



**TRAINEE HANDBOOK 2012**  
**SPECIFIC REQUIREMENTS FOR**  
**CHEMICAL PATHOLOGY**

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## GLOSSARY

AST	aspartate aminotransferase
EQAP	external quality assessment program
IANZ	International Accreditation New Zealand
ICU	intensive care unit
(J)SAC	(Joint) Specialist Advisory Committee
LIS	laboratory information system
NATA	National Association of Testing Authorities
OHS	occupational health and safety
POC	point of care
PSA	prostate specific antigen
QA	quality assurance
QAP	RCPA Quality Assurance Programs Pty Ltd
QC	quality control
RI	reference interval
TSH	thyroid stimulating hormone
TFT	thyroid function test
UV	ultraviolet

## 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 sophisticated 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 sophisticated understanding of pathophysiology and be able to liaise with clinicians;
- know the laboratory and be able to talk to scientific staff about the laboratory and its problems;
- know about management problems and be able to deal with staff problems and manage a budget;
- stay up-to-date with new assays and new ideas arising in Chemical Pathology.

A guiding principle in assessing the suitability of a candidate presenting for final examination is “can this person function at consultant level?”

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

- discipline specific functions as a medical specialist in the laboratory
- functions as a manager in the laboratory
- other professional functions of chemical pathologists
- generic processes employed by chemical pathologists

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

## 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 for RCPA Trainees and three (3) years for joint RCPA-RACP Trainees.

### **Entry Requirements**

- RCPA Trainees are required to have had at least one (1) year of clinical work (ie, have completed intern year) however candidates are encouraged to have two (2) years of clinical practice.
- Joint training with Endocrinology (RCPA-RACP Trainees). Trainees will usually enter the joint program following three (3) years of basic physician training, including success in the FRACP written and/or clinical examinations.

### **Exemptions from Training Time and Examinations**

Trainees who have trained in areas of relevance to Chemical Pathology may be given some credit towards their five (5) years of approved training. Trainees who hold a Chemical Pathology fellowship from a similar organisation to the RCPA may be granted exemption from components of the Part I examination.

The College maintains training and exam exemption tables that act as guidelines when your application is reviewed by the College. Please refer to

<http://www.rcpa.edu.au/Careers/Training/Examinations/ExamExemptions.htm>  
<http://www.rcpa.edu.au/Careers/Training/Examinations/TrainingTimeCredits.htm>

Applications for exemptions must be directed to the Registrar of the RCPA Board of Censors.

## **Joint Training in Endocrinology & Chemical Pathology**

A joint training program in Chemical Pathology and Endocrinology is available, supervised by the Joint Specialist Advisory Committee (JSAC) in Endocrinology and Chemical Pathology of the Royal Australasian College of Physicians (RACP) and the Royal College of Pathologists of Australasia (RCPA). 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.

### **General principles of Joint Training**

- Trainees will usually enter the joint program following three (3) years of basic physician training, including success in the FRACP written and/or clinical examinations;
- Joint training takes four years;
- Joint Trainees must be registered with both the RCPA and the RACP and are supervised by the JSAC (Endocrinology and Chemical Pathology);
- Laboratory training in Chemical Pathology is conducted in laboratories accredited by the RCPA.
- Clinical endocrinology advanced training is conducted hospitals with endocrinology training programs accredited by the RACP. Paediatric endocrinology trainees must also complete the RACP's mandatory paediatric requirements.
- At the completion of the four (4) year joint training program, trainees will be eligible for FRCPA and FRACP.

For regulations applying to training with the RACP, Trainees who commenced training before 2011 should consult the *Requirements for Physician Training Adult Internal Medicine* (the "Mango Book") <http://www.racp.edu.au/page/educational-and-professional-development/advanced-training/advanced-training-requirements>. Trainees who commenced training in 2011 and subsequently are advised to consult the PREP Program requirements for Endocrinology <http://www.racp.edu.au/download.cfm?downloadfile=E382AB48-B814-DE69-71C5B75F1199CAFF&typename=dmFile&fieldname=filename>

### **Components of Joint Training**

The program comprises:

- Clinical Endocrinology: requirements include one (1) core clinical year in endocrinology and metabolism plus specified additional clinical training in the laboratory years;
- Three (3) laboratory years. 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;
- With prior approval by the JSAC the third laboratory year may be substantially altered to allow the commencement of a PhD or MD.

### **Clinical training in Endocrinology**

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.

### **Laboratory training in Chemical Pathology**

The Chemical Pathology component of training consists of three (3) years of laboratory training with allowance being made for ongoing direct patient care during each year. Training must be undertaken in laboratories accredited with the RCPA and usually supervised by a Fellow of the RCPA.

Joint Trainees usually take the Part I examination in their second year of laboratory training and the Part II examination in their final (third) year of laboratory training.

## RESEARCH

Research, either clinical and/or laboratory, is a component of both Colleges' training and Trainees are encouraged to enrol for a PhD or MD. All Trainees must satisfy the clinical and laboratory requirements of the joint program, and training beyond 4 years is usually necessary to satisfy RACP, RCPA and PhD or MD requirements.

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. Evidence of adequate and appropriate involvement in research should be presented to the Joint Subcommittee prior to entry into the last year of Joint Training.

## SUPERVISION

All training must be supervised. Trainees may nominate their own supervisor. More than one supervisor can be nominated if Trainees divide the year between two or more unrelated laboratories. The College recommends that any one supervisor be responsible for no more than two Trainees.

The supervisor will normally be a Fellow of the College; however non-Fellows may be approved by the Board of Censors if no Fellow is available. Joint Trainees will have an RACP supervisor during their clinical endocrinology training and may have an additional RACP supervisor in their laboratory years. If the Trainee spends significant periods working in an area where the supervisor has no personal involvement, the supervisor must certify that suitable supervision is being provided. The supervisor must also ensure that adequate supervision is arranged in their absence.

In some circumstances shared supervision may be necessary, but there must be a nominated primary supervisor with overall responsibility. Trainees working towards higher academic degrees (e.g. PhD), who find that their research supervisor is not suitable to be the RCPA training supervisor, should nominate an alternative.

