TRAINEE HANDBOOK 2019

RCPA
The Royal College of Pathologists of Australasia

Chemical Pathology

It is essential to read this Handbook in conjunction with the ***Trainee Handbook – Administrative Requirements*** which is relevant to all trainees. This has information about the College's structure and policies, together with details of requirements for registration, training and examination applications.

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GLOSSARY

AACB	Australasian Association of Clinical Biochemists
AST	Aspartate aminotransferase
BEA	Board of Education and Assessment
CJCT	Committee for Joint College Training
EQAP	External quality assessment program
IANZ	International Accreditation New Zealand
ICU	Intensive care unit
LIS	Laboratory information system
MD	Doctor of Medicine
NATA	National Association of Testing Authorities
PhD	Doctor of Philosophy
POC	Point of care
PSA	Prostate specific antigen
QA	Quality assurance
QAP	RCPA Quality Assurance Programs Pty Ltd
QC	Quality control
RACP	The Royal Australasian College of Physicians
RCPA	The Royal College of Pathologists of Australasia
RI	Reference interval
TSH	Thyroid stimulating hormone
TFT	Thyroid function test
UV	Ultraviolet
WHS	Workplace health and safety

SECTION 1

INTRODUCTION

Chemical pathology is the branch of pathology which deals with the diagnosis and management of disease by use of chemicals present in the body fluids and tissues. Typically, chemical pathology laboratories are the largest subunits in pathology departments and commonly perform measurements of many different chemicals on hundreds of patient samples each day. Because many of these analyses are time-critical, the chemical pathology laboratory is usually highly automated and uses complex analysers which are capable of performing many analyses in a short time frame.

Chemical pathologists are responsible for running these laboratories, ensuring the quality of the results, and providing a diagnostic service and advice to clinicians. This requires a thorough knowledge of the pathophysiology of disease, the diagnostic value of individual tests, and also of the work of the laboratory.

Because of the complexity of the laboratory, trainees in chemical pathology spend a lot of time leading to the Part I assessment learning about the laboratory and about the instrumentation and procedures in the laboratory.

A significant part of the work of the chemical pathologist entails oral communication with clinical colleagues and for this reason significant emphasis is put on oral communication skills both in training and in assessment.

In 2004, the RCPA established a program with the Royal Australasian College of Physicians (RACP) for trainees to train jointly in Endocrinology and Chemical Pathology. Joint trainees are required to demonstrate the same knowledge and undertake the same assessment as RCPA trainees.

PERSONAL CHARACTERISTICS NEEDED

The chemical pathologist needs:

- Strong aptitude for, and interest in, the scientific basis of medicine and laboratory work;
- The ability to lead, to work autonomously and to work well as part of a team of medical, nursing and laboratory staff, as well as the wider discipline of Pathology;
- The ability to make sound clinical judgments and to combine their laboratory and clinical roles seamlessly;
- Familiarity with information systems and data analysis. The use of information systems is an integral part of practice in chemical pathology, where large amounts of numeric data are analysed;
- The ability to communicate well orally and in writing;
- The ability and willingness to guide and teach trainees.

GENERAL AIMS OF THE TRAINING PROGRAM

By the time trainees complete the requirements for Fellowship, they should

- Have a thorough understanding of pathophysiology and be able to liaise with clinicians;
- Understand laboratory organization and processes and be able to manage a budget;
- Understand how to manage staff and communicate effectively about issues that may arise;
- Stay up-to-date with new assays and new ideas arising in chemical pathology.

Furthermore, the RCPA policy on patient expectations of pathologists specifies that pathologists will:

- Demonstrate and maintain competence
- Be respectful of patients
- Treat specimens respectfully
- Foster constructive collegiality and teamwork within the laboratory
- Be part of the medical team looking after patients
- Provide accurate and timely results
- Be professional in their approach
- Be involved in appropriate accreditation and quality activities
- Provide value for public and private expenditure.

A guiding principle in assessing the suitability of a candidate presenting for final examination is whether the person can function at consultant level.

The general aims of the training program relate to four general functions of chemical pathologists:

- Discipline specific functions as a medical specialist in the laboratory
- Functions as a manager in the laboratory
- Research and scholarship
- Professional attributes

These functions are elaborated as specific training outcomes and activities in **Section 2** of this handbook.

TRAINING REQUIREMENTS

RCPA single discipline training

To gain the FRCPA in chemical pathology requires five (5) years of accredited training and satisfactory completion of the assessment program detailed below. No more than four (4) years in the one institution will be allowed. Please refer to the *Trainee Handbook - Administrative Requirements for e*ssential information regarding training limitation, retrospective accreditation of training and temporary suspension of training.

Exemptions from training time and examinations

Trainees who have trained in areas relevant to chemical pathology may be given credit towards the five (5) years of approved training. Trainees who hold a chemical pathology fellowship from an organisation similar to the RCPA may be granted exemption from components of the Part I examination. The RCPA training time credits and exam exemption tables guide consideration of applications for exemption.

Applications for exemptions must be directed to the Registrar of the RCPA Board of Education and Assessment.

Research

Research is a component of the RCPA training. Evidence of participation in research activities may include peer reviewed activities such as quality assurance, presentation at scientific meetings, publications and/or progress towards, or successful completion of, a PhD or MD thesis.

Part I examinations must be completed prior to enrolment for a PhD or MD. Prior approval must be obtained for the proposed research training. During a research year, trainees must complete the required workplace assessment tasks of the laboratory training program. Training beyond 5 years is usually necessary to obtain RCPA fellowship and the award of a PhD or MD degree.

Joint Training in Endocrinology & Chemical Pathology

The RCPA-RACP Joint Training Program in chemical pathology and endocrinology is available for those wishing to specialise in both laboratory and clinical practice. Training is in an integrated discipline encompassing the diagnosis, investigation and management of disorders of chemistry, metabolism and the endocrine system, together with the techniques, management and administration of a chemical pathology laboratory. No more than three (3) years of integrated training will be allowed for joint trainees.

Trainees may enter the joint program when they have successfully completed their Basic Physician training with the RACP and are granted one-year retrospective training credit towards their FRCPA. The FRCPA and FRACP are awarded jointly on completion of the joint program.

The program comprises:

- Clinical endocrinology: requirements include one core clinical year in endocrinology and metabolism plus specified additional clinical training in the laboratory years. Trainees are expected to acquire a depth and breadth of knowledge in clinical endocrinology and metabolism, including diabetes. They must develop a detailed understanding of the principles of endocrine physiology, biochemistry, cellular and hormonal metabolism. Clinical endocrinology advanced training is conducted in hospitals with endocrinology training programs accredited by the RACP. Paediatric endocrinology trainees must also complete the RACP's mandatory paediatric requirements.

- Laboratory training in chemical pathology: requirements include three (3) years of laboratory training with allowance being made for ongoing direct patient care during each year. Two years must include 80% of laboratory work and 20% of ongoing direct patient care. The third laboratory year should include ongoing direct patient care of at least 10% full-time equivalent. Training must be undertaken in laboratories accredited with the RCPA and is usually supervised by a Fellow of the RCPA.

- With prior approval by the CJCT the third laboratory year may be substantially altered to allow the commencement of a PhD or MD.

Educational activities such as case presentations, preparation of case reports or subject reviews, participation in utilisation review studies, quality and audit activities and attendance at intra- and extra-mural scientific meetings are regarded as essential components of the program. The examinations in laboratory practice are solely under the control of the RCPA Board of Education and Assessment.

The joint training program is managed by a Committee for Joint College Training (CJCT) comprising representatives of the RCPA and RACP and representatives of relevant special societies relevant to the discipline. Training is monitored through annual training program approval and accreditation after submission of the supervisor reports each year. Please refer to the section on Forms and Submissions in the *RCPA Training Handbook – Administrative Requirements* regarding the submission of forms to the CJCT and the RCPA.

Trainees may not complete their laboratory and clinical training entirely within one institution except under extraordinary circumstances and any exception required approval of the CJCT. At least one year of the four-year program must be spent in a separate institution and may occur in either the laboratory or the clinical component. Change of supervisor to another member of an integrated clinical/laboratory service will not qualify, nor will a change to a different geographical site of an integrated service. Periods of training overseas may fulfil some requirements but prior approval of the CJCT is essential.

Prospective trainees should refer to the RCPA Trainee Handbook – Administrative Requirements regarding registration with the RCPA and to the RACP website for regulations applying to training with the RACP.

SUPERVISION

All training must be supervised. It is recommended that any one supervisor be responsible for no more than two trainees.

- **Single discipline trainees:** It is recommended (but not mandated) that a second supervisor be appointed where available, but the primary supervisor should take overall responsibility. The supervisor/s will normally be Fellows of the RCPA however non–Fellows may be approved by the Board of Education and Assessment if no Fellow is available. If a trainee divides the year between two or more unrelated laboratories, more than one supervisor should be appointed.

- **Joint trainees:** It is mandatory for two supervisors to be appointed. The primary supervisor during the laboratory component of training must be a Fellow of the RCPA. The primary supervisor during clinical training must be Fellow of the RACP.

The following conditions apply to both single discipline and joint trainees:

The primary supervisor must certify that suitable supervision is arranged in their absence and/or if the trainee spends significant periods working in an area where the supervisor has no personal involvement

Trainees working towards higher academic degrees (e.g. PhD), with a research supervisor who is not an RCPA fellow, should nominate an RCPA Fellow as co-supervisor.

It is expected that there will be teaching and other contributions (e.g. project or research supervision) from senior members of the department other than the supervisor.

While it is not appropriate for supervision to be delegated largely to a non-pathologist, it may be appropriate for senior staff with relevant experience to sign off some workplace-based assessment forms.

The training programs

Supervisors should devise a prospective training program in collaboration with the trainee on initial registration and annually. Supervisors should ensure that the trainee has sufficient time and opportunities to carry out the required training activities.

- **Single discipline trainees:** The training program is included with the initial and annual registration documentation.

- **Joint trainees**: The RCPA accesses the training program via the RACP website for Joint trainees.

Supervisors and others to whom aspects of training have been delegated are expected to monitor and provide regular feedback on the development of the trainee's competence. Regular, formal, documented meetings with the trainee should occur at least every three months, at which time the training program can be reviewed. In addition, supervisors should regularly observe the trainee's laboratory performance and interactions with scientists, peers and clinicians; and review reporting of results. This may be delegated to other trainers where appropriate, e.g., when the trainee is on secondment to another laboratory for a segment of training.

The formal duties of RCPA supervisors, such as requirements to report the trainee's progress to the Board of Education and Assessment, are described in the *RCPA Induction Manual for Supervisors* and the RCPA policy on the *Role of the Supervisor*. Please refer to these documents for detailed information.

ASSESSMENT

Assessment is by formal examination and by submission of a portfolio, which is a record of workplace-based assessment and other achievements during training. The periodic and annual supervisor reports are also kept in the portfolio. The requirements are summarised below. Please refer to the Appendices for details.

Examinations

- Basic Pathological Sciences examination. Usually taken before or during the first year of training. All trainees are required to undertake or apply for exemption from this examination. Joint Trainees who register with the RCPA after the beginning of the 2020 training year will no longer be automatically exempt from the Basic Pathological Sciences examination. See **Appendix 2** for detailed requirements.

- Chemical Pathology Part I examination. RCPA trainees may not take this examination until the third year of training; joint trainees may not take it until the second year of laboratory training. The goal is to ensure that trainees can appropriately mix the laboratory/scientific and clinical elements of chemical pathology. Management does not feature in the Part I examination, except where there is major overlap with scientific/technical areas, such as quality assurance/quality control. See **Appendix 3** for detailed requirements.

