to:

- a) Work effectively at clinical interface and collaborate with multidisciplinary teams to provide expert consultation on laboratory test interpretation and patient management.
- b) Gather essential and accurate information about the patient, and effectively contribute to the investigation and management of patients
- c) Lead and manage a competent, effective and reliable clinical biochemistry laboratory so that maximum benefit can be gained for patient care.

#### 2) Medical Knowledge

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioural sciences, as well as the application of this knowledge to patient care.

Residents must demonstrate in-depth knowledge in the following:

- a) Water, electrolytes and acid base metabolism
- b) Liver Function and Disease
- c) Kidney Function and Disorders
- d) Diabetes Mellitus
- e) Hypoglycaemia
- f) Lipid Metabolism
- g) Thyroid Function and Disorders
- h) Pituitary Gland Function and Disorders
- i) Adrenal Cortex Function and Disorders
- j) Bone and mineral metabolism
- k) Reproductive System Function and Disorders
- l) Pregnancy Physiology and Disorders
- m) Prenatal testing
- n) Newborn screening and Inborn Errors of Metabolism (IEMs)

Residents must demonstrate in-depth knowledge in:

- a) Diagnostic utility of clinical biochemistry tests
- b) Factors affecting result interpretation (includes pre-analytical, analytical and post-analytical)

- c) Laboratory Quality Management
- d) Laboratory Analytical Methods
- e) Optical Techniques
- f) Chromatography
- g) Electrochemistry and Chemical sensors
- h) Electrophoresis
- i) Enzyme and Rate analyses
- j) Immunochemical techniques
- k) Point of care testing
- l) Laboratory automation
- m) Mass spectrometry
- n) Inductively Coupled Plasma Mass Spectrometry (ICP-MS) (elemental analysis)
- o) Evaluation of analytical methods
- p) Laboratory Statistics
- q) Principles of Laboratory Safety

### **3) System-based Practice**

Residents must demonstrate the ability to:

- Work effectively in various health care delivery settings and systems relevant to their clinical discipline
- Coordinate patient care within the health care system relevant to their clinical discipline
- Incorporate considerations of cost awareness and risk/benefit analysis in patient care
- Advocate for quality patient care and optimal patient care systems
- Work in inter-professional teams to enhance patient safety and improve patient care quality. This includes effective transitions of patient care and structured patient hand-off processes.
- Participate in identifying systems errors and in implementing potential systems solutions

### **4) Practice-based Learning and Improvement**

Residents must demonstrate a commitment to lifelong learning.

Resident must demonstrate the ability to:

- Investigate and evaluate patient care practices
- Appraise and assimilate scientific evidence
- Improve the practice of medicine
- Identify and perform appropriate learning activities based on learning needs

## **5) Professionalism**

Residents must demonstrate a commitment to professionalism and adherence to ethical principles including the Singapore Medical Council's Ethical Code and Ethical Guidelines (ECEG).

Residents must:

- Demonstrate professional conduct and accountability
- Demonstrate humanism and cultural proficiency
- Maintain emotional, physical and mental health, and pursue continual personal and professional growth
- Demonstrate an understanding of medical ethics and law

## **6) Interpersonal and Communication Skills**

Residents must demonstrate ability to:

- Effectively exchange information with patients, their families and professional associates.
- Create and sustain a therapeutic relationship with patients and families
- Work effectively as a member or leader of a health care team
- Maintain accurate medical records

## **Other Competency: Teaching and Supervisory Skills**

Residents must demonstrate ability to:

- Teach others
- Supervise others

## **Other Learning Outcomes**

Residents must complete courses mandated by:

- a) SMC (Singapore Medical Council).
- b) Medical Ethics, Professionalism and Health Law course conducted by Singapore Medical Association.
- c) FRCPA (Royal College of Pathologists of Australasia): Quality Management, Laboratory Safety, Professionalism and Confidentiality, Cultural Safety by FRCPA e-Learning modules (for residents undergoing the FRCPA examinations only).

## **Curriculum**

The curriculum and detailed syllabus relevant for local practice must be made available in the Residency Programme Handbook and given to the residents at the start of residency.

The PD must provide clear goals and objectives for each component of clinical experience.