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

Supervisors should devise a prospective training (or research) program, on initial registration and annually. This should be devised in collaboration with the Trainee and submitted to the RCPA. Supervisors should also ensure that the Trainee has sufficient time and opportunities to carry out the required training activities.

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. A formal meeting with the Trainee should occur every three months. Supervisors should meet regularly with the Trainee; observe their laboratory performance and interaction with scientists, peers and clinicians; and review result reporting. This may be delegated to other trainers where appropriate, eg, when the Trainee is on secondment to another laboratory for a segment of training.

The formal duties of Supervisors, such as requirements to report the Trainee's progress to the Board of Censors, 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's 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 the Basic Pathological Sciences examination. Whilst Joint Trainees are exempt, they must formally apply for exemption. See **Appendix 2** for detailed requirements.
- Chemical Pathology Part I examination. RCPA trainees may not take this examination until the third (3<sup>rd</sup>) year of training; Joint Trainees may not take this exam until the second (2<sup>nd</sup>) 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.

### *Written assignments*

In each of the first four (4) years of training, Trainees must complete a 1500-2500 word assignment on topics designated by the Chief Examiner (a total of four assignments during training). Each must be certified as the Trainee's original work.

### *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 to be completed before the Part 1 examinations (**Appendix 3**) and Part II examinations (**Appendix 4**).

#### **IMPORTANT NOTE FOR TRAINEES WHO COMMENCED TRAINING PRIOR TO 2012**

If you commenced training **BEFORE 2012**, transition portfolio requirements apply. Please refer to the RCPA website for specific information.

## ***Supervisors' Reports***

Trainees must submit a Supervisor's 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's report form and guidelines are in **Appendix 6**.

## **RESOURCES**

No one text or journal will be sufficient for preparation for examination. The textbooks and journals below are useful but do not necessarily cover all the Chemical Pathology that a trainee should know. None of these is compulsory. There are also many valuable websites.

### **Textbooks**

- Baynes J, Dominiczak MH. Medical Biochemistry. Mosby, London, 2010.
- Besser GM, Thorner MO. Comprehensive Clinical Endocrinology. Mosby, 3<sup>rd</sup> edition, 2002.
- Blau N, Hoffmann GF, Leonard J, Clarke JTR (eds). Physician's Guide to the Treatment and Follow-up of Metabolic Diseases. Springer-Verlag, Berlin Heidelberg, 2006.
- Burtis CA, Ashwood ER, Bruns DE (eds): Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. Elsevier Saunders, St Louis, 4<sup>th</sup> edition, 2006.
- Fernandes J, Saudubray J-M, van den Berghe G. (eds): Inborn Metabolic Diseases. Diagnosis and Treatment. Springer, Berlin, 3<sup>rd</sup> edition, 2000.
- Fraser CG. Biological Variation: From Principles to Practice. AACCC Press 2001
- Kaplan LA, Pesce AJ. (eds). Clinical Chemistry. Theory, Analysis, Correlation. Mosby, St Louis, 5<sup>th</sup> edition, 2010.
- Kronenberg H, Melmed S, Polonsky K, Larsen PR (eds). Williams Textbook of Endocrinology. Saunders, 11<sup>th</sup> edition, 2007
- Scriver CR, Beaudet AL, Sly WS, Valle D (eds). The Metabolic & Molecular Bases of Inherited Disease. McGraw-Hill, 8<sup>th</sup> edition, 2001.
- Walmsley RN, White GH. A Guide to Diagnostic Clinical Chemistry. Blackwell, 1994.
- Westgard JO. Basic QC Practices. Westgard QC, Inc. 2<sup>nd</sup> edition 2001.
- Zilva J, Pannall P, Mayne P. Clinical Chemistry in Diagnosis and Treatment. Hodder Arnold 1994.

### **Journals**

- Clinical Chemistry
- Annals of Clinical Biochemistry
- Clinica Chimica Acta
- Clinical Biochemistry
- Critical Reviews in Clinical Laboratory Sciences
- New England Journal of Medicine
- Lancet
- British Medical Journal
- Medical Journal Australia

## Chemical Pathology Trainee Handbook

- Internal Medicine Journal
- Clinical Endocrinology
- Diabetes
- Diabetes Care
- Journal of Clinical Endocrinology and Metabolism
- Therapeutic Drug Monitoring
- American Journal of Clinical Pathology
- Journal of Clinical Pathology

### **Conferences**

AACB annual scientific meeting

AACB SES events

RCPA Update meeting

If you have ideas about additional resources, please inform RCPA ([rcpa@rcpa.edu.au](mailto:rcpa@rcpa.edu.au)) so these can be added to future editions of this handbook.

## 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

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 as a medical specialist in the laboratory**

- 1.1 Foundation knowledge and skills
- 1.2 Accession, Management and Processing of Specimens
- 1.3 Storage and Retrieval of Laboratory Data
- 1.4 Performance of Laboratory Procedures
- 1.5 Analysis and Validation of Laboratory Data
- 1.6 Developing and reporting a professional opinion
- 1.7 Dynamic testing
- 1.8 Monitoring Patient Progress

### **2 Functions as a manager in the laboratory**

- 2.1 Quality Management
- 2.2 Laboratory Safety
- 2.3 Compliance with Legislation
- 2.4 Managing People
- 2.5 Managing resources

### **3 Other professional functions of chemical pathologists**

- 3.1 Research and critical appraisal
- 3.2 Undertaking Self-Education and Continuing Professional Development
- 3.3 Educating Colleagues and others

### **4 Generic processes employed by chemical pathologists**

- 4.1 Patient Safety
- 4.2 Ethics and Confidentiality
- 4.3 Communication
- 4.4 Collaboration and teamwork

# 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 fulfill 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 and methods used to assess the value and reliability of a wide variety of chemical pathology tests. **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.