- Chemical Pathology Part II examination. Trainees who pass Part I are eligible to sit for the Part II examination, which is ordinarily sat in the final year of chemical pathology training. The focus is on integration of technical/scientific knowledge with clinical and management elements. Clinical elements are emphasised more than management. The goal of this examination is to determine whether the candidate is competent to function as a consultant. See **Appendix 4** for detailed requirements.

All durations refer to full-time training (or part-time equivalent) in an accredited laboratory. If it is found that after the submission of an examination application form, a trainee has not met the eligibility criteria for sitting an examination/s, e.g. insufficient accredited training time, the trainee will be withdrawn from the examination/s and will be eligible for a full refund of the examination fee

Portfolio

The **portfolio** is a physical collection of workplace-based assessment forms and other documents that provide evidence that trainees have successfully completed a range of activities that form part of their daily work in the laboratory. The portfolio records the trainee's progress in developing technical skills and professional values, attitudes and behaviours that are not readily assessed by formal examinations.

Trainees have the responsibility of initiating the workplace-based assessments and ensuring that they have completed the required number by the required dates. They should identify suitable opportunities to have their competence assessed, negotiate a suitable time for the assessment with a suitably qualified assessor and provide the appropriate form. Assessments should be able to be done regularly without significant disruption to workplace productivity.

Please ensure that you refer to the detailed portfolio requirements which must be completed before the Part 1 examinations and Part II examinations (**Appendices 3,4,7**).

Supervisor reports

Trainees must submit a supervisor report for each year of training, with additional reports for periods of rotation. Additionally, a pre-exam report is required prior to oral component of the Part I and Part II exams. Copies of the reports should be kept in the portfolio. The supervisor report form and guidelines are in **Appendix 7.**

RESOURCES

Texts, journals and weblinks are in the *Chemical Pathology* section of the RCPA website. Other peer-reviewed resources should be consulted as necessary for comprehensive coverage, especially contemporary reviews and key papers in the general chemical pathology literature.

SECTION 2

LEARNING OUTCOMES AND RECOMMENDED TRAINING ACTIVITIES

In Section 2 of the handbook, the four broad functions of the chemical pathologist are elaborated as sets of training outcomes and suggested training activities.

Where possible, the learning outcomes are denoted as needing to be achieved early in training [E] or at a more advanced level [A]. Competence in outcomes achieved early in training should be maintained throughout. Familiarity with new and emerging topics that may not appear in the handbook is also expected

Trainees are not expected to do every training activity in the list. They should use their judgment to select those that are most likely to achieve the outcomes, being mindful of the range of learning opportunities offered by their particular laboratory**.**

1 DISCIPLINE-SPECIFIC FUNCTIONS OF THE CHEMICAL PATHOLOGIST IN THE LABORATORY

Chemical pathologists contribute to the diagnosis and management disease by analysing chemicals present in body fluids and tissues, thereby providing a diagnostic service and advice to clinicians. They have expertise in the pathophysiology of disease, endocrinology, therapeutic drug monitoring, paediatric and metabolic medicine and the diagnostic value of individual tests. Chemical pathologists are responsible for running highly automated laboratories and ensuring the quality of the results. The chemical pathologist must understand a wide variety of physico-chemical techniques, be able to solve problems that arise in the laboratory and make informed decisions with regard to the selection of instrumentation. The chemical pathologist must also have expertise in the selection and functioning of computing and laboratory information systems upon which the efficient operation of the laboratory depends.

By the end of training, trainees are expected to be fully knowledgeable and technically competent in routine investigations and be competent to provide advice to clinicians. They should also have observed and reflected on the ways that senior chemical pathologists fulfil the role of medical specialist in the laboratory and have participated in the more demanding aspects of the role, as appropriate for the stage of training, assuming increasing levels of responsibility as they progress. They should also know how to access expertise in all these areas and to consider where their own interests lie and need to be developed.

The following lists of learning outcomes and activities are a guide as to what trainees should have achieved by the end of training.

1.1 Foundation knowledge and skills

Outcomes

[E] Explain principles and concepts of physiological biochemistry, particularly metabolic inter-conversions. ***See List A, Appendix 1***;

[E] Explain the pathophysiology of all diseases that are diagnosed by chemical pathologists and have sufficient clinical understanding to formulate clinico-pathological correlations ***See List B, Appendix 1***;

[E] Understand the principles underlying the application of physicochemical techniques and assay methods and be able to make informed decisions regarding instrumentation used in the analysis of specimens. ***See List C, Appendix 1***;

[E] Understand statistical concepts, methods and tools used to assess the accuracy, uncertainty, variation and reproducibility of test results, including data for both individual patients and populations, and to be able to determine confidence levels, reference or expected values and the clinical significance of testing. ***See List D, Appendix 1***

[E] Understand the effect on laboratory results of biological and environmental factors, eg, age, sex, nutritional status, time of day, stress, posture, hospitalization, medication, etc.

[E] Understand the investigative aspects of microbiology, haematology, toxicology, medical genetics and other disciplines that are relevant to the practice of chemical pathology;

[E] Understand the pharmacology of therapeutic agents required in management of disease.

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, eg,

- Maintain current knowledge of chemical pathology by reading relevant journals, text books, on-line sources and other relevant material;
- Maintain current knowledge of therapeutic and investigative aspects of other disciplines that are relevant to chemical pathology.
- Review the literature and other documentation on reported test sensitivity and specificity data and disease prevalence, estimate positive predictive value;
- Refresh knowledge of statistical concepts and procedures relevant to chemical pathology.

1.2 Accession, management and processing of specimens

Outcomes

[E] Understand and apply laboratory procedures for routine, urgent and out-of-hours work;
[E] Understand and apply laboratory criteria for potential sample rejection;
[E] Use the laboratory information system to record all required patient and sample information;
[E] Label samples accurately and prepare samples appropriately for analysis.
[E] Understand and review methods for the selection, collection and transport of specimens so as to optimise diagnostic yield, based on up to date knowledge of current developments and the regulatory framework;
[E] Advise clinicians and patients on specimen collection, special requirements, patient preparation, effects of coexistent illness and the limitations of any proposed investigations. See also **Section 1.7 Dynamic Testing.**

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, eg,

- Read laboratory manuals and NATA/RCPA, IANZ and other relevant guidelines;
- Participate in daily laboratory activities;
- Deal appropriately with laboratory inquiries requiring confidentiality because of abnormal results or sensitive tests;
- Assess workflow in the laboratory and identify any problems;
- Perform bench 'experiments' to assess problems, eg, with glucose or homocystine and delayed separation;
- Review and document system handling problems when inadequate information is available, eg inadequately identified samples;
- Identify samples where labelling affects sample analysis and reporting, eg, dynamic tests where the times recorded (both absolute and relative) are critical.
- Participate in ward rounds and discussions with clinicians;
- Perform tests and procedures where patient safety and comfort is a major issue, eg, sweat tests or insulin-induced hypoglycaemia test;
- Audit ICU patients' outcomes in direct relation to thyroid function tests;
- Prepare or update patient information sheets, in conjunction with the marketing division.

1.3 Storage and Retrieval of Laboratory Data

Outcomes

- Explain the principles and procedures involved in establishing a specimen storage and retrieval system;
- Comply with the specimen storage and indexation conventions of the laboratory;
- Use laboratory information systems in recording patient and request information, including a storage and retrieval system for specimens, results, comments and final reporting;
- Use the laboratory information system to retrieve reports/specimens for examination and review to satisfy clinical audit, and/or research purposes;
- Understand the principles, requirements and functioning of laboratory information systems used for instrument interfacing, flagging of results and generating interpretive comments

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, eg,

- Read laboratory manuals and NATA/RCPA, IANZ and other relevant guidelines;
- During assay evaluation retrieve selected specimens;
- Use LIS to retrieve specimens with particular abnormalities for clinical review.

1.4 Performance of laboratory procedures

Outcomes

[E] Understand and apply the principles of operation and perform the specific analyses and use the techniques specified in ***List C Appendix 1***

[E] Explain the relative benefits and disadvantages of instrumentation and platforms used for analysis of samples, with consideration of menu, throughput, assay design, quality performance, financing and laboratory physical constraints;

[E] Follow laboratory procedures for reagent handling;

[E] Understand the requirements of a laboratory information system;

[E] Understand information technology aspects of instrumentation and LIS, eg, instrument interfacing, flagging of results, interpretive comments.

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, eg,

- Perform routine chemistry analysis on daily samples, including various POC devices;
- Perform benchwork;
- Review standard operating procedures for various tests;
- Monitor the shelf life of various reagents;
- Assess 'abnormal' samples, including haemolysis, severe lipaemia and exposure of bilirubin sample to UV lights;
- Maintain current knowledge by reading relevant journals and text books to supplement laboratory manuals.

1.5 Analysis and validation of laboratory data

Outcomes

[E] Understand methods used to evaluate tests specified in ***List D, Appendix 1***;

[E] Monitor and verify results in accordance with laboratory procedures;

[E] Understand the purpose of clearly defining the limits of detection for analytes;

[E] Perform calibration procedures on platforms and analytes;

[E] Understand how to determine reference intervals;

[E] Implement trouble-shooting procedures.

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, eg,

- Maintain current knowledge by reading relevant journals and text books to supplement laboratory manuals
- Follow up problem cases;
- Document cases where analytes are misreported due to failure to identify exceeding linearity, with potential for misdiagnosis and management problems;
- Define the limit of detection of a new assay (bench work)
- Establish reference intervals for new analytes;
- Review various reference intervals (RI) and compare with other laboratories;
- Read manufacturers' inserts to assess their way of establishing RI;
- Perform calibration procedures on all as many platforms and analytes as possible.

1.6 Developing and reporting a professional opinion

Outcomes

[E] Synthesise and interpret (bearing in mind test limitations) all relevant laboratory and clinical information to form and record an opinion as to nature, cause, severity, likely outcome of clinical conditions;

[E] Add concise, meaningful comments to written reports, when appropriate;

[E] Explain the use of the laboratory information system to develop and apply algorithms and rules for production of results, interpretive comments and recommendations for further tests and alerts for non-routine action;
[E] Report in accordance with the relevant regulatory framework;
[E] Recommend and use standardised information structures, formal terminologies and units for requesting and reporting;
[A] Explain evidence-based advice, guideline development, prediction and research and describe the knowledge and information tools that can be used to help with this.

Activities
Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, eg,

- Participate in teaching, grand rounds, clinical rounds and contribute effectively to these
- Participate in signing out
- Participate in developing/adapting expert system
- Review the departmental list of analytes and define appropriate reporting.

1.7 Dynamic testing

Outcomes
[E] Perform and advise clinical staff on protocols for the performance of dynamic tests specified in ***List E Appendix 1***;
[E] Interpret the results of such tests to the clinician and advise on further testing that is appropriate to elucidate the clinical problem in question.

Activities
Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, eg,

- Review guidelines for dynamic tests, together with other clinical disciplines, especially endocrinology;
- As far as possible, perform the dynamic tests;
- Discuss the interpretation of dynamic tests with consultants and relevant disciplines.

1.8 Monitoring Patient Progress

Outcomes
[E] Where laboratory results suggest that disease is developing, monitor patient progress using direct visits or surveillance via the laboratory information system;
[E] Advise clinicians when further specific testing may be warranted or a specific diagnosis becomes apparent.