#### Learning Methods and Approaches: Scheduled Didactic and Classroom Sessions

The programme must schedule, and residents must attend:

- a) Tutorials and Socratic Interactions
- b) Didactic bigger-group learnings organised by national and cross-institutional Chemical Pathology community.

*Residents are encouraged to attend seminars, workshops and conferences organised by the national or international Chemical Pathology community.*

In the event of a protracted outbreak whereby face-to-face on-site meeting is disallowed and cross institution movement is restricted, teaching should be conducted on virtual platforms.

Residents must attend the following:

| Teaching Activity                                                                                                                                                                                                                                                                                                                                                                                                          | Attendance Required                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| Tutorials and Socratic Interaction with supervising faculty of the clinical chemistry laboratory:<br><br>a) Topical/case-based discussions<br>b) Peer-review learning (PRL) sessions<br>c) Journal and/or evidence-based reviews<br>d) Hospital-wide or multidisciplinary clinical meetings and clinicopathology meetings<br>e) Teaching sessions, seminars and workshops to meet specific chemical pathology competencies | Residents must attend at least 70% of the teaching sessions |
| Didactic bigger-group learnings organised by national and cross-institutional Chemical Pathology community:<br><br>a) Topical/case-based discussions<br>b) Quality assurance committee (QAC) / peer-review learning (PRL) sessions                                                                                                                                                                                         |                                                             |

#### Learning Methods and Approaches: Clinical Experiences

A resident can train at the same clinical chemistry laboratory for up to 48 months (or according to current FRCPA or FRCPATH requirements, whichever is shorter). A resident must spend at least 6 months in total in at least one clinical chemistry laboratory of a different healthcare cluster.

A supervisor must be identified for each resident at each rotation institution. Supervisors must be pathologists in chemical pathology with FRCPA or FRCPATH qualifications. A full-time pathologist in chemical pathology should not

supervise more than 2 residents. Under extenuating circumstances when the supervisor to resident ratio of 1:2 cannot be met, a supervisor can take on 3 residents after approval by the RAC. A part-time pathologist (of at least 0.5 FTE) should not supervise more than 1 resident.

#### Learning Methods and Approaches: Scholarly / Teaching Activities

Residents must take an active part in teaching of undergraduates, medical officers, allied health professionals and nurses, and participate in research projects and present research findings at relevant local, regional and international meetings.

Residents must complete the following scholarly / teaching activities:

|    | <b>Name of activity</b>    | <b>Brief description: nature of activity, minimum number to be achieved, when it is attempted</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | Teaching                   | Conduct at least 4 teaching sessions per year to undergraduates, doctors, allied health professionals and nurses.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 2. | Research and Presentations | <p>Minimum of total 4 items with at least ONE from Cat A and at least ONE from Cat B.</p> <p>CAT A:</p> <ul style="list-style-type: none"> <li>• Published article or manuscript accepted for publication in a peer reviewed journal where the resident is the first or a major contributing author</li> <li>• A poster or oral presentation at a national or international meeting or conference where the resident is the lead or a major contributor to the work</li> <li>• A formal research proposal for original research in chemical pathology in a format that could be submitted to a research funding body.</li> </ul> <p>CAT B:</p> <ul style="list-style-type: none"> <li>• A written report on an audit activity developed by the resident or with significant intellectual input from the resident in the development</li> <li>• A written report on a complex case in chemical pathology</li> </ul> |

In the event of a protracted outbreak, scholarly and teaching activities should be conducted online.

### Learning Methods and Approaches: Documentation of Learning

Residents must, before exit, complete the portfolios set out in the table below and document on forms / logs on MedHub.