**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**.

**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 the laboratory information system to retrieve specimens for examination and review.
- Understand the principles, requirements and functioning of laboratory information systems used for instrument interfacing, flagging of results and generating interpretive comments

**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

### Learning 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.

**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.

**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] Use the laboratory information system to design algorithms for investigating and reporting different clinical scenarios;
- [E] Use these algorithms, alert limits, etc, to identify results which need non-routine action and to develop protocols for reflex testing;
- [E] Report in accordance with the relevant regulatory framework.

**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.

**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.

**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.

**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.
- (after 2012) complete the Quality Management module in the RCPA Education Portal.

## 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.

**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 OHS Officer;
- Review the OHS standard in your jurisdiction.
- Participate in OHS 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 module in the in the RCPA Education Portal.

## 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.

**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
- [A] Provide supervision and constructive feedback to staff;

**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;
- (after 2012) complete the Ethics module in the RCPA Education Portal.

## 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;
- [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.

**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;
- (After 2012) complete the Quality Management module in the RCPA Education Portal.

### 3 OTHER PROFESSIONAL FUNCTIONS OF THE CHEMICAL PATHOLOGIST

*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.

**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 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.

**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.

**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;
- 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 GENERIC PROCESSES EMPLOYED BY THE CHEMICAL PATHOLOGIST

*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 Patient Safety

#### **Outcomes**

- [E] Advocate for, and protect, patient rights;
- [E] promote understanding of health and disease, including relevant epidemiology and public health issues, to patients, clinicians and the community;
- [E] Promote timely and appropriate use of pathology investigations;
- [E] Apply risk management strategies to minimise errors;
- [E] Maintain patient safety, comfort, confidentiality and privacy whilst performing tests and procedures.

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

- Access and read relevant sections of the National Patient Safety Education Framework document.
- (after 2012) complete the Quality Management module and the Ethics module in the RCPA Education Portal.

### 4.2 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] Recognise and respect cultural and religious factors impacting on professional practice;
- [E] Describe strategies to ensure equity of access to pathology testing for patients.

**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;
- (After 2012) complete the Ethics module in the RCPA Education Portal.
- Complete relevant activities from the Monash University Clinical Ethics Resource (<http://mnhs-teaching1b.med.monash.edu.au/Public/Clinical%20Ethics/>).

### 4.3 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.

**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).

### 4.4 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 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 patient care;
- [E] Communicate directly with clinicians about results, when appropriate.

***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

## Section 3

### Appendices

- Appendix 1 Essential topics in Chemical Pathology
- Appendix 2 Basic pathological sciences examination
- Appendix 3 Part I examination
- Appendix 4 Part II examination
- Appendix 5 Guidelines for written assignments
- Appendix 6 Supervisor's report guidelines and form
- Appendix 7 Portfolio guidelines
- Appendix 8 Forms and logbook pages

## 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
- Polymerase chain reaction
- Blood gas analysis
- Radioactivity

- Automation
- Nucleic acid specific technology
- 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
- Bilirubin
- Electrolytes
- Creatinine
- Calcium
- AST
- Bicarbonate
- Cholesterol
- Porphyrins
- TSH
- Cortisol
- Albumin
- Aluminium
- Arterial blood gases
- PSA
- Troponin

## ***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 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 any intern, medical or dental student in their final year as well as registered trainees.

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

The purpose of the Basic Pathological Sciences Examination is to assess the candidate's 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 if not any medical specialty.

The examination has become necessary because of recent changes in the curricula of many if not all medical schools in Australia where a shift away from pathology as a 'core discipline' has occurred. Hence an understanding of basic patho-biological processes is no longer guaranteed in many medical graduates. However, such 'core knowledge' is essential for a successful start into the training program and satisfactory progress.

The Basic Pathological Sciences examination assesses:

- scientific knowledge that can be found in undergraduate, up-to-date textbooks of pathology;
- the principles of scientific methodology that underpin the daily diagnostic work of pathologists, including antibody technology, molecular biology and cytogenetics;
- factual knowledge of what was once described as "general pathology", comprising mechanisms of cellular injury, cellular growth and cell death, inflammation and tissue repair, haemodynamic disorders, genetic disorders, immunity, environmental hazards, neoplasia and infectious diseases;
- (a basic, general understanding of) newer scientific methods that have led to advances in understanding of the mechanisms of disease, such as molecular cloning, adult and embryonic stem cells, molecular and cytogenetic methods in the diagnosis of disease and prediction of disease outcome, etc.

#### ***Examination Format and Content***

The examination is a single 2.5 hour paper of 100 multiple choice questions.

Candidates are expected to know base subjects in pathology disciplines other than that in which they are primarily training, so they can make intelligent assessment of results, at least equal to that of their clinical colleagues.

The exam will **concentrate** on the following general subjects (please note that the list of examples is not exhaustive):

- Cellular pathology (cell growth and ageing, cell injury and death)
- Acute and chronic inflammation, healing and repair
- Immunity (building blocks of the immune system, hypersensitivity reactions, autoimmune diseases, AIDS, amyloidosis)
- Haemodynamic disorders (oedema, thrombosis, embolism, infarction, shock)
- Genetic basis of disease (genetic mechanisms of disease; basic knowledge of the more common genetic diseases as well as an understanding of commonly-used genetic tests)

- Microbiology (general principles of microbial pathogenesis, common viral and bacterial infections, the most common parasitic and fungal infections)
- Neoplasia (biology of benign and malignant tumours, epidemiology of cancer, molecular and cellular oncogenesis)
- Occupational and environmental pathology (common toxins and manifestations in the human body, such as asbestos, smoking, industrial toxins)
- Nutrition, metabolism (common nutritional deficiencies, obesity)
- Acid-base balance and fluid/electrolyte disturbances (basic physiological and pathophysiological mechanisms).

In each of these subjects, emphasis will be placed on:

- Nomenclature and definitions of disease
- Classification of diseases
- Disease processes/pathogenesis
- Causation/aetiology
- Scientific methodology and new diagnostic methods
- Ethics, social and political aspects of pathology and disease
- Analysis of data (e.g. incidence, prevalence, accuracy, precision, predictive value, correlation).