Activities
Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, eg,

- Follow up patients
- Phone out abnormal/critical results
- Participate in after-hours roster

2 FUNCTIONS OF THE CHEMICAL PATHOLOGIST AS A MANAGER

Frequently there will be a staff of a dozen or more people working under the control of a chemical pathologist. Besides managing these people, the chemical pathologist must be fully conversant with topics as disparate as budgeting, safety, privacy, certification and quality, as well as having to represent the department to higher authorities.

By the end of training, trainees are not expected to have the responsibilities of senior managers, however they are expected to have become familiar with managerial tasks by observing and reflecting on managerial duties and by participating in activities that are appropriate to their stage of training, assuming increased levels of responsibility as they progress. It should be possible to develop this knowledge by participation in regular department management meetings, observing laboratory preparation for NATA inspections, and so on.

The following lists of learning outcomes and activities are a guide as to what trainees should have achieved by the end of training.

2.1 Quality Management

Outcomes

[A] Explain the relative benefits and disadvantages of the design and operating characteristics of a particular instrumentation or platforms;
[A] Apply, review and plan quality assurance strategies for monitoring processes and outputs in the laboratory;
[A] Become familiar with corrective actions;
[A] Ensure water supply and purification measures meet quality control standards;
[E] Apply findings of internal and external quality control to laboratory procedures;
[E] Promote timely and appropriate use of pathology investigations;
[E] Apply risk management strategies to minimise errors;
[A] Document, notify, analyse and apply corrective actions, using laboratory information systems where appropriate, in the event of incidents, errors and adverse events.

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, eg,

- Review summaries of relevant requirements for laboratory accreditation and performance, for example the NATA Checklist for Laboratory Accreditation;
- Participate in a quality audit and review the last audit assessment reports of your laboratory and identify any contentious issues
- Review laboratory internal QC procedures and update if required. Review EQAP and any remedial actions
- Participate in case/slide/laboratory/clinical rounds, peer review meetings, external quality assurance (e.g. RCPA QAP) and continuing professional development activities;
- Read current literature on QA strategies, risk management, informatics and evidence based medicine in chemical pathology laboratories;
- Participate in workflow checks to ensure effective and efficient laboratory function;
- Recognise, report and analyse quality problems when they arise in the laboratory;
- Participate in implementing plans for testing and evaluating measures to improve the quality of laboratory practice and patient care;
- Explain consequences of inappropriate QC limits in terms of assay out-of-control;
- Identify the source of water supply in your laboratory. Review the grading of water purification in your laboratory and its quality control;
- Participate in QAP case comments.

Complete the Quality Management eLearning module in RCPA Education Online and print the certificate of completion for your portfolio.

2.2 Laboratory Safety

Outcomes

[E] Identify the ways in which the laboratory disposes of various wastes, including radioactive materials, infectious wastes, etc.
[E] Dispose of waste in accordance with laboratory procedures and legislative requirements.
[A] Apply, review and plan laboratory safety procedures, to protect self and staff against infection, radiation, toxic, gas, chemical, electrical and fire hazards;
[A] Apply and evaluate processes for assessing risk, investigating and reporting hazards, in accordance with legal aspects of investigation and disclosure;
[A] Analyse incident reports and near misses to identify opportunities for improvements in practice;
[A] Contribute to the management of staff needs in the event of an adverse event in the laboratory.

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, eg,

- Participate in orientation program for new staff members;
- Schedule meeting with workplace WHS Officer;
- Review the WHS standard in your jurisdiction.
- Participate in WHS drills and meetings, especially fire safety;
- Participate in training to use equipment for biological, chemical and fire safety, first aid and resuscitation;
- Review incident reports and explore improvements if relevant;
- Follow relevant laboratory safety protocols and report breaches;
- Wear appropriate safety (personal protective) equipment when in the laboratory;
- Ensure relevant personal vaccinations are completed prior to commencement of duties;
- Complete the Laboratory Safety eLearning module in RCPA Education Online: and print the certificate of completion for your portfolio.

2.3 Compliance with Legislation

Outcomes

[A] Demonstrate basic knowledge of requirements of Approved Pathology Provider (Australia) or other relevant undertakings;
[A] Demonstrate basic knowledge of regulatory requirements of NATA, IANZ or other relevant accrediting authorities
[A] Operate with awareness of the potential for medical litigation and the role of pathologists as defendants or consultants, and apply appropriate risk management strategies;
[A] Ensure laboratory compliance with current requirements for notifiable diseases;
[A] Identify acceptable standards of billing practice appropriate to the work setting.

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, eg,

- Review summaries and seek advice from appropriate senior staff;
- Locate sources of pathology financing information, e.g. Medicare Benefits Schedule, Health Insurance Act or other documentation relevant to your jurisdiction;
- Document incidents and discussions with medico-legal implications and discuss with supervisor or a senior colleague;
- Review laboratory manuals and State/Territory/country legislation regarding notifiable diseases;
- Maintain currency with the relevant requirements for notifiable diseases.

2.4 Managing People

Outcomes

[E] Review and use orientation and training protocols for new staff;
[E] Display skills in conflict resolution in the workplace;
[E] Behave in accordance with equal opportunity and antidiscrimination practices in the workplace;
[E] Be familiar with the RCPA policy on bullying and harassment. Refer to Appendix 1 of the *RCPA Trainee Handbook - Administrative Requirements;*
[E] Identify techniques to provide constructive feedback to staff;
[A] Provide supervision and constructive feedback to staff;

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, eg,

- Participate in staff and business meetings in the department;
- Observe administrative procedures in relation to selection and appointment of staff;
- Reflect on observations of interactions in the workplace;
- Participate in training on giving and receiving feedback and/or read articles on the subject;
- Participate in a conflict resolution course and/or read articles on the subject;
- Assist in the orientation and mentoring of junior colleagues;
- Participate as trainee representative on College committees.
- Participate in procedure for developing a business case for extra staff;
- Complete the 6 Ethics eLearning modules in RCPA Education Online (mandatory). Complete relevant activities from the Monash University Clinical Ethics Resource (optional).

2.5 Managing resources

Outcomes

[A] Describe budgetary considerations in an established chemical pathology laboratory;
[A] Describe issues concerned with the assessment, procurement, installation, maintenance and use of laboratory equipment and electronic information systems in the laboratory environment and evaluate cost-effectiveness;
[A] Identify sources of funding for laboratory testing;
[A] Be familiar with procedures used to ensure regular and preventative maintenance of existing platforms;
[A] Review and benchmark the performance of platforms in terms of breakdowns, and repair frequency, as distinct from planned preventative maintenance.

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, eg,

- Review and discuss with senior staff laboratory budget reports including income, expenditure, salary, overtime, annual leave and sick leave costs, maintenance and consumables costs
- Participate as an observer in committees concerned with resource management
- Participate in evaluating the cost-effectiveness of current and proposed laboratory procedures and equipment in the context of limited resources;
- Teach colleagues to use new laboratory equipment and IT software and hardware.
- Attend training sessions concerned with implementing new technology, noting costs and benefits of the technology
- Access Medicare Benefits Schedule and other documents relevant to your jurisdiction
- Take part in drawing up an annual department budget and identifying the fixed, variable and discretionary costs
- Participate in drawing up a tender for new laboratory equipment;
- Perform time and motion studies in your own lab and visit other labs of similar size and view their procedures;

- Complete the Quality Management eLearning module in RCPA Education Online and print the certificate of completion for your portfolio:

2.6 Information fundamentals

Outcomes

[E] Understand statistical concepts, methods and tools used to assess the value and reliability of numerical test results and epidemiological data and determine confidence levels and clinical significance of testing.

[E] Understand the role and scope of informatics in laboratory medicine, including concepts of information architecture, quality and analysis, systems design, and specialised sub-domains such as bioinformatics, imaging and statistics

[E] Explain the basics of laboratory systems architecture and the movement of data for communication of requests, reports and instrument interfacing

[E] Identify the information technology environment in which the laboratory information system operates, including integrated systems (i.e. hospital information systems, back-ups, reporting and network structure.

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, eg,

- Access and read documents and view video presentations relating to informatics to be found in RCPA Education Online
- Participate in departmental and clinical meetings;
- Network and share information with colleagues;
- Plan, organise and review teaching activities, together with supervisor, peers and laboratory staff;
- Participate in College activities and meetings.

3 RESEARCH AND SCHOLARSHIP

Chemical pathologists have a sound understanding of research methodology and an ability to critically evaluate research findings. This enables them to critically appraise the benefits and deficiencies in the new medical and scientific tests and procedures that are continually being developed. They contribute to the body of knowledge and/or enhancement of practice in chemical pathology, maintain professional competence throughout their and career and contribute to the chemical pathology education of colleagues, trainees and the wider public.

By the end of training, trainees should be sufficiently skilled in the methods of scientific inquiry to be able to critically appraise scientific literature and to conduct a small scale laboratory investigation or participate in a larger-scale study. It is only by undertaking research projects that trainees can come to understand the difficulties in formulating and answering even apparently simple questions. Trainees should have developed the self-discipline to support the habit of lifelong self-education. Through personal experience and observation they should have sufficient understanding of teaching and learning to be able to mentor and supervise junior staff and to conduct educational sessions for students, colleagues and for the general community.

The following lists of learning outcomes and activities are a guide as to what trainees should have achieved by the end of training.

3.1 Research and critical appraisal

Outcomes

[E] Critically appraise sources of medical information, discriminating between them in terms of their currency, format, authority and relevance;
[E] Develop a personal strategy, using IT software where appropriate, to discover, store, access and share information resources;
[E] Apply and interpret basic statistical and epidemiological concepts and data;
[E] Demonstrate skill in developing a research proposal, conducting appropriate research activities and writing up for peer review/publication;
[E] Comply with the requirements of relevant bodies concerned with ethics in human and animal research;
[A] Prepare reports and papers for publication that comply with the conventions and guidelines for reporting biomedical research;
[A] Contribute to data analysis and publication in the department.

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, eg,

- Undertake projects under supervision and write up for submission for publication;
- Participate in and present cases, reviews, original work, to peers at grand rounds, specialist meetings, journal club, etc;
- Attend research meetings;
- Contribute to writing research proposals and ethics submissions;
- Search clinical and laboratory databases to collect, organise and analyse data.
- Use the research and scholarship resources in RCPA Education Online: Write cases for iNvestigate (RCPA-UNSW collaborative project)
- Use a standard bibliographic application (e.g. EndNote) to download citations and organise them into a personal database;
- Read reference materials on basic statistical and epidemiological concepts;
- Access appropriate sites for relevant information, e.g. text books, journals, databases and other electronic media.

3.2 Undertaking Self-Education and Continuing Professional Development

Outcomes

[E] As part of a personal continuing education strategy, practice the habit of identifying and documenting own learning needs, planning educational strategies to meet them, monitoring achievements through self-assessment and reflecting on the outcomes;

[E] Identify personal learning preferences and reflect on how effective they are in developing competence;

[E] Demonstrate up to date knowledge of and ability to appraise medical and pathological literature and innovations in areas relevant to chemical pathology.

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, eg,

- Formulate a personal learning plan;
- Complete an online learning style inventory and explore a variety of ways to learn;
- Apply various computer-based instructional tools, such as electronic tutorials for confirming or updating knowledge and skills;
- Review RCPA CPDP documentation to identify and apply activities and recording strategies that may be applicable;
- Select relevant mentors to guide professional activities;
- Regularly review journals relevant to chemical pathology and participate in or lead discussions on contemporary issues;
- Participate in and present personal work at relevant educational meetings and journal clubs.