| Name of activity                                                              | Documentation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EPA 1</b><br><b>Managing Laboratory Quality Assurance Practices</b>        | <p>Reports of management of QC / QA practices to be evaluated with entrustment-based discussion (EbD)</p> <p>Report format:</p> <ul style="list-style-type: none"> <li>Maximum 1000 words, including statistical charts/graphs and tables.</li> </ul> <p>In total: At least 10 by Year 5</p> <ul style="list-style-type: none"> <li>At least 2 per year from Year 2 to Year 4</li> <li>At least 1 in Year 5</li> </ul> <p>Entrustment level to be attained:</p> <ul style="list-style-type: none"> <li>Residents must demonstrate Entrustment Level 3 in at least 2 reports by end of Year 3 to promote to Year 4.</li> <li>Residents must demonstrate Entrustment Level 4 in at least 1 report in each area (namely proficiency testing, internal quality control, analyser-specific QC metrics, turnaround-times, amended report) by Year 5, to ensure competency of the resident at exit (mandatory).</li> </ul> |
| <b>EPA 2</b><br><b>Implementing a new test and/or a new assay formulation</b> | <p>Reports on implementation of a New Test or a New Assay Formulation to be evaluated with entrustment-based discussion (EbD)</p> <p>Report format:</p> <ul style="list-style-type: none"> <li>Maximum 1000 words, including statistical charts/graphs and tables.</li> </ul> <p>In total: At least 4 by Year 5</p> <ul style="list-style-type: none"> <li>At least 1 per 2 years from Year 2 onwards</li> </ul> <p>Entrustment level to be attained:</p> <ul style="list-style-type: none"> <li>Residents must demonstrate Entrustment Level 3 in at least 1 report by end of Year 3 to promote to Year 4.</li> </ul>                                                                                                                                                                                                                                                                                              |

|                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                | Residents must demonstrate Entrustment Level 4 in at least 2 reports by Year 5 (mandatory).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>EPA 3<br/>Providing routine<br/>biochemistry clinical<br/>consultations</b> | <p>Reports of consultations and / or discussion with attending / requesting clinician or multidisciplinary team on the Clinical Biochemistry test results and interpretation; (including unexpected results) to be evaluated with entrustment-based discussion (EbD).</p> <p>Reports will include the following areas:</p> <ul style="list-style-type: none"> <li>• Process of contact initiation with attending clinician or multidisciplinary team, consultation process and conclusions reached.</li> <li>• Of the minimum 8 reports by Year 5: <ul style="list-style-type: none"> <li>- At least 1 case of Serum Protein Electrophoresis by end of Year 3, and at least 3 by end of Year 5.</li> <li>- At least 1 case of clinical consult on possible Immunoassay Interference by end of Year 5</li> <li>- At least 1 case of clinical consult on test results derived of HPLC or Mass Spectrometry methodology by Year 5</li> </ul> </li> </ul> <p>Report format:</p> <ul style="list-style-type: none"> <li>• Case presentations, covering clinical and analytical components.</li> <li>• Maximum 1000 words, including statistical charts/graphs and tables.</li> <li>• At least 8 by Year 5</li> <li>• At least 2 per year from Year 2</li> </ul> <p>Entrustment level to be attained:</p> <ul style="list-style-type: none"> <li>• Residents must demonstrate Entrustment Level 3 in at least 2 reports by end of Year 3 to promote to Year 4.</li> <li>• Residents must demonstrate Entrustment Level 4 in at least 2 reports by Year 5 (mandatory).</li> </ul> |

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|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>EPA 4</b><br/> <b>Assisting the Implementation of Laboratory Safety Management Systems</b></p> | <p>Reports on laboratory safety audits or lab safety manual reviews or investigating laboratory safety incidents to be evaluated with entrustment-based discussions (EbD).</p> <p>The 4 reports should comprise of:</p> <ul style="list-style-type: none"> <li>• 1 laboratory safety audits (in leadership or assistant leadership capacity).</li> <li>• 1 laboratory safety manual review.</li> <li>• 2 investigations of laboratory safety incidents, with reflection on learning points.</li> </ul> <p>Report format:</p> <ul style="list-style-type: none"> <li>• Maximum 1000 words, including statistical charts/graphs and tables.</li> </ul> <p>In total:</p> <ul style="list-style-type: none"> <li>• 4 reports with EbD by the end of Year 5</li> </ul> <p>Entrustment level to be attained:</p> <ul style="list-style-type: none"> <li>• Residents must demonstrate Entrustment Level 3 in 1 laboratory safety incident report by end of Year 3 to promote to Year 4.</li> <li>• Residents must demonstrate Entrustment Level 4 in 1 laboratory safety incident report by Year 5 (mandatory).</li> </ul> |
| <p>DOPS (Direct Observation of Practical Skills)</p>                                                 | <p>DOPs should be planned with the supervisor and forms signed by the supervisor (or an appropriately qualified laboratory professional).</p> <ol style="list-style-type: none"> <li>1. Multi-test Automated analyser - Spectrophotometry</li> <li>2. Multi-test Automated analyser - Ion Selective Electrochemistry</li> <li>3. Multi-test Automated analyser - Immunoassay</li> <li>4. Multi-test Automated analyser - Analyser Daily Setup including quality assurance procedures</li> <li>5. Multi-test Automated analyser - Analyser Periodic Maintenance including quality assurance procedures</li> <li>6. Multi-test Automated analyser - Troubleshooting IQC Problems - 3 separate occasions</li> <li>7. Multi-test Automated analyser - Handling Over-AMR results</li> </ol>                                                                                                                                                                                                                                                                                                                              |