## 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;
- Satisfactory progress (supervisor's) reports

#### ***Part 1 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 centers and has two components

- Paper A will comprise 20 short notes questions, 10 laboratory and 10 clinical, over 3 hours 15 minutes.
- Paper B will comprise 40 multiple choice questions (20 laboratory and 20 clinical) and 20 calculations over 3 hours 15 minutes.

The pass mark for the written papers is 50%. Trainees must pass both papers to be invited to the oral examination.

#### **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.

#### ***Written assignments***

Before presenting for the Part I examination, Trainees must have completed two (2) 1500-2500 word assignments on topics designated by the Chief Examiner. It is strongly recommended that Trainees complete one per year. Each must be certified as the Trainee's original work. Please refer to (**Appendix 5**) for guidance.

#### ***Portfolio***

The Portfolio is a record of activities undertaken by the Trainee associated with their daily work during the entire period of training. Trainees are advised to commence these activities at the earliest possible time after commencing training and to have satisfactorily completed the required

number in order to be able to present for the Part I examination. The forms and logbook pages needed to record Portfolio activities are in **Appendix 8**.

The Portfolio should include:

- Personal safety checklist: must be completed as soon as practicable after commencing training;
- Direct Observation of Practical Skills (DOPS). Trainees must be observed by an appropriately qualified person in order to assess their competence in a range of essential laboratory tasks. Trainees must complete two (2) DOPS (one per year) before presenting for the Part I examination. Please refer to the DOPS form and guidelines.
- Laboratory tests: Before presenting for the Part I examination, Trainees are expected to have spent at least one month actively involved in each of the following areas:
  - routine automated biochemistry
  - stat or urgent biochemistry
  - protein investigations
- Where possible, this will include all aspects of testing including the following: specimen collection and processing; instrument preparation, operation and maintenance; understanding the clinical significance of results; the preparation of meaningful reports. The period spent in each area should be recorded on the appropriate logbook pages.
- Case-based discussions (CbD) which provide evidence of the Trainee's overall laboratory and clinical judgment and ability to present and discuss a clinical case. Trainees must complete two (2) CbDs (one per year) before presenting, for the Part I examination. Please refer to the CbD form and guidelines.  
**PLEASE NOTE. The CbD requirement will come into effect from 2013.**
- Patient consultations: Trainees must complete a minimum of one patient consultation per week before presenting for the Part I examination. These should be recorded on the appropriate logbook pages.
- Clinical meetings: Trainees must attend, prepare for and present at multidisciplinary clinical meetings (eg grand rounds, ward rounds, endocrinology, etc). Trainees should attend a minimum of two (2) meetings per week. Trainees should also present cases at a minimum of four (4) meetings per year before presenting for the Part I examination. These cases can be presented at either clinical or laboratory meetings and should be recorded on the Clinical Meeting sign-off form.
- Teaching sessions: Trainees must prepare and conduct an appropriate number of teaching sessions. A minimum of one (1) session per year is required before presenting for the Part I examination. These should be recorded on the appropriate logbook pages.
- Supervisor reports: end-of-rotation, annual and pre-examination reports.
- Up-to-date portfolio summary spread sheet (download the form from the RCPA website);

The portfolio summary spreadsheet should be continuously updated and a print-out must be included as the front page of the portfolio. The portfolio must be made available to the Supervisor to check for completeness at the time of the rotation, annual and pre-examination supervisor's report.

A print-out of the summary spreadsheet should be appended to the pre-examination supervisor's report which is sent to the College. The spreadsheet will be reviewed by the Chief Examiner and the Registrar of the Board of Censors and 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's Reports

Trainees must submit a Supervisor's report for each year of training, including periods of rotation. Trainees who are sitting the Part I examination must submit an additional pre-examination Supervisor's report, with the appended print-out of the portfolio summary spreadsheet.

It is the Trainee's responsibility to ensure that the pre-examination Supervisor's 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 report form can be downloaded from the website: <http://www.rcpa.edu.au/Careers/Training/SupervisorReports.htm>

## Summary of assessment requirements for Part I

<b>Item</b>	<b>Completion</b>	<b>Assessed by</b>	<b>Comments</b>
Written exams consisting of short answer, multiple choice 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.
Written assignments: One (1) per year, certified as candidate's own original work, and signed off by supervisor or delegate before submitting for examination.	Two (2) to be completed before Part I written exams	Assessed by Chief Examiner or delegate prior to oral exam. Candidates may be required to revise and resubmit if not satisfactory.	
Directly Observed Practical Skills (DOPS) minimum 1 per year to be signed off by supervisor or delegate.	Two (2) to be completed before written Part I exams	Portfolio summary spreadsheet is checked for completeness by BOC Registrar.	Completed DOPS and CbD forms and other items in the Trainee's portfolio are to be reviewed by the supervisor when preparing the supervisor's report
Case-based discussions (CbD): minimum 1 per year to be signed off by supervisor or delegate <b>NB: REQUIRED FROM 2013.</b>	Two (2) to be completed before Part I written exams	If not satisfactory, the candidate may be required to undertake further activities	See Appendix 8
Other portfolio items to be signed off by supervisor or delegate	To be completed before Part I written exams		The portfolio should not be sent to the College unless requested for audit
Supervisors' Reports: end of rotation, annual and pre-exam reports	See RCPA web site for submission dates	Reviewed by BOC Registrar and Chief Examiner or delegate	See Appendix 4

## Assessment calendar

Please refer to the *RCPA Training Handbook – General Requirements* (on the RCPA website) 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 are assumed to be in place and will not be further examined except 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 a heterophile antibody interference. In this context, the technical aspects of investigation for heterophile antibodies may be discussed.

Assessment in Part II is by

- A formal written examination, comprising 20 short notes questions over 3 hours 15 minutes;
- Oral examination
- A portfolio of evidence of having participated in sufficient number and type of activities;
- Satisfactory Supervisors' reports

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

#### ***Part II formal examinations***

##### **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.

##### **Written assignments**

Trainees must complete a further two (2) 1500-2500 word assignments (one per year) on topics designated by the Chief Examiner. These are in addition to the two written assignments completed before the Part I examination. A total of four (4) must have been completed during the years of training. Each must be certified as the Trainee's original work. Please refer to **(Appendix 5)** for guidance.