3.3 Educating colleagues and others

Outcomes

[E] Prepare and deliver educational sessions, incorporating the principles of adult learning and using effective oral, visual or written modes, and reflect on their effectiveness;

[E] Contribute to the informal education of laboratory personnel, peers, medical students and other health professionals;

[E] Translate and convey technical concepts and information in an understandable manner to people without a background in chemical pathology;

[E] promote understanding of health and disease, including relevant epidemiology and public health issues, to patients, clinicians and the community.

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, eg,

- Participate in and contribute to formal and informal departmental teaching sessions, clinicopathological meetings, conference presentations;
- Organise the scientific staff continuing education program and provide list of learning objectives associated with each presentation;
- Prepare posters or educational articles of scientific investigations in pathology and present to peers and other health professionals;
- Identify and record examples where training deficiencies lead to lab problems and implement staff training to remedy identified deficiencies;
- Mentor students and other trainees and advise on effective preparation for examinations;
- Read journals relevant to chemical pathology, including articles on effective teaching strategies;
- After passing the Part I examinations, review or develop educational materials for non-pathologists, eg, Lab Tests Online;
- Participate in training on the effective teaching and supervision of adult learners in laboratory and clinical settings, such as the “Teaching on the Run” program
- Seek evidence of own teaching effectiveness.

4 PROFESSIONAL QUALITIES

Chemical pathologists work effectively with the laboratory and clinical team to ensure timely, appropriate and accurate patient diagnosis. They also perform tests and procedures that require them to ensure patient safety, comfort, confidentiality and privacy. They respect patient confidentiality and rights and conduct themselves in a professional manner at all times, being responsible and accountable to colleagues and the community.

During training, trainees should reflect on and strive to adopt the attitudes and values that underpin professional practice and take advantage of opportunities to extend themselves in these areas, so that by the end of training they are fully able to assume their professional responsibilities.

The following lists of learning outcomes and activities are a guide as to what trainees should have achieved by the end of training.

4.1 Ethics and Confidentiality

Outcomes

[E] Practice ethically, which includes:
- promptness of reporting;
- interacting appropriately with others;
- knowing when to seek opinion from others;
- financial probity;
- recognising and handling conflict of interest;

[E] Comply with legal, ethical and medical requirements relating to patient records and documentation, including confidentiality, informed consent and data security;
[E] Differentiate between ethically appropriate and ethically inappropriate procedures;
[E] Identify appropriate courses of action in regard to unprofessional conduct by or ill health in a colleague;
[E] Comply with copyright and intellectual property rules;
[E] Describe strategies to ensure equity of access to pathology testing for patients;
[E] Advocate for, and protect, patient rights;
[E] Maintain patient safety, comfort, confidentiality and privacy whilst performing tests and procedures.

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, eg,

- Review appropriate literature and guidelines including the National Patient Safety Education Framework;
- Read the most recent Australian Medical Association Code of Ethics;
- Read the Australian Medical Council Good Medical Practice Code of Conduct;
- Access and read documents relating to cultural competence, including those concerning indigenous people, such as Aboriginal and Torres Strait Islander and Maori people;
- Reflect on professional behaviour of self and others, identifying potential for ethical dilemmas and strategies to deal with them;
- Complete the 6 Ethics eLearning modules in RCPA Education Online (mandatory). Complete relevant activities from the Monash University Clinical Ethics Resource (optional).

4.2 Communication

Outcomes

[E] Use appropriate language in all communications, showing awareness of cultural and linguistic diversity;
[E] Produce concise, grammatically correct written reports;
[E] Demonstrate respectful interpersonal communication skills such as active listening and accepting and offering appraisal;
[E] Comply with guidelines for handling sensitive information;
[E] Consult with clinical specialists and pathologists on issues of patient care and professional practice and in seeking and providing referral opinion on difficult cases;
[E] Advise clinicians on the choice and performance of laboratory procedures and the interpretation and relevance of pathological findings, taking into account clinicians' and patients' needs;
[E] Advise laboratory staff about testing methodologies, quality assurance techniques and delineating protocols for the issuing of results;
[E] Pay prompt attention to communicating urgent and critical results.

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, eg,

- Participate in training sessions on communications, cross-cultural communications, presentation skills, etc;
- Compose written reports at an appropriate level of responsibility and seek feedback from supervisor, colleagues and clinicians;
- Document telephone communication of pathological findings, interpretations, clarification of requests and complaints where appropriate, seeking feedback on the quality of your communication from supervisors and colleagues;
- Read documents relating to etiquette and proper use of electronic communications such as email;
- Consult style guides for correct use of grammar and terminology for written communications;
- Ring out urgent results;
- Become familiar with policies and procedures relating to printing of results, including incomplete requests and site of printing (e.g. the ward).

4.3 Collaboration and teamwork

Outcomes

[E] Contribute effectively to the activities of laboratory and health care teams, recognizing responsibilities and limitations of own role;
[E] Consult with laboratory colleagues, other medical practitioners, pathology informaticians and health care professionals;
[E] Contribute effectively to inter-disciplinary team activities, such as peer review sessions and other education and quality activities, recognizing responsibilities and limitations of own role;
[E] Promote the role of pathologists as vital contributors to patent care;
[E] Communicate directly with clinicians about results, when appropriate.

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, eg,

- Identify the elements of an effective team and reflect on your observations of teams in your work place and others with which you interact;
- Participate in departmental meetings;
- Network and share information with colleagues, using available technologies;

- Plan, organize and review teaching activities, together with supervisor, peers and laboratory staff;
- Participate in mentoring programs;
- Participate in College activities and meetings

4.4 Cultural competence

Outcomes

[E] Demonstrate an awareness of cultural diversity and the ability to function effectively, and respectfully, when working with and treating people of different cultural backgrounds. Diversity includes but is not limited to ethnicity, gender, spiritual beliefs, sexual orientation, lifestyle, beliefs, age, social status or perceived economic worth;

[E] Apply knowledge of population health, including issues relating to health inequities and inequalities; diversity of cultural, spiritual and community values; and socio-economic and physical environment factors; to specialist pathology practice;

[E] Apply knowledge of the culture, spirituality and relationship to land of Aboriginal, Torres Strait Islander and/or Māori peoples to specialist pathology practice and advocacy.

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, eg,

- Access and read documents relating to cultural competence, including those concerning indigenous people, such as Aboriginal and Torres Strait Islander and Maori people
- Participate in departmental and clinical meetings;
- Network and share information with colleagues;
- Plan, organise and review teaching activities, together with supervisor, peers and laboratory staff;
- Participate in mentoring programs;
- Participate in College activities and meetings;
- Complete the Cultural Competence eLearning modules in RCPA Education Online and print the email confirming satisfactory completion of the relevant module/s for your portfolio.

SECTION 3

APPENDICES

Appendix 1

Essential topics in Chemical Pathology

List A: Physiological biochemistry

Metabolic inter-conversions in healthy individuals form the basis for understanding the pathophysiology of the diseases for which chemical pathologists provide testing. Essential topics include:

- Carbohydrates
- Lipids
- Enzymes
- Amino acids and proteins
- Nucleic acids
- Trace elements and vitamins of nutritional significance
- Electrolytes and the kidney
- Urine composition and analysis
- Blood gases and pH
- Basic metabolism in the adult, child and neonate

List B: Pathophysiology

This is the major area of day-to-day work in Chemical Pathology and requires being able to explain the value and significance of tests from the point of view of a pathologist. For example, a high TSH concentration as well as a high free T4, is more likely due to assay interference than a TSH-secreting pituitary tumour and the list of possible causes should reflect this In addition to the tests conducted in your laboratory, you should also know about endocrinology, therapeutic drug monitoring, paediatric and metabolic medicine. Essential topics include:

- Acid-base disturbance
- Renal function
- Liver function
- Cardiac function
- Gastro-intestinal function
- Tumour markers
- Haematological biochemistry and coagulation
- Endocrinology
  - diabetes
  - pituitary
  - thyroid
  - adrenal cortex
  - reproduction
  - adrenal medulla
  - calcium
- Porphyrins
- Inborn errors of metabolism
- Transplantation
- Therapeutic drug monitoring
- Toxicology
- Overdose – diagnosis and management
- Fluids (ascites, CSF, pleural fluids etc)
- Lipids
- Pregnancy

- New markers of neurological disease
- Population screening
- Principles of newborn screening
- Pediatric chemical pathology
- Autoantibodies

List C: Techniques and assays

Techniques

Trainees should be able to explain the principles of a wide variety of techniques and instrumentation and explain the elements that go with the application of these techniques, ie,

- Applications of the technique in the chemical pathology laboratory
- Physical/chemical laws/principles underpinning the technology
- Structure and key components of the instrumentation
- Reagents
- Calibration and quality control
- Troubleshooting

For example, for photometry, candidates should be able to explain:

- Absorbance and transmittance
- Beer's law
- Spectrophotometer structure
- Light sources
- Cuvettes
- Spectral isolation
- Detectors
- Wavelength calibration
- Troubleshooting
- Applications

The techniques include:

- Automated general chemistry analysers
- Spectrophotometry
- Flame photometry
- Atomic absorption spectrophotometry
- Mass spectrometry
- Turbidimetry and nephelometry
- Osmometry
- Electrophoresis
- Isoelectric focussing
- Western blot
- Ion-selective electrodes
- Chromatography
- High performance liquid chromatography
- Enzymology
- Immunoassay
- Blood gas analysis
- Radioactivity
- Automation
- Nucleic acid amplification and detection techniques
- Centrifugation
- Buffers
- Units of measurement
- Fluorescence

- Phosphorescence
- Weight and volume calibration
- Pipettes
- Water quality
- Waste disposal
- Point of care technology
- Interferences

Assays

Trainees should be thoroughly conversant with all the technical details relating to assays performed in their laboratory. In some instances, eg TSH, trainees should learn about the immunoassay technique, as it can be widely applied.

The following list of the most important analytes is the minimum requirement. Other analytes are also important and trainees should be aware of them.

- Glucose
- HbA1c
- Bilirubin
- Electrolytes
- Creatinine
- Calcium
- AST
- Bicarbonate
- Cholesterol
- Porphyrins
- TSH
- Cortisol
- Albumin
- Aluminium
- Arterial blood gases
- PSA
- Troponin

Molecular tests

Trainees should be familiar with methods for the identification or exclusion of predefined genetic variants with known clinical implications. A single assay may identify one or several variants, but the underlying principle is that the pathologist is not required to undertake analysis to determine whether the identified variant/s is/are clinically significant, as this is already established knowledge.

Examples of typical clinical applications include –

- Diagnosis of diseases with limited allelic heterogeneity
- Pharmacogenetic variants of relevance to drug metabolism (e.g. *TPMT* variants)
- Cascade testing for familial hypercholesterolaemia within a family (following identification of the family-specific mutation)

Relevant method categories include

- testing for the presence/ absence of a restriction site;
- hybridization-based assays;
- oligonucleotide ligation assays;
- single nucleotide primer extension (minisequencing);
- mutagenically separated PCR;
- gap-PCR;
- inverse PCR;
- long-range PCR, etc.

There is a broad range of nucleic acid amplification-dependent assays available, each being useful for a variable list of tasks.