8. Multi-test Automated analyser - Handling small volume sample
9. Multi-test Automated analyser - Handling haemolysed sample
10. Multi-test Automated analyser - Handling lipaemic sample
11. Multi-test Automated analyser - Handling icteric sample
12. Multi-test Automated analyser - Handling and reporting critical results - 3 cases
13. Semi-Automated or Manual analyser - Blood Gases
14. Semi-Automated or Manual analyser - Osmometry
15. Specialised methods: High Performance Liquid Chromatography
16. Specialised methods: Gas Chromatography
17. Specialised methods: Tandem Mass Spectrometry
18. Specialised methods: Protein Electrophoresis and Immunofixation
19. Specialised methods for Trace Metals: ICPMS
20. Specialised methods for Trace Metals: FTIR
21. Specialised methods in relation to Toxicology - Screening
22. Specialised methods in relation to Toxicology - Confirmation
23. Molecular Techniques - PCR
24. Molecular Techniques - NGS
25. Specimen Reception
26. Water Purification System - Maintenance and Monitoring
27. Multi-test POCT analyser
28. Glucose POCT analyser
29. Paediatric and IMD Investigations - 5 cases
30. Phlebotomy via venesection, including patient identification and preanalytical considerations - 3 cases
31. Test result review and sign-out via the laboratory information system (LIS) - 3 cases
32. Dynamic Function Test - Follow-through of procedure, lab analysis and result reporting - Glucose Tolerance Test
33. Dynamic Function Test - Follow-through of procedure, lab analysis and result reporting - Synacthen Stimulation Test

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                        | <p>34. Dynamic Function Test - Follow-through of procedure, lab analysis and result reporting - Water Deprivation Tests</p> <p>35. Dynamic Function Test - Follow-through of procedure, lab analysis and result reporting - Prolonged 72-h fast</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Clinical Consultations | <p>Clinical consults are telephone calls or direct consults with clinicians regarding significant, unusual or difficult cases.</p> <p>At least 1 per week, may overlap with fulfilment of requirements for EPA 3. Each record should include a brief summary (20-50 words) of the case discussed.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Teaching               | <p>Conduct at least 4 teaching sessions per year to a good mix of undergraduates, doctors, allied health professionals and nurses. May overlap with fulfilment of requirements for Protected Training Time (PTT) PTT#1 and PTT#2.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Research               | <p>Minimum of total 4 items with at least ONE from Cat A and at least ONE from Cat B.</p> <p>CAT A:</p> <ul style="list-style-type: none"> <li>• Published article or manuscript accepted for publication in a peer reviewed journal where the trainee is the first or a major contributing author.</li> <li>• A poster or oral presentation at a national or international meeting or conference where the trainee is the lead or a major contributor to the work.</li> <li>• A formal research proposal for original research in chemical pathology in a format that could be submitted to a research funding body.</li> </ul> <p>CAT B:</p> <ul style="list-style-type: none"> <li>• A written report on an audit activity developed by the trainee or with significant intellectual input from the trainee in the development.</li> <li>• A written report on a complex case in chemical pathology.</li> </ul> |