## **Portfolio**

The Portfolio is a record of activities undertaken by the Trainee associated with their daily work during the entire period of training. Trainees are advised to commence these activities at the earliest possible time after commencing training and to have satisfactorily completed the required number in order to be able to present for the Part I examination. The forms and logbook pages needed to record Portfolio activities are in **Appendix 8**.

The portfolio should include:

- Direct Observation of Practical Skills (DOPS). Trainees must be observed by an appropriately qualified person in order to assess their competence in a range of essential laboratory tasks. Two (2) DOPS (one per year) to be completed after passing the Part I examination and before presenting for the Part II examination. Four (4) DOPS in total must be completed within the first four years of training. See DOPS form and guidelines.
- Laboratory tests: Before presenting for the Part II examination, Trainees are expected to have spent at least one month actively involved in each of the following areas:
  - specialised endocrine biochemistry
  - metabolic and paediatric biochemistry
  - drug assays and toxicology
  - genetic investigations and molecular pathology.

Where possible, this will include all aspects of testing including the following: specimen collection and processing; instrument preparation, operation and maintenance; understanding the clinical significance of results; the preparation of meaningful reports. The period spent in each area should be recorded on the appropriate logbook pages.

- Case-based discussions (CbD) which assess overall laboratory and clinical judgment and ability to present and discuss a clinical case. Two (2) CbDs (one per year) to be completed after passing the Part I examination and before presenting for the Part II examination. Four (4) in total to be completed satisfactorily within the first four years of training. See the CbD form and guidelines. **NOTE. This requirement will come into full effect from 2013.**
- Patient consultations: A minimum of one patient consultation per week before presenting for the Part II examination. These should be recorded on the appropriate logbook pages.
- Clinical meetings: Trainees must attend, prepare for and present at multidisciplinary clinical meetings (eg grand rounds, ward rounds, endocrinology, etc). Minimum attendance is two (2) meetings per week. Before the Part I examination, Trainees should have presented cases at a minimum of four (4) clinical or laboratory meetings per year. The meetings should be recorded on the Clinical Meeting sign-off form.
- Teaching sessions: Trainees must prepare and conduct an appropriate number of teaching sessions. A minimum of one (1) per year is required before presenting for the Part II examination. These should be recorded on the appropriate logbook pages.
- Supervisor reports: end-of-rotation, annual and pre-examination reports.
- Up-to-date portfolio summary spread sheet (download the form from the RCPA website);

The portfolio summary spreadsheet should be continuously updated and a print-out must be included as the front page of the portfolio. The portfolio must be made available to the Supervisor to check for completeness at the time of the rotation, annual and pre-examination supervisor's report.

A print-out of the summary spreadsheet should be appended to the pre-examination supervisor's report which is sent to the College. The spreadsheet will be reviewed by the Chief Examiner and the Registrar of the Board of Censors; 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's Reports

Trainees must submit a Supervisor's report for each year of training, including periods of rotation. Trainees who are sitting the Part II examination must submit an additional pre-examination Supervisor's report with the appended print-out of the portfolio summary spreadsheet. Trainees are responsible for submitting the pre-examination Supervisor's report by the due date. Failure to do so may jeopardise the accreditation of training time or finalisation of examination results. The Supervisor's report form is at <http://www.rcpa.edu.au/Careers/Training/SupervisorReports.htm>

## Summary of assessment requirements for Part II single discipline RCPA and Joint RCPA/RACP trainees

A pass or exemption in the Basic Pathological Sciences examination is required before enrolling for the Part II examination.

<b>Item</b>	<b>Completion</b>	<b>Assessed by</b>	<b>Comments</b>
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 projects & portfolio	Examiners with at least 5 years post-Fellowship experience	Questions set by the Examinations Subcommittee
Written assignments: one (1) per year to be certified as candidate's own work and signed by supervisor or delegate	4 to be completed before Part II written exams (2 of these before Part I)	Assessed by Chief Examiner or delegate before oral exam.	Candidates may be required to revise & resubmit if not satisfactory.
Directly Observed Practical Skills (DOPS) min. 1 per year, signed by supervisor/delegate	4 to be completed before Part II written exams (2 of these before Part I)	Portfolio summary spreadsheet is checked for completeness by BOC Registrar.	Completed DOPS and CbD forms and other items in the portfolio to be reviewed by supervisor when preparing the supervisor's report
Case-based discussions (CbD): minimum 1 per year to be signed by supervisor or delegate <b>NB: REQUIRED FROM 2013.</b>	4 to be completed before Part II written exams (2 of these before Part I)	If not satisfactory, the candidate may be required to undertake further activities	See Appendix 8  The portfolio itself should not be sent to the College unless requested for audit.
Other portfolio items to be signed off by supervisor or delegate	Requirements to be completed before Part II oral exam		
Supervisors' Reports: end of rotation, annual and pre-exam reports.	See RCPA web site for submission dates	Reviewed by BOC Registrar, Chief examiner or delegate	See Appendix 4

## Assessment calendar

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

## Appendix 5

### Guidelines for Written Assignments

Before sitting the Part II examination, Trainees must submit four (4) 1500-2500 word assignments on topics designated by the Chief Examiner;

#### Format

- A hard copy of the assignment together with an electronic copy, prepared in Microsoft Word, are required;
- The first page should have the trainee's RCPA number and the word count (excluding references).
- The trainee's name should **NOT** be displayed anywhere in the document
- All pages must be numbered
- A recognised system for citing references should be used consistently

#### Declaration of originality

Each assignment must be accompanied by a signed declaration of originality. Please use the form on the next page and do **NOT** incorporate the form into the assignment, to preserve anonymity.