If methods change or move into genomic methods, pathologists will need to ensure that they have the required skills

List D: Knowledge required to evaluate chemical pathology tests

Trainees should be able to assess the value and reliability of a wide variety of chemical pathology tests, using a variety of statistical techniques and evaluative methods. Essential topics are

- General statistics
- Theory of reference intervals
- Quality control – internal and external
- Method evaluation
- Functional sensitivity/detection limits etc
- How to evaluate data
- Sensitivity, specificity and predictive value, ROC analysis
- Bayes theorem
- Non-parametric statistics and their use

List E: Dynamic tests

Trainees should be able to perform dynamic tests and advise clinical staff on protocols for the performance of these tests:

- Synacthen stimulation test
- Overnight dexamethasone suppression test
- Oral glucose tolerance test
- Ischaemic or non-ischaemic forearm exercise test
- Water deprivation test
- Insulin hypoglycaemia test
- Glucagon stimulation test
- Others

Appendix 2

Basic Pathological Sciences Examination

All trainees must pass or be exempted from the Basic Pathological Sciences examination. The examination may be taken before commencement of training and is open to registered trainees as well as any medical graduate or medical student. Joint trainees who register from 2020 will not be automatically exempt from the RCPA Basic Pathological Sciences examination. This will include joint New Zealand trainees who register in December 2019 and any joint trainees who have delayed registering with the RCPA until 2020.

Although a pass in Basic Pathological Sciences is not a prerequisite for attempting Part I examination, a pass or exemption must be achieved before proceeding to sit the Part II examination.

The purpose of the Basic Pathological Sciences Examination is to assess familiarity with the most important pathological processes and biological principles of disease that form essential knowledge for any medical graduate who considers a career in the pathological disciplines.

The examination has become necessary because pathology may no longer taught as a “core” discipline in some Australasian medical schools, hence an understanding of basic patho-biological processes is no longer guaranteed in many medical graduates. Such knowledge is essential for a successful start and satisfactory progress in the training program.

Examination Format and Content

The examination is a single 2.5 hour paper of 100 one-best-answer multiple choice questions, based on the BPS syllabus on the RCPA website.

The syllabus reflects knowledge that appears in current, authoritative texts as well as newer knowledge that may not yet appear in text books.

The topics cover the basic mechanisms of disease that trainees need to understand so they are equipped to train in their chosen discipline and to understand pathology disciplines other their own chosen field. To cite just a few examples, the microbiology trainee needs to know what a septic infarct looks like; the chemical pathology trainee needs to know about the anatomical pathology changes seen in metabolic syndrome; the anatomical pathology trainee needs to understand why certain antibodies are used in routine diagnosis and the genetic pathology trainee needs to understand how enzyme deficiencies may lead to morphological changes.

The syllabus is primarily based on Chapters 1-11 of the Professional Edition of Robbins and Cotran Pathologic Basis of Disease (9th ed. 2015. Elsevier) by Abul K. Abbas, Vinay Kumar and Jon C. Aster. References to supplementary materials are also given, which explain details more clearly than the textbook or contain helpful diagrams. As much as possible these references are from Open Access journals, but for copyright reasons the actual articles are not able to be placed on the College website.

Appendix 3

Part I assessment

Assessment in Part I is by

- Formal examinations;
- A portfolio of evidence of having participated in sufficient number and type of activities;
- Supervisor reports

See Assessment Matrix in Appendix 10.

Examinations are prepared in accordance with RCPA Guideline 3/2015 Quality Framework for RCPA Examinations – Written, Practical and Oral.

The Part I examination may be taken by RCPA single discipline trainees after having completed at least 24 months full-time or equivalent part time training in an approved chemical pathology laboratory. Joint trainees may sit the Part I examination after at least 18 months fulltime (or pro-rata part-time) training in an accredited chemical pathology laboratory. The same requirements apply to RCPA trainees and Joint RACP/RCPA trainees.

Part I formal examinations

Whilst clinical elements feature prominently in all parts of Chemical Pathology training, the aim of the Part I assessment is to ensure that trainees have spent time in the laboratory and absorbed the information there, such that they can appropriately mix the laboratory/scientific and clinical elements of Chemical Pathology. Management will not feature in the Part I examination, except where there is major overlap with scientific/technical areas, such as quality control.

Phase 1:

The examination is held at designated examination centres and has two components

- Paper A comprises 20 short notes questions, 10 laboratory and 10 clinical, over 3 hours 15 minutes.
- Paper B comprises 40 questions (20 short answer and 20 calculations) over 3 hours 15 minutes.

Trainees must pass both papers to be invited to the oral examination. Candidates who fail one of these examinations but pass the other will not be required to re-sit the passed examination if it was passed at a sufficiently high standard and if the failed examination is undertaken in the following year

Phase 2:

This is an oral examination with similar questions for all candidates. Responses will be marked against model answers.

The focus of the oral exam will be the interpretation of test results although the discussion will often be much broader. It may include clinical questions relating to diagnosis and epidemiology, laboratory methods and technical issues, quality assurance, effective test utilisation, laboratory management and medico-legal issues.

Where possible all candidates will be given reading material to digest in the 5-10 minutes before entering the exam room. The oral exam will be organised into a series of approximately 10 minute “stations”, each with one examiner. Where possible all candidates will be asked the same questions.

Portfolio for Part I

The hard copy portfolio must be made available to the supervisor to check periodically. A print-out of the portfolio summary spreadsheet must be included as the front page of the portfolio.

The hard copy portfolio and summary spread sheet will be checked for completeness by the supervisor before the Part I examination. It is strongly recommended that trainees commence these activities at the earliest possible time after commencing training.

Please refer to the portfolio requirements which are set out in Appendix 7.

Detailed instructions are included on the forms that must be used to record the activities. The forms and logbook pages are in **Appendix 8**. The portfolio spread sheet (Excel file) may be downloaded from the RCPA website.

The portfolio and the portfolio summary spreadsheet must be provided to the supervisor to review when they are preparing the supervisor report

A print copy of the summary spreadsheet should be appended to the annual report and the pre examination supervisor report which is sent to the College prior to the oral component of the Part I examination. The summary spreadsheet will be reviewed by the Chief Examiner and the Registrar of the Board of Education and Assessment. The signatories and trainee may be contacted to confirm evidence of satisfactory completion.

NOTE: The portfolio itself should not be sent to the College unless requested for audit.

Supervisor reports

Trainees must submit a supervisor report for each year of training, including periods of rotation and an additional report prior to the oral examinations. See above for instructions regarding the print copy of portfolio summary spreadsheet. It is the trainee's responsibility to ensure that the pre-examination supervisor report is completed and submitted by the due date. Failure to do so may jeopardise the accreditation of training time or finalisation of examination results. The supervisor report form can be downloaded from the website.

Summary of assessment requirements for Part I

Item	*Completion*	*Assessed by*	*Comments*
Written exams consisting of short answer and calculation questions	Before oral exam	Chief Examiner. Short answer questions are double marked by chemical pathology examiners.	Questions set by the Examinations Subcommittee.
Oral examination: multi-station set of structured interviews	After passing written exams.	Examiners with at least 5 years post-Fellowship experience	Questions set by the Examinations Subcommittee.
Evidence of research and scholarship See Appendix 5	Should be started early in training. Must be completed before September in the final year.	Assessed by Chief Examiner or delegate	Candidates will be required to revise & resubmit if not satisfactory.
Other portfolio items to be signed off by supervisor or delegate.	All Part I requirements completed before Part I practical exams	Portfolio summary spreadsheet is checked for completeness by the BEA Registrar	Portfolio items are to be reviewed by the supervisor when preparing the supervisor report See Appendices 7, 8

Item	Completion	Assessed by	Comments
		or Deputy Registrar. If incomplete, the candidate may be required to undertake further activities	The portfolio should not be sent to the College unless requested for audit
Supervisor reports for each year and/or rotation and an additional pre-oral exam report. A print copy of the portfolio summary spreadsheet must be appended to the annual report and the pre-oral exam report.	See RCPA web site for submission dates	Reviewed by BEA Registrar and Chief Examiner or delegate	Referral to Chief Examiner if necessary. See Appendix 4.

Assessment calendar

Please refer to the *RCPA Training Handbook – Administrative Requirements* for key assessment dates.

Appendix 4

Part II Assessment

The goal of assessment in Part II is to determine whether the candidate has the knowledge, skills and communication ability necessary to function as a consultant. The focus is on integration of technical/scientific knowledge with clinical and managerial elements. The emphasis is clinical with a lesser emphasis on management. The scientific and technical elements that were the focus of the Part I examinations may be examined, especially in the context of addressing a particular clinical problem. For example, in interpreting a set of discordant thyroid function tests, part of the differential diagnosis may be heterophile antibody interference. In this context, the technical aspects of investigation for heterophile antibodies may be discussed.

Assessment in Part II is by

- Formal examinations
- Evidence of research and scholarship
- A portfolio of evidence of having participated in sufficient number and type of activities;
- Supervisor reports

See Assessment Matrix in Appendix 10.

Examinations are prepared in accordance with RCPA Guideline 3/2015 Quality Framework for RCPA Examinations – Written, Practical and Oral.

The same requirements apply to RCPA trainees and Joint RCPA/RACP trainees.

Part II formal examinations

The Part II examinations are ordinarily sat in the final year of chemical pathology training.
A pass (or exemption) in both the Basic Pathological Sciences examination and pass in the Part I Chemical Pathology assessment (includes the portfolio) is required before enrolling for the Part II examination.

Written examination

The three-hour written paper comprises 20 short notes questions which concentrate on clinical aspects of chemical pathology but covers management and scientific aspects where appropriate.

Oral examination

The focus of the oral exam will be the interpretation of test results although the discussion will often be much broader. It may include clinical questions relating to diagnosis and epidemiology, laboratory methods and technical issues, quality assurance, effective test utilisation, laboratory management and medico-legal issues. The range and difficulty of topics will be similar to those that a recently qualified Fellow might be expected to encounter.

Where possible all candidates will be given reading material to digest in the 5-10 minutes before entering the exam room. The oral exam will be organised into a series of approximately 10 minute “stations”, each with one examiner. Where possible all candidates will be asked the same questions.

Portfolio for Part II

The hard copy portfolio must be made available to the supervisor to check periodically. A print-out of the portfolio summary spreadsheet must be included as the front page of the portfolio.

The hard copy portfolio and summary spread sheet will be checked for completeness by the supervisor before the Part II examination. It is strongly recommended that trainees commence these activities at the earliest possible time after commencing training.

Please refer to the portfolio requirements which are set out in Appendix 8.

Detailed instructions are included on the forms that must be used to record the activities. The forms and logbook pages are in **Appendix 9**. The portfolio spread sheet (Excel file) may be downloaded from the RCPA website.

The portfolio and summary spreadsheet must be provided to the supervisor to review when they are preparing the supervisor report.

A print copy of the summary spreadsheet should be appended to the annual report and to the pre-exam supervisor report which is sent to the College prior to the oral component Part II examination. The summary spreadsheet will be reviewed by the Chief Examiner and the Registrar of the Board of Education and Assessment. The signatories and trainee may be contacted to confirm evidence of satisfactory completion.

The portfolio itself should not be sent to the College unless requested for audit.

Supervisor reports

Trainees must submit a supervisor report for each year of training, including periods of rotation and an additional report prior to the oral examinations. See above for instructions regarding the print copy of portfolio summary spreadsheet.

Trainees are responsible for submitting the pre-examination supervisor report by the due date. Failure to do so may jeopardise the accreditation of training time or finalisation of examination results.

The supervisor report form can be downloaded from the RCPA website.