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MSF (Multi-Source Feedback)                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p>MSF (using the Harmonised MSF Form <a href="https://go.gov.sg/harmonizedmsf">https://go.gov.sg/harmonizedmsf</a>) will be conducted once a year, as a formative (and not summative) assessment; scores will only be used for performance feedback and improvement.</p> <p>Raters of the MSR can be:</p> <ol style="list-style-type: none"> <li>Doctors who are not of Pathology specialty or Chemical Pathology sub-specialty.</li> <li>Medical Laboratory Scientists and Technologists.</li> </ol>                       |
| Professional Ethics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <p>Residents must complete attendance of Medical Ethics courses mandated by:</p> <ol style="list-style-type: none"> <li>Singapore Medical Council <ul style="list-style-type: none"> <li>Medical Ethics, Professionalism and Health Law course conducted by Singapore Medical Association.</li> </ul> </li> <li>FRCPA and /or FRCPATH <ul style="list-style-type: none"> <li>Quality Management, Laboratory Safety, Professionalism and Confidentiality, Cultural Safety by FRCPA e-Learning modules.</li> </ul> </li> </ol> |
| <p><u>PTT #1</u><br/>Tutorials and Socratic Interaction with supervising faculty of host clinical chemistry laboratory:</p> <ol style="list-style-type: none"> <li>Topical/case-based discussions</li> <li>Peer-review learning (PRL) sessions</li> <li>Journal and/or evidence-based reviews</li> <li>Hospital-wide or multidisciplinary clinical meetings and clinicopathology meetings</li> <li>Teaching sessions, seminars and workshops to meet specific chemical pathology competencies</li> </ol> | <p>Residents must attend at least 70% of the teaching sessions</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

PTT #2

Didactic bigger-group  
learnings organised by  
national and cross-  
institutional Chemical  
Pathology community:

- 1) Topical/case-based  
discussions
- 2) Quality assurance  
committee (QAC) /  
peer-review learning  
(PRL) sessions

## Summative Assessments

### Summative Assessments

| Residency Years | Summative Assessments                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------|---------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | Clinical, patient-facing, psychomotor skills etc.                         | Cognitive, written etc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| R5              | Attainment of requisite entrustment levels (entrustment level 4) for EPAs | <p>Pass-grade in FRCPA/FRCPath Part 2 Examination</p> <p><u>FRCPA Part II</u><br/>           Phase 1: 20 short answer questions: 3 hours<br/>           Phase 2: Structured oral examination: Series of 6 cases of approximately 15 minutes stations<br/> <u>OR</u><br/> <u>FRCPath Part II</u><br/>           Module 1: Practical skills<br/>           Module 2: Clinical, scientific and management skills<br/>           Module 3: Written component</p>                                                                 |
| R4              | Nil                                                                       | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| R3              | Attainment of requisite entrustment levels (entrustment level 3) for EPAs | <p>Pass-grade in FRCPA/FRCPath Part 1 Examination</p> <p><u>FRCPA Part I</u><br/> <u>Phase 1:</u><br/>           Paper A: 20 short answer questions (10 laboratory and 10 clinical) over 3 hours 15 minutes<br/>           Paper B: 40 questions (20 short answer and 20 calculations) over 3 hours 15 minutes<br/> <u>Phase2:</u><br/>           Structured oral examination: Series of 10 minutes stations<br/> <u>OR</u><br/> <u>FRCPath Part I</u><br/>           Clinical Biochemistry Written Examination: 2 hours</p> |
| R2              | Nil                                                                       | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| R1              | Nil                                                                       | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

# Learning Outcomes

| Learning Outcomes                                               | Attainment of Entrustment Level 3 in the requisite number of reports for the respective EPAs | Attainment of Entrustment Level 4 in the requisite number of reports for the respective EPAs | Pass-grade in FRCPA/FRCPPath Examinations |              |               |                 |                  | Compliance of all training requirements listed on C.R10 |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-------------------------------------------|--------------|---------------|-----------------|------------------|---------------------------------------------------------|
|                                                                 |                                                                                              |                                                                                              | FRCP A BPS                                | FRCPA Part I | FRCPA Part II | FRCPPath Part I | FRCPPath Part II |                                                         |
| EPA 1<br>Managing Laboratory Quality Assurance Practices        | √                                                                                            | √                                                                                            | √                                         | √            | √             | √               | √                | √                                                       |
| EPA 2<br>Implementing a New Test and/or a New Assay Formulation | √                                                                                            | √                                                                                            | √                                         | √            | √             | √               | √                | √                                                       |

|                                                                                              |   |   |   |   |   |   |   |   |
|----------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|---|
| EPA 3 Providing<br>Routine<br>Biochemistry<br>Clinical<br>Consultations                      | √ | √ | √ | √ | √ | √ | √ | √ |
| EPA 4 Assisting<br>the<br>Implementation<br>of Laboratory<br>Safety<br>Management<br>Systems | √ | √ | √ | √ | √ | √ | √ | √ |