The College's policy is that trainees who submit work that is not their own will fail and the matter will be referred to the Board of Censors


#### Marking criteria

Assignments 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 for the rest of the assignment.  | 20 marks  |
| 4. The main body of the assignment is well organised, easy to read and answers the question that has been set. A full range of appropriate sources have been used to research the assignment. This may include 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 assignment contains large amounts of irrelevant material.  | -10 marks |
| 9. Bonus marks for an exceptional essay where the trainee demonstrates outstanding writing and scholarship.  | 10 marks  |

#### Submitting the assignment and originality declaration

Please send one hard copy of the assignment and the print out of the declaration of originality to the RCPA Office. An e-copy of the assignment should be emailed to the College [exams@rcpa.edu.au](mailto:exams@rcpa.edu.au). The declaration and the hard copy will be kept on file at the College. E-copies will be sent to examiners. Please refer to *RCPA Trainee Handbook – General Requirements* for due date.

 <p>The Royal College of Pathologists of Australasia</p>	<p><b>Chemical Pathology Assignment Declaration of originality</b></p>
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Name of trainee (please print) .....

RCPA ID .....

Title of assignment.....

.....

Declaration of originality

I certify that the assignment is my own original work. It has not been submitted for assessment and has not been used by any other Trainee.

Signature ..... Date.....

Please submit this form by email to the College ([exams@rcpa.edu.au](mailto:exams@rcpa.edu.au)) at the same time as your assignment. Please refer to *RCPA Trainee Handbook – General Requirements* for due date

## Appendix 6

### Guidelines for completing the Supervisor's Report Form

The role and responsibilities of supervisors are outlined in the following documents which are available on the RCPA website:

- RCPA induction manual for supervisors
- Policy (Supervision of Training)

The Supervisor's Report Form can be downloaded from the RCPA website:

<http://www.rcpa.edu.au/Careers/Training/SupervisorReports.htm>

The 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.

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.

The portfolio should include completed forms for:

- Personal safety checklist
- Directly Observed Practical Skills (DOPS)
- Case-based discussions (CbD)
- Clinical meetings
- All previous Supervisors' reports

The logbook should record:

- Routine automated biochemistry
- Stat or urgent biochemistry
- Metabolic and paediatric biochemistry
- Endocrine biochemistry
- Protein investigations
- Drug assay and toxicology
- Genetic investigations and molecular pathology
- Clinical practice - inpatients
- Clinical practice - outpatients

#### Submitting the Supervisor's Report

It is the Trainee's responsibility to ensure that this form is completed and submitted by the due date. At least one Supervisor's Report 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 examinations, the additional pre-examination Supervisor's report is due by the date specified in the *RCPA Trainee Handbook – General 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 7

### Portfolio Guidelines for Trainees and Supervisors

This document contains guidelines and forms to assist Trainees to compile the portfolio, the logbook and the portfolio summary. The activities to be recorded in the portfolio 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 accumulate evidence for the portfolio from the commencement until the completion of training. Some activities must be completed every year; others must be completed by the due date for the pre-Part II examination Supervisor's report.

We strongly recommend that Trainees commence these latter activities **early in training** and aim to have half of them underway or complete by the time they present for the Part I examination.

The forms for recording these workplace activities are in **Appendix 8**.

- Personal safety checklist
- Directly Observed Practical Skills (DOPS)
- Case-based discussions (CbD)
- Ward rounds and clinical meetings and presentations at these meetings

The forms should be filed in a hard copy **portfolio folder** with seven (7) separate sections, numbered as in the Table of items/activities (overleaf).

A logbook should be kept for recording:

- Routine automated biochemistry
- Stat or urgent biochemistry
- Protein investigations
- Metabolic and paediatric biochemistry
- Endocrine biochemistry
- Drug assay and toxicology
- Genetic investigations and molecular pathology
- Patient consultations
- Teaching activities

Pages for the logbook are included in **Appendix 8**. We recommend that you preserve them by keeping them in a plastic folder which you keep with you at all times.

All supervisors' reports should also be stored in the portfolio.

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's report.

The Portfolio summary spreadsheet should be appended to the pre-exam supervisor's report and submitted to the RCPA prior to the oral examination at a time determined by the RCPA. The summary will be reviewed by the Registrar, Board of Censors and the Chief Examiner. The signatories and Trainees may be contacted to confirm evidence of satisfactory completion. The actual portfolio should not be sent unless requested for audit.

 <b>RCPA</b> The Royal College of Pathologists of Australasia	<b>Chemical Pathology Portfolio requirements</b>
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Portfolio Section	Mandatory activities	Evidence
1	<b>Personal safety</b> checklist; to be completed within 3 months of starting training	Personal Safety Checklist. Can be downloaded from the AP Education Portal One only is required during training.
2	<b>Supervisor's report/s</b> for each year and/or rotation and the pre-exam reports	Reports and a brief reflection (maximum 1 page) on the supervisor's comments for each report.
3	<b>DOPS</b> A total of four (4) – to be completed satisfactorily within the first four years of training	DOPS forms signed as satisfactory by supervisor or other appropriately qualified person.
4	<b>CbD</b> A total of four (4) – to be completed satisfactorily within the first four years of training. <b>NOTE: REQUIRED FROM 2013</b>	CbD forms signed as satisfactory by supervisor or other appropriately qualified person.
5	<b>Laboratory investigations</b> for <ul style="list-style-type: none"> <li>• Routine automated biochemistry</li> <li>• Stat or urgent biochemistry</li> <li>• Metabolic and paediatric biochemistry</li> <li>• Endocrine biochemistry</li> <li>• Protein investigations</li> <li>• Drug assay and toxicology</li> <li>• Genetic investigations and molecular pathology</li> </ul> Please note some must be completed before the Part I examinations	Logbook Period spent performing these investigations, the assays and the instruments used, should be recorded in the logbook and verified periodically by the supervisor or delegate.  The supervisor should sight and sign off the logged lab work at the periodic supervisor's meetings and at the end-of-year formal review.
6	<b>Patient consultations</b> Inpatient and outpatient (new and follow-up) consultations At least one consultation per week	Logbook Consultations that the trainee has conducted should be recorded in the logbook.  The supervisor should sight and sign off the logged consultations at the periodic supervisor's meetings and at the end-of-year formal review..
7	<b>Ward rounds and clinical meetings</b> (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  Trainees should also keep a list of cases/entities presented at each meeting  Each meeting logged on the form should be signed by the supervisor to verify the trainee's involvement in the meeting.