Summary of assessment requirements for Part II

Item	***Completion***	***Assessed by***	***Comments***
Written examination consisting of 20 short answer questions	Before oral exam	Chief Examiner. Short answer questions are double marked by chemical pathology examiners.	Questions set by the Examinations Subcommittee.
Oral examination: multi-station set of structured interviews	After passing the written exam and submission of portfolio	Examiners with at least 5 years post-Fellowship experience	Questions set by the Examinations Subcommittee
Evidence of research and scholarship See Appendix 5	4 items to be completed before September in the final year of training.	Assessed by Chief Examiner or delegate	Candidates will be required to revise & resubmit if not satisfactory.
Other portfolio items to be signed off by supervisor or delegate	To be completed before Part II oral exam	Portfolio summary spreadsheet is checked for completeness by the BEA Registrar or Deputy Registrar. If incomplete, the candidate may be required to undertake further activities.	Portfolio items are to be reviewed by the supervisor when preparing the supervisor report See Appendices 7, 8 The portfolio should not be sent to the College unless requested for audit

Item	Completion	Assessed by	Comments
Supervisor reports for each year and/or rotation and an additional pre-oral exam report. A print copy of the portfolio summary spreadsheet must be appended to the annual report and the pre-oral exam report.	See RCPA web site for submission dates	Reviewed by BEA Registrar, Chief examiner or delegate	Referral to Chief Examiner if necessary. See Appendix 4.

Assessment calendar

Please refer to the RCPA *Training Handbook – Administrative Requirements* (on the RCPA website) for key assessment dates.

Appendix 5

Guidelines for research and scholarship

Four items, each on a different topic, should be submitted, for which the trainee must have made the major intellectual contribution. The items should cover the range of communication formats that pathologists are expected to encounter in their professional career. At least **one** item should be from Category A and **one** from Category B (see below); the remainder can be from either Category A or B.

Although they are not due until September in the final year of training, trainees are advised to start them as early in training as practicable.

Category A - At least one item required	**Documentation**
Published article or **manuscript** accepted for publication in a peer reviewed journal where the trainee is the first or a major contributing author	One hard copy of article or manuscript with evidence of acceptance for publication. Cover sheet with declaration of originality: see Appendix 6.
Presentation of a **poster** at a national or international meeting or conference where the trainee is the lead or a major contributor to the work and is significantly responsible for the production of the poster	One hard copy of the abstract, an A4 or A3 printout of mini version of the poster and copy of letter from conference organising committee verifying acceptance. Cover sheet with declaration of originality: see Appendix 6.
A **formal research proposa**l for original research in chemical pathology in a format that could be submitted to a research funding body. The trainee should be a major contributor to the work being proposed	One hard copy of the research proposal. Cover sheet with declaration of originality: see Appendix 6.

Category B - At least one item required	**Documentation**
A **written report** on an **audit activity** developed by the trainee or with significant intellectual input from the trainee in the development. Please note: routine laboratory audits do not count in this category.	eCopy (MS Word) and one hard copy. Limit of 2 Cover sheet with declaration of originality: see Appendix 6.
A **written report** on a **complex case** in CP that the trainee has worked up and reported, with appropriate discussion of the relevant issues.	eCopy (MS Word) and one hard copy. Limit of 2 Cover sheet with declaration of originality: see Appendix 6.

Guidelines for presenting and submitting Category A items

For each item, send hard copy with a cover page containing candidate name, RCPA ID and a signed declaration of originality (see Appendix 6). If multiple category A items, each should have a cover page and all should be bound in a single, spiral bound booklet.

Keep a copy for yourself. The copy submitted to the College will not be returned to you.

Postal address

Royal College of Pathologists of Australasia
207 Albion St, Surry Hills, NSW 2010

Due date: 30 September in the final year of training

Guidelines for presenting and submitting Category B items

Prepare an e-copy (MS Word) and a hard copy of each item.
The **e-copy** must be emailed to the college address below. Multiple items can be sent in the same email message.

- The trainee's name should not be displayed anywhere in the body of the work.
- All pages must be numbered
- A recognised system for citing references must be used consistently
- Do a word count, excluding references
- For the **e-copy:** the first page should display the title, the trainee's RCPA number and word count. The e-copies will be sent to examiners and should identify you by your RCPA ID number and **not** your name.
- For the **hard copy:** in addition to the first page, include a cover sheet with the title, candidate name, RCPA ID number and the relevant declaration of originality (see Appendix 6). Multiple items should be spiral bound in a single booklet with the cover pages and an index. The hard copy will be kept on file at the College.

E-copies may be checked using plagiarism detection software. Trainees who submit work that is not their own will fail and the matter will be referred to the Board of Education and Assessment

Assessment

Items will be assessed as satisfactory or unsatisfactory. Items that are assessed as unsatisfactory may be revised and re-submitted one time only. Category A items will be assessed by the chief examiner. Category B Items will be marked independently by two examiners, using the following marking scheme:

1.	Clear layout of text with appropriate headings and paragraphs.	5 marks
2.	Correct, concise English without spelling or grammatical errors.	5 marks
3.	Clear introduction which covers the background of the topic and sets the scene.	20 marks
4.	The body of the work is well organised, easy to read and addresses the topic. A full range of appropriate sources has been used, including textbooks, journals, websites, personal communications, surveys or experiments.	30 marks
5.	The conclusion accurately summarises the arguments that have been presented.	10 marks
6.	Figures and tables are well planned and easy to understand.	20 marks
7.	References are relevant and are cited accurately	10 marks
8.	Penalty marks if the large amounts of irrelevant material are included.	-10 marks
9.	Bonus marks for exceptional writing and scholarship.	10 marks

Email address: exams@rcpa.edu.au

Due date: 30 September in the final year of training

Appendix 6

Declarations of originality for research and scholarship

Declaration for published manuscript

Trainee declaration: I certify that this published article is work that I completed during my accredited training in chemical pathology. The work is original and has not been submitted for assessment previously. I have read and understand RCPA Policy 10/2002 - Plagiarism and Cheating in Examinations.

Supervisor declaration: As the supervisor for Dr. ……..……, I certify that this published article reports work to which he/she made a major contribution and was carried out during his/her training in chemical pathology. I have reviewed this item and read the relevant RCPA PPD requirements and believe it is suitable for submission to the RCPA examiners.

Trainee signature……..ID…….....

Supervisor name (print) .....……..……...

Supervisor signature…….....date……

Declaration for conference poster presentation

Trainee declaration: I certify that this poster reports work that I completed during my accredited training in chemical pathology. The work is original and has not been submitted for assessment previously and has not been used by any other trainee in this laboratory. I have read and understand RCPA Policy 10/2002 - Plagiarism and Cheating in Examinations.

Supervisor declaration: As the supervisor for Dr. ……....., I certify that this oral/poster presentation (cross out as applicable) reports work to which he/she made a major contribution and was carried out during his/her training in chemical pathology and has not been used by any other trainee in this laboratory. I have reviewed this item and read the relevant RCPA PPD requirements and believe it is suitable for submission to the RCPA examiners.

Trainee signature……..ID…….....

Supervisor name (print) .....……..……...

Supervisor signature…….....date……

Declaration for research proposal

Trainee declaration: I certify that this research proposal was completed during my accredited training in chemical pathology. The work is original and has not been submitted for assessment previously and has not been used by any other trainee in this laboratory. I have read and understand RCPA Policy 10/2002 - Plagiarism and Cheating in Examinations.

Supervisor declaration: As the supervisor for Dr. ……....……, I certify that he/she made a major contribution to this research proposal, which was completed during his/her training in chemical pathology. It has not been used by any other trainee in this laboratory. I have reviewed this item and read the relevant RCPA PPD requirements and believe it is suitable for submission to the RCPA examiners.

.

Trainee signature……..ID…….....

Supervisor name (print) .....……....……...

Supervisor signature…….....date……

Declaration for an audit

Trainee declaration: I certify that I made a major contribution to devising, conducting and reporting this audit in chemical pathology. The work has not been submitted for assessment previously and has not been used by any other trainee in this laboratory. I have read and understand RCPA Policy 10/2002 - Plagiarism and Cheating in Examinations.

Supervisor declaration: As the supervisor for Dr. ……....……, I certify that he/she undertook this audit as stated above. I have reviewed this item and read the relevant RCPA PPD requirements and believe it is suitable for submission to the RCPA examiners.

Trainee signature……..ID…….....

Supervisor name (print) .....……....……...

Supervisor signature…….....date……

Appendix 7

Guidelines for completing the Supervisor Report Form

Please refer to the following documents:

- Information about the role and responsibilities of supervisors and resources to support supervision
- The RCPA policy on the Supervision of Training and Accreditation of Supervisors

The supervisor report form should be completed by the supervisor in consultation with other pathologists and laboratory staff with a significant role in the trainee's training program and with reference to the trainee's portfolio.

Supervisors should be mindful that scoring trainee performance is of critical importance in early notification of underperforming trainees so that remedial action can be initiated early in training, if appropriate. Experience tells us that most trainees score 3, which indicates that they are performing at the expected level of training. A score of 1 or 2 identifies to the College/CJCT an underperforming trainee and flags the need for evaluation for trainee support pathways.

Please refer to the portfolio requirements which are set out in Appendix 8.

Trainees must make their up-to-date portfolio and logbooks available to the supervisor for the annual, rotation and pre-examination reviews. For the pre-examination review, a print-out of the portfolio summary spread sheet must also be made available.

Submitting the Supervisor Report

It is the trainee's responsibility to ensure that this form is completed and submitted by the due date. At least one supervisor report, with a print copy of the portfolio summary spreadsheet, is due annually for all trainees and may be submitted with the annual registration for the subsequent year. For trainees who participate in rotational programs, one report is required to be submitted on completion of each period of rotation at a different institution.

For trainees sitting for Part I and Part II oral examinations, the additional pre-examination supervisor report is due by the date specified in the *RCPA Trainee Handbook – Administrative Requirements* (on the RCPA website). A print-out of the portfolio summary spread sheet must be appended to this report. Reports must be available for consideration at the examinations.

Please post this form by the due date to
The Royal College of Pathologists of Australasia
207 Albion Street, Surry Hills NSW 2010 AUSTRALIA

Faxed reports will not be accepted.

Appendix 8

Portfolio Requirements

The table below sets out guidelines to assist trainees to compile the portfolio, the logbook and the portfolio summary spreadsheet.

Portfolio activities are carried out in the workplace and provide evidence that the trainee is developing technical skills and professional values, attitudes and behaviours that are not readily assessed by formal examinations.

Trainees should start accumulating evidence for the portfolio as early as possible in training and aim to have half of them underway or complete before the Part I examination.

Appendix 9 contains the forms and logbook pages for recording these workplace activities. Please file the (hard copy) forms in a **portfolio folder** with separate sections, numbered as in the table.

A soft copy **portfolio summary** (Excel spreadsheet) should also be compiled so that trainees can keep track of what they have completed. The spreadsheet can be downloaded from the RCPA website. It is the trainee's responsibility to keep both hard and soft copy records **up-to-date**.

The supervisor should review and sign off completed portfolio forms and logbook on the annual, rotation and pre-exam supervisor report.

The annual and pre-exam supervisor reports should have print copies of the portfolio summary spreadsheet appended and should be submitted to the RCPA by the due dates. The summary will be reviewed by the Registrar, Board of Education and Assessment and the Chief Examiner. The signatories and trainees may be contacted to confirm evidence of satisfactory completion.

Note: The actual portfolio should not be sent unless requested for audit.

	Item	Part I	Part II	Evidence
1	**Laboratory safety** checklist.	**Checklist to be completed within 3 months of starting training. eLearning module to be completed during training**		**Checklist - one is required during training.** **Certificate of completion** of eLearning module (see point 10 below)
2	**Supervisor report/s** for each year and/or rotation with brief reflection (maximum 1 page) on the supervisor's comments for each report.	End-of-rotation and annual reports. An additional pre-exam report is required in the year of the Part I and Part II assessments See RCPA website for submission dates.		See **Supervisor Report Guidelines** Appendix 6
3	**DOPS** A total of eleven (11) to be completed satisfactorily during the first four years of training: • 9 investigations DOPS • 1 specimen reception DOPS • 1 instrument maintenance DOPS	At least 6 before Part I 5 investigations 1 specimen reception	An additional 5 before Part II	**DOPS forms for** • **Investigations** • **Specimen reception** • **Instrument maintenance** All forms to be signed by supervisor or other appropriately qualified person.
4	**CbD** A total of four (4) to be completed satisfactorily during the first four years of training.	2 before the Part I examinations	An additional 2 before the Part II examinations	CbD forms signed as satisfactory by supervisor or other appropriately qualified person.

	Item	Part I	Part II	Evidence
5	**Routine automated biochemistry** Routine automated biochemistry processor runs that the trainee has been directly involved with to be logged.	Minimum 10 before the Part I examinations.	No minimum number	**Routine Automated Biochemistry Log** Log to be verified periodically by the supervisor or delegate. Log to be signed off by supervisor at periodic supervisor's meetings and annual review.
6	**Paediatric and metabolic investigations** Investigations that the trainee has been directly involved with to be logged.	Throughout training. No minimum number but zero is unacceptable		**Paediatric & Metabolic Investigations log** Log to be verified periodically by the supervisor or delegate. Log to be signed off by supervisor at periodic supervisor's meetings and annual review.
7	**Clinical consultations** Telephone consultations with clinicians or consultations directly with patients	At least one consultation per week	At least one consultation per week	**Clinical consultations log** Log to be signed off by supervisor at periodic supervisor's meetings and annual review.
8	**Ward rounds and clinical meetings** (CPC, MDT)	Two (2) meetings per week should be signed off to verify the trainee's participation. Trainee must have presented cases at a minimum of four (4) clinical or laboratory meetings per year.		**Supervisor Sign-off Form for Clinical Meetings** Each meeting logged on the form should be signed by the supervisor to verify the trainee's involvement in the meeting.
9	**Teaching sessions** Sessions conducted for students, laboratory colleagues or other audiences.	No minimum number but zero is unacceptable		**Teaching sessions log** The supervisor should sight and sign off the log at supervisor's meetings and at the annual review.
10	**Professional qualities eLearning modules** Refer to Section 2 Learning outcomes and recommended training activities for weblinks	The following RCPA e-learning modules are required to be completed during training: Quality Management Laboratory Safety Ethics (6 modules) Cultural Competence		A **certificate or email** verifying completion can be printed when the module has been completed (a workbook is required for the Ethics module). Note: A cultural competence certificate issued by a recognised health service provider can substitute for the RCPA cultural competence module certificate.
11	**Evidence of research and scholarship**	Four items described in Appendix 5		See Appendix 5

Appendix 9

Forms and Logbook pages

Appendix 9 contains master copies of forms to be used to record activities for the portfolio. Please make as many copies as you need and file the completed forms safely in the portfolio folder.

The forms are

- Laboratory safety checklist
- DOPS forms
- CbD form
- Supervisor sign off form for attendance at ward rounds and clinical meetings, and case presentations at these meetings

Appendix 9 also contains master copies of logbook pages. In the meantime, please make as many copies of the logbook pages as you need and file the completed forms safely in a plastic folder.

The logbook pages are for

- Routine automated biochemistry
- Paediatric and metabolic investigations
- Clinical consultations
- Research activities
- Ward rounds and clinical meetings
- Teaching sessions

Laboratory safety checklist

This form is designed to confirm that trainees have understood and are able to apply laboratory safety instruction provided by the employer as it relates to the RCPA curriculum. It covers the essentials for new trainees and is the basis for subsequent learning that will be assessed and eventually lead to the ability to function in a laboratory management role as a pathologist.

- ☐ I have participated in a laboratory safety induction program or educational session
- ☐ I have reviewed the laboratory safety manual
- ☐ I know where to find the laboratory safety equipment and how to use it
- ☐ I have known immunity to hepatitis B (natural or vaccine)
- ☐ I have been vaccinated and/or screened for other infectious diseases as required by my laboratory
- ☐ I know how and when to wash my hands and carry this out
- ☐ I wear enclosed shoes in the laboratory and tie back long hair if applicable
- ☐ I wear appropriate protective clothing (gown, gloves, goggles, mask as needed) and always remove it before leaving the laboratory
- ☐ I cover any cuts or wounds before working in the laboratory
- ☐ I never eat or put anything in my mouth whilst in the laboratory
- ☐ I know how to handle blood and other body substances and tissues to avoid transmission of infection to myself and others
- ☐ I know how to prevent sharps injury
- ☐ I am aware of electrical, chemical, radiation and biological hazards and how to prevent them
- ☐ I know what to do in an emergency
- ☐ I know the procedure for reporting safety-related incidents
- ☐ I know where to find information about legislative requirements for laboratory safety
- ☐ I know where to find detailed information about laboratory hazards such as dangerous chemicals
- ☐ I always clean up after myself
- ☐ I set up my workspace and ensure correct posture and lifting technique so as to avoid strain and injury

Trainee name:

Sign:

Witness (supervisor or other senior member of staff):

Date:

DOPS (Direct Observation of Practical Skills) Assessment

Instructions for Trainees and Supervisors

The purpose of the Direct Observation of Practical Skills (DOPS) assessment is to indicate trainees' acquisition of practical laboratory skills; to show that they can work safely in the laboratory; and to provide feedback to trainees about their progress by highlighting strengths and areas for improvement, thereby encouraging their professional development.

Trainees are required to complete eleven (11) DOPS forms during training. Each should demonstrate competence using a **different type** of investigation, instrument or technique. Trainees should initiate the DOPS assessment by requesting an appropriate assessor to observe them when they are confident they can complete it satisfactorily.

It is important for the assessor to observe the trainee doing the entire activity. Observations can be made by the supervisor and also by suitably qualified scientific staff. Assessors who are RCPA Fellows can note this as a quality activity in their annual CPDP submission.

The assessor should complete the DOPS form while the trainee is present and spend 5-10 minutes providing immediate feedback.

Grading, standards and outcome of assessment

Each aspect of the trainee's performance should be graded. The "n/a" option should be used if the assessor has not observed that aspect or is otherwise unable to comment.

The trainee's strengths as well as areas for improvement should be discussed with the trainee. Feedback should be given sensitively, in a suitable environment. Areas for development should be identified, agreed and recorded on the DOPS form.

The final outcome should be graded according to whether the standard of performance is as expected for the stage of training. The level of competence should be such that the trainee would be able to perform the task safely without supervision, usually at the level of a competent junior scientist. A trainee whose performance does not meet the standard will be able to repeat the assessment with no penalty.

Record keeping

The DOPS forms must be fully completed, signed and dated by the trainee and the assessor. The forms must be retained by the trainee in his/her portfolio. Only DOPS for which the trainee has met the standard need to be recorded in the portfolio.

The Royal College of Pathologists of Australasia

Chemical Pathology Investigations DOPS Assessment Form

DOPS = Direct Observation of Practical Skills

Trainee name	**Trainee ID (RCPA)**	**Stage of training** Y1 Y2 Y3 Y4 Y5 if >Y5, please specify
Assessor name	**Assessor position** ☐ Pathologist ☐ Scientist ☐ Snr trainee ☐ Other (pls specify)	

Instrument or technique (tick the box that applies). **Nine different techniques** required during training

- ☐ Multi-test automated analyser
- ☐ Small manual or semi-automated analyser (eg blood gases, manual immunoassay, osmometry, breath testing, stone analysis)
- ☐ High performance liquid chromatography
- ☐ Gas chromatography
- ☐ Trace metal techniques (eg atomic absorption or ICPMS)
- ☐ Specialised protein methods - electrophoresis
- ☐ Specialised protein methods - immunochemistry
- ☐ Specialised protein methods – other (please specify.....)
- ☐ Molecular techniques
- ☐ QAP sample – follow through all stages of processing
- ☐ Trial a new test in parallel with automated test (please specify.....)
- ☐ Drugs/toxicology
- ☐ Point of care test (eg, ABG, troponin, etc)
- ☐ Other (please specify.....)

Number of hours spent performing the method prior to DOPS assessment	**Has the trainee completed the laboratory's usual training process for this method?** ☐ yes ☐ no

Please comment on whether these aspects of the trainee's performance are as expected for the stage of training	**Yes**	**No**	**n/a**
Understands the principles of the method			
Understands and complies with the laboratory documentation, package inserts, manuals, etc			
Completes an assay successfully and produces a valid result that is able to be reported			
Able to explain the QC procedures for this method, including internal and external QA			
Able to discuss anomalies and resolve uncertainties for the method			
Able to explain maintenance and trouble-shooting requirements for the method			

Please comment on other relevant aspects, especially on aspects for improvement (use the reverse side if insufficient room)

Final outcome (circle one) As expected for the stage of training Below expected for the stage of training	Date of DOPS	Time taken for DOPS	Time taken for feedback
Name (print) and signature of assessor		Signature of trainee	
Laboratory			

The Royal College of Pathologists of Australasia

Chemical Pathology DOPS for Specimen Reception Assessment Form

(Direct Observation of Practical Skills)

Trainee name	**Trainee ID (RCPA)**	**Stage of training** Y1 Y2 Y3 Y4 Y5 if >Y5, please specify
Assessor name	**Assessor position** ☐ Pathologist ☐ Scientist ☐ Snr trainee ☐ Other (pls specify)	
Number of hours spent in specimen reception prior to DOPS assessment	**Has the trainee completed the laboratory's usual training process for this method?** ☐ yes ☐ no	

Please comment on whether these aspects of the trainee's performance are as expected for the stage of training	**Yes**	**No**	**n/a**
Handles samples safely			
Enters data correctly			
Understands the principles for sorting samples and handling urgent requests			
Understands and complies with the laboratory documentation, manuals, etc			
Able to discuss anomalies and resolve problems			

Please comment on other relevant aspects, especially on aspects for improvement (use the reverse side if insufficient room)

Final outcome (circle one) As expected for the stage of training Below expected for the stage of training	Date of DOPS	Time taken for DOPS	Time taken for feedback
Name (print) and signature of assessor	Signature of trainee		
Laboratory			

The Royal College of Pathologists of Australasia

Chemical Pathology DOPS for Instrument Maintenance Assessment Form

Direct Observation of Practical Skills

Trainee name	**Trainee ID (RCPA)**	**Stage of training** Y1 Y2 Y3 Y4 Y5 if >Y5, please specify
Assessor name	**Assessor position** ☐Pathologist ☐Scientist ☐Snr trainee ☐Other (pls specify)	

How to use this form

Complete this form when you are involved in maintenance activities for a complex piece of laboratory equipment. Use a new form for each instrument and tick as many boxes in Section B as apply. The minimum requirement is to be involved in the maintenance of one piece of equipment.

Section A: Instrument (tick box that applies)	**Section B (tick as many as apply)**
☐ Multi-test automated analyser. Specify component……. …… ☐ Small manual or semi-automated analyser ☐ HPLC ☐ GC ☐ Electrophoresis equipment ☐ Other (please specify) ……	☐ Flush ☐ Change filter ☐ Change membranes ☐ Change gaskets ☐ Repressurise ☐ Recalibrate ☐ Other (please specify)

Please comment on whether the trainee's involvement and performance are as expected for the stage of training

Please comment on other relevant aspects, especially on aspects for improvement

Final outcome (circle one) As expected for the stage of training Below expected for the stage of training	Date of DOPS	Time taken for DOPS	Time taken for feedback
Name (print) and signature of assessor	Signature of trainee		
Laboratory			

CbD (Case-based Discussion) Assessment Form

Instructions for Trainees and Supervisors

Throughout training, trainees should seek opportunities to present and discuss cases with experienced colleagues and receive feedback. The CbD form should be used to formally record at least one (1) of these sessions per year. At least two (2) CbD forms should be signed off as satisfactory before the Part I examination, and a total of four (4) before the Part II examination.