## Appendix 8

### Forms and Logbook pages

Appendix 8 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

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

Appendix 8 also contains master copies of logbook pages. Eventually the College will supply a logbook. 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
- Stat or urgent biochemistry
- Metabolic and paediatric biochemistry
- Endocrine biochemistry
- Protein investigations
- Drug assay and toxicology
- Genetic investigations and molecular pathology
- Patient consultations

	<b>Personal safety checklist</b>
---	----------------------------------

- 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 four (4) DOPS forms during training. Each should demonstrate competence using a **different type** of 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 as either Satisfactory or Not Satisfactory. 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 only be graded Satisfactory if all aspects have been performed to the standard expected of a Trainee at that stage. A Trainee whose performance is Not Satisfactory 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 Satisfactory DOPS need to be recorded in the Portfolio.

		<b>Chemical Pathology DOPS (Direct Observation of Practical Skills) Assessment Form</b>		
<b>Trainee name</b>		<b>Trainee ID ( RCPA)</b>	<b>Stage of training</b> Y1    Y2    Y3    Y4    Y5 if >Y5, please specify	
<b>Assessor name</b>		<b>Assessor position</b> <input type="checkbox"/> Pathologist <input type="checkbox"/> Scientist <input type="checkbox"/> Snr Trainee <input type="checkbox"/> Other (pls specify)		
<b>Instrument or technique</b> (tick the box that applies). <i>Four <b>different techniques</b> required during training</i>				
<input type="checkbox"/> multi-test automated analyser <input type="checkbox"/> small manual or semi automated analyser (eg blood gases, manual immunoassay, osmometry, breath testing, stone analysis) <input type="checkbox"/> chromatography (eg HPLC, GC) <input type="checkbox"/> trace metal techniques (eg atomic absorption or ICPMS) <input type="checkbox"/> specialised protein methods (eg electrophoresis) <input type="checkbox"/> molecular techniques <input type="checkbox"/> other (please specify)				
<b>Number of hours spent performing the method prior to DOPS assessment</b>		<b>Has the trainee completed the laboratory's usual training process for this method?</b> <input type="checkbox"/> yes <input type="checkbox"/> no		
<b>Please comment on whether these aspects of the trainee's performance are satisfactory for the stage of training</b>			<b>Satis- factory</b>	<b>Not Satis- factory</b>
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				
<b>Please comment on other relevant aspects, especially on aspects for improvement</b> (use the reverse side if insufficient room)				
Final outcome (circle one) Satisfactory    Not Satisfactory		Date of DOPS	Time taken for DOPS	Time taken for feedback
Signature of assessor			Signature of trainee	

## **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 assessor could note this as a quality activity in their annual CPDP submission. 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 as either Satisfactory or Not Satisfactory. 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 only be graded Satisfactory if all aspects have been performed to the standard expected of a Trainee at that stage. A Trainee whose performance is Not Satisfactory 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 Satisfactory CbD forms need to be recorded in the Portfolio.

 <h1 style="margin: 0;">RCPA</h1> <p style="font-size: small; margin: 0;">The Royal College of Pathologists of Australasia</p>	<h2 style="margin: 0;">Chemical Pathology Case-based Discussion (CbD) Assessment Form</h2>				
<b>Trainee name</b>	<b>Trainee ID (RCPA)</b>	<b>Stage of training</b> Y1    Y2    Y3    Y4    Y5 if more than Yr5, please specify			
<b>Assessor name and position</b>					
<b>Focus of discussion (tick as many as apply)</b> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> bone - calcium, magnesium;  <input type="checkbox"/> liver, gastroenterology; nutrition  <input type="checkbox"/> water, electrolytes  <input type="checkbox"/> lipids  <input type="checkbox"/> gases, acid/base metabolism  <input type="checkbox"/> diabetes  <input type="checkbox"/> other endocrinology (.....)                 </td> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> proteins, enzymology  <input type="checkbox"/> trace metals  <input type="checkbox"/> toxicology  <input type="checkbox"/> genetics/molecular pathology  <input type="checkbox"/> paediatric  <input type="checkbox"/> pregnancy  <input type="checkbox"/> other                 </td> </tr> </table>				<input type="checkbox"/> bone - calcium, magnesium; <input type="checkbox"/> liver, gastroenterology; nutrition <input type="checkbox"/> water, electrolytes <input type="checkbox"/> lipids <input type="checkbox"/> gases, acid/base metabolism <input type="checkbox"/> diabetes <input type="checkbox"/> other endocrinology (.....)	<input type="checkbox"/> proteins, enzymology <input type="checkbox"/> trace metals <input type="checkbox"/> toxicology <input type="checkbox"/> genetics/molecular pathology <input type="checkbox"/> paediatric <input type="checkbox"/> pregnancy <input type="checkbox"/> other
<input type="checkbox"/> bone - calcium, magnesium; <input type="checkbox"/> liver, gastroenterology; nutrition <input type="checkbox"/> water, electrolytes <input type="checkbox"/> lipids <input type="checkbox"/> gases, acid/base metabolism <input type="checkbox"/> diabetes <input type="checkbox"/> other endocrinology (.....)	<input type="checkbox"/> proteins, enzymology <input type="checkbox"/> trace metals <input type="checkbox"/> toxicology <input type="checkbox"/> genetics/molecular pathology <input type="checkbox"/> paediatric <input type="checkbox"/> pregnancy <input type="checkbox"/> other				
<b>Complexity of case (tick box)</b> <input type="checkbox"/> low <input type="checkbox"/> medium <input type="checkbox"/> high					
<b>Brief description of case presented, discussed and assessed</b>					
<b>Why was this case selected for discussion?</b>					
<b>Does this case broaden the trainee's experience by being different from previous cases that have been discussed?</b> <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> n/a					
<b>Please comment on whether these aspects of the trainee's performance are satisfactory for the stage of training</b>			<b>Satis- factory</b>	<b>Not Satis- factory</b>	<b>n/a</b>
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					
<b>Please comment on other relevant aspects, especially on aspects for improvement (use the reverse side if insufficient room)</b>					
Final outcome (please circle)  Satisfactory    Not Satisfactory		Date of CbD		Time taken for CbD	Time taken for feedback
Signature of assessor				Signature of trainee	



## Chemical Pathology Routine Automated Biochemistry Log

**How to use this form**

From the beginning of training, trainees should log the amount of time spent processing routine automated biochemistry specimens. Only specimens that the trainee has been directly involved with should be logged. Specimens that the trainee has reviewed (eg QAP) but not reported should **not** be included.