The early CbDs should be for routine situations and those with frequently occurring, manageable complications. Between the Part I and Part II examinations, the cases should be of high complexity, with difficult or unusual situations.

Doing CbD assessments is excellent preparation for the oral examinations. CbD assessments indicate the development of the ability to interpret and relate pathological results to clinical findings; to plan appropriate investigations, and make decisions in relation to patient care, including decisions with ethical and legal dimensions. The purpose of the CbD assessment is also to provide feedback to trainees about their progress by highlighting strengths and areas for improvement, thereby encouraging their professional development.

The trainee should initiate each CbD assessment. The trainee should select two (2) recent cases in which s/he has been involved clinically or through laboratory tests. The assessor should select one (1) of these for the trainee to present and discuss. The trainee should select a suitable assessor, who should be an RCPA Fellow but does not need to be the listed supervisor.

The trainee should request a mutually convenient time to meet for about 30 minutes. The presentation/discussion should take about 15-20 minutes. A further 5-10 minutes should be allowed for the assessor to give immediate feedback and complete the CbD form. In addition to the formal CbD assessment, supervisors are encouraged to have an informal discussion of the second case prepared by the trainee.

Each CbD case discussion should cover one or more of the different aspects of practice indicated on the CbD form.

Grading, standards and outcome of assessment

Each aspect of the trainee's performance should be graded. The "n/a" option should be used if the assessor has not observed that aspect or is otherwise unable to comment. The assessor should discuss strengths as well as areas for improvement with the trainee. Feedback should be given sensitively, in a suitable environment. Areas for development should be identified, agreed and recorded on the CbD form.

The final outcome should be graded according to whether the standard of performance is as expected for the stage of training. A trainee whose performance does not meet the standard will be able to repeat the assessment with no penalty.

Record keeping

The CbD forms must be fully completed, signed and dated by the trainee and the assessor. The forms must be retained by the trainee in his/her portfolio. Only CbD for which the trainee has met the standard need to be recorded in the portfolio.

The Royal College of Pathologists of Australasia

Chemical Pathology Case-based Discussion (CbD) Assessment Form

Trainee name	**Trainee ID (RCPA)**	**Stage of training** Y1 Y2 Y3 Y4 Y5 if more than Yr5, please specify

Assessor name and position

Focus of discussion (tick as many as apply)

- ☐ Bone - calcium, magnesium;
- ☐ Liver, gastroenterology; nutrition
- ☐ Water, electrolytes
- ☐ Lipids
- ☐ Gases, acid/base metabolism
- ☐ Diabetes
- ☐ Other endocrinology (……)
- ☐ Proteins, enzymology
- ☐ Trace metals
- ☐ Toxicology
- ☐ Genetics/molecular pathology
- ☐ Paediatric
- ☐ Pregnancy
- ☐ QA/QC of POC devices
- ☐ Troubleshoot POC devices

Complexity of case (tick box) ☐low ☐medium ☐high

Brief description of case presented, discussed and assessed

Why was this case selected for discussion?

Does this case broaden the trainee's experience by being different from previous cases that have been discussed? ☐yes ☐no ☐n/a

Please comment on whether these aspects of the trainee's performance are as expected for the stage of training	**Yes**	**No**	**n/a**
Ability to present case clearly and concisely			
Good understanding of clinical issues relating to the case			
Good understanding of laboratory issues relating to the case			
Depth of understanding and awareness of current literature relevant to this case			
Ability of interpret results in a balanced and rational way			
Ability to provide and clearly communicate well reasoned professional advice			
Ability to clinically correlate the laboratory tests results in the setting of clinical presentation of the patient.			
Ability to suggest further relevant or more useful tests towards the management of the patient in relation to diagnosis and monitoring including prognostication.			
Ability to communicate findings to a non-medical person (e.g. patient, lawyer)			
Understanding of management and financial aspects of the case			
Overall laboratory and clinical judgment			

Please comment on other relevant aspects, especially on aspects for improvement (use the reverse side if insufficient room)

Final outcome (please circle) As expected for the stage of training Below expected for the stage of training	Date of CbD	Time taken for CbD	Time taken for feedback
Name (print) and signature of assessor		Signature of trainee	
Laboratory			

Chemical Pathology Routine Automated Biochemistry Log

How to use this form

From the beginning of training, trainees should log their experience with routine automated biochemistry processors. Only runs that the trainee has been directly involved with should be logged.
Examples of suitable activities include:

- Reading and evaluation of documentation
- Instrument setup and preparation
- Routine analysis of specimens
- Reviewing results and quality control
- Troubleshooting QC problems
- Troubleshooting instrument problems
- Dealing over-range results and dilutions
- Dealing with small volume specimens
- Dealing with haemolysed, lipaemic and icteric specimens
- Dealing with unexpected or critical results
- Other

At the end of each rotation, the log should be sighted and signed off by the assessor (usually a scientist) and also signed off on the annual supervisor report.

The trainee should be assessed as competent in these activities before the Part I exams

Trainee name			**Trainee ID**	**Stage of training** Y1 Y2 Y3 Y4 Y5 If > Y5 please specify
	Date	**Activity**	**Assay**	**Instrument/component**
1`				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Supervisor name (print) .....Signature……..

Laboratory..... Date…….....……

The Royal College of Pathologists of Australasia

Chemical Pathology Paediatric & Metabolic Investigations Log

How to use this form

From the beginning of training, trainees should log experience with paediatric investigations including those for inborn errors of metabolism. The number of runs that the trainee has been directly involved with should be logged or individual specimens in rare cases.

Activities that should be logged include doing and observing runs as well as interpretation with calculations and reporting

At the end of each rotation, the log should be sighted and signed off by the assessor (will usually be the scientist on the bench) and also signed off on the annual supervisor report.

Trainee name			**Trainee ID**	**Stage of training** Y1 Y2 Y3 Y4 Y5 If > Y5 please specify
	Date	**No. of runs/cases** (please specify)	**Assay used**	**Instrument used**
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

Supervisor name (print) .....…….....……Signature……..……..

Laboratory..... Date…….....……

Chemical Pathology Clinical Consultations Log

How to use this form

From the beginning of training, trainees should log clinical consultations that involve significant, difficult or unusual cases that are the subject of telephone calls with clinicians or of consultations directly with patients. At the end of each rotation, the log should be sighted and signed off by the supervisor and also signed off on the annual supervisor report.

A minimum of one such consultation per week should be recorded during training.

Trainee name	**Trainee ID**	**Stage of training** Y1 Y2 Y3 Y4 Y5 If > Y5 please specify

	Date	**Brief summary of issue discussed**
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Supervisor name (print) .....Signature……..

Laboratory..... Date…….....……

The Royal College of Pathologists of Australasia

Chemical Pathology Research Activities Log

How to use this form

From the beginning of training, trainees should log research and other scholarly activities. Suitable activities may include

- Published articles or submitted manuscripts
- Oral papers at scientific congresses
- Poster presentations at scientific congresses
- Research proposals
- Reports of quality or audit activities
- Reports of having explored the reliability of a new test

No minimum number is required. At the end of each rotation, the log should be sighted and signed off by the assessor (will usually be the scientist on the bench) and also signed off on the annual supervisor report.

Trainee name	**Trainee ID**	**Stage of training** Y1 Y2 Y3 Y4 Y5 If > Y5 please specify

	Date	**Type of item** (please specify)	**Details**
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Supervisor name (print) .....Signature……..

Laboratory..... Date…….....……

The Royal College of Pathologists of Australasia

Chemical Pathology
Supervisor sign off form
Ward rounds and Clinical Meetings

How to use this form

This form is to be used to record that the trainee has fulfilled the following requirements:

- attend a minimum of two meetings per week throughout training, eg, grand rounds, ward rounds, endocrinology, etc.
- present cases at a minimum of four (4) clinical or laboratory meetings per year throughout training.

The supervisor is asked to sign after each meeting to verify off the trainee's participation. Trainees should retain a list of the cases/entities presented at each meeting in the portfolio.

At the end of each year, this form should be sighted by the supervisor and signed off on the annual supervisor report.

Please START A NEW FORM AT THE BEGINNING OF EACH YEAR OF TRANIING

Trainee name	**Trainee ID**	**Stage of training** Y1 Y2 Y3 Y4 Y5 if > Y5 please specify

	Meeting date	**Brief description of meeting**	**Did trainee present cases? Y/N**	**Supervisor signature**
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				

Supervisor name (print) .....Signature……..

Laboratory..... Date…….....……

Chemical Pathology Teaching Sessions Log

How to use this form

From the beginning of training, trainees should log the number of teaching sessions conducted for students, laboratory colleagues or other audiences.

At the end of each rotation, the log should be sighted and signed off by the supervisor and also signed off on the annual supervisor report.

Please START A NEW FORM AT THE BEGINNING OF EACH YEAR OF TRAINING

Trainee name	**Trainee ID**	**Stage of training** Y1 Y2 Y3 Y4 Y5 If > Y5 please specify

	Date	**Duration of session**	**Audience**	**Topic presented**
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

Supervisor name (print) .....…….....……..……Signature…….....……..

Laboratory..... Date…….....……

Appendix 10

Assessment matrix

	Competency to be assessed Competencies are organised according to the RCPA common curriculum framework	Part 1 exams			Part 2 exams			Portfolio (WBA)			
		A	B	C	D	E	F	G	H	I	J
1.1	Foundation knowledge and skills	X	X	X	X	X					
1.2	Accession, Management, Processing of Specimens		X	X		X		X			
1.3	Storage and Retrieval of Laboratory Data		X	X		X					X
1.4	Performance of Laboratory Procedures		X	X		X		X			
1.5	Analysis and Validation of Laboratory Data		X	X	X	X		X			X
1.6	Developing and reporting a professional opinion	X	X	X	X	X		X	X		
1.7	Dynamic testing			X		X		X	X		
1.8	Monitoring Patient Progress		X						X		X
2.1	Quality management: assurance & control	X	X	X	X	X		X	X	X	X
2.2	Laboratory safety		X	X		X		X			X
2.3	Compliance with local legislation	X		X	X	X		X	X		X
2.4	Manage people				X	X			X		X
2.5	Manage resources				X	X			X		X
2.6	Information fundamentals		X				X	X			X
3.1	Research and critical appraisal						X		X	X	X
3.2	Undertake self-education and CPD						X				X
3.3	Educate colleagues staff, patients/families			X		X					X
3.4	Provide data for planning and evaluation		X				X				X
4.1	Ethics and confidentiality			X		X	X		X		X
4.2.1	Communication - oral			X		X		X	X		X
4.2.2	Communication – report writing						X				X
4.2.3	Communication – academic writing						X			X	
4.3	Collaboration and teamwork				X	X					X
4.4	Cultural competence			X		X			X		X

Key	**Assessment methods**
A	Part 1 written exam
B	Part 1 SAQ and calculations exam
C	Part 1 structured oral exam
D	Part 2 written exam: SAQ
E	Part 2 structured oral exam
F	Part 2 research and scholarship
G	DOPS: directly observed practical skills
H	CbD: case-based discussion
I	Items evidencing research and scholarship
J	Portfolio evidence of activity in the following categories Category 1: Safety checklist, incident reports Category 2: Attendance/presentations at clinical meetings Category 3: Laboratory investigations Category 4: Clinical practice Category 5: Management meetings