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.

**The equivalent of a minimum of one month should be spent in this activity before the Part I exams**


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

<b>Trainee name</b>		<b>Trainee ID</b>		<b>Stage of training</b> Y1 Y2 Y3 Y4 Y5 If > Y5 please specify	
	<b>Date</b>	<b>Period (hrs)</b>	<b>Assay used</b>	<b>Instrument used</b>	
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					

Supervisor name.....Signature.....Date.....

 <h1 style="margin: 0;">RCPA</h1> <p style="margin: 0;">The Royal College of Pathologists of Australasia</p>	<h2 style="margin: 0;">Chemical Pathology Stat or Urgent Biochemistry Log</h2>																																																																																																									
<p><b>How to use this form</b>                  From the beginning of training, trainees should log the amount of time spent processing stat or urgent biochemistry specimens. Only specimens that the trainee has been directly involved with should be logged. Specimens that the trainee has reviewed (eg QAP) but not reported should <b>not</b> be included.</p> <p>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.</p> <p><b>The equivalent of a minimum of one month should be spent in this activity before the Part I exams</b></p> <p>Please START A NEW FORM AT THE BEGINNING OF EACH YEAR OF TRAINING</p>																																																																																																										
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"><b>Trainee name</b></td> <td style="width: 20%;"><b>Trainee ID</b></td> <td style="width: 30%;"><b>Stage of training</b> Y1 Y2 Y3 Y4 Y5 If &gt; Y5 please specify</td> </tr> </table>		<b>Trainee name</b>	<b>Trainee ID</b>	<b>Stage of training</b> Y1 Y2 Y3 Y4 Y5 If > Y5 please specify																																																																																																						
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Supervisor name.....Signature.....Date.....

 <p style="margin: 0;"><b>RCPA</b> The Royal College of Pathologists of Australasia</p>	<h2 style="margin: 0;">Chemical Pathology Protein investigations Log</h2>
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**How to use this form**  
 From the beginning of training, trainees should log the amount of time spent doing protein investigations (electrophoresis, immuno-chemistry, etc) specimens. Only specimens that the trainee has been directly involved with should be logged.

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.


**The equivalent of a minimum of one month should be spent in this activity before the Part I exams**

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

<b>Trainee name</b>	<b>Trainee ID</b>	<b>Stage of training</b> Y1 Y2 Y3 Y4 Y5 If > Y5 please specify
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Supervisor name.....Signature.....Date.....

 <p style="font-size: 24pt; margin: 0;"><b>RCPA</b></p> <p style="font-size: 10pt; margin: 0;">The Royal College of Pathologists of Australasia</p>	<p style="font-size: 18pt; margin: 0;"><b>Chemical Pathology Metabolic &amp; Paediatric Biochemistry Log</b></p>
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**How to use this form**  
 From the beginning of training, trainees should log the amount of time spent processing metabolic and paediatric biochemistry specimens. Only specimens that the trainee has been directly involved with should be logged. Specimens that the trainee has reviewed (eg QAP) but not reported should **not** be included.


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.

**The equivalent of a minimum of one month should be spent in this activity during training.**

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
	<b>Date</b>	<b>Brief description of specimen</b>	<b>Assay used</b>	<b>Instrument used</b>
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Supervisor name.....Signature.....Date.....

	<h2 style="margin: 0;">Chemical Pathology Endocrine Biochemistry Log</h2>
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**How to use this form**  
 From the beginning of training, trainees should log the amount of time spent processing metabolic and paediatric biochemistry specimens. Only specimens that the trainee has been directly involved with should be logged.

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.

**The equivalent of a minimum of one month should be spent in this activity during training.**

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

<b>Trainee name</b>	<b>Trainee ID</b>	<b>Stage of training</b> Y1 Y2 Y3 Y4 Y5 If > Y5 please specify
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	Date	Period (hrs)	Assay used	Instrument used
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Supervisor name.....Signature.....Date.....



## Chemical Pathology Drug assay and toxicology Log

**How to use this form**

From the beginning of training, trainees should log the amount of time spent doing drug assays and toxicology investigations. Only specimens that the trainee has been directly involved with should be logged. Specimens that the trainee has reviewed (eg QAP) but not reported should **not** be included.


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.

**The equivalent of a minimum of one month should be spent in this activity during training.**

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

<b>Trainee name</b>		<b>Trainee ID</b>		<b>Stage of training</b> Y1 Y2 Y3 Y4 Y5 If > Y5 please specify	
	<b>Date</b>	<b>Period (hrs)</b>	<b>Assay used</b>	<b>Instrument used</b>	
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Supervisor name.....Signature.....Date.....

	<h2 style="margin: 0;">Chemical Pathology Genetic investigations and molecular pathology Log</h2>
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**How to use this form**  
 From the beginning of training, trainees should log the time spent doing genetic and molecular pathology investigations. Only specimens that the trainee has been directly involved with should be logged. Specimens that the trainee has reviewed (eg QAP) but not reported should **not** be included.


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.

**The equivalent of a minimum of one month should be spent in this activity during training.**

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

<b>Trainee name</b>		Trainee ID	<b>Stage of training</b> Y1 Y2 Y3 Y4 Y5 If > Y5 please specify		
	<b>Date</b>	<b>Period (hrs)</b>	<b>Assay used</b>	<b>Instrument used</b>	
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Supervisor name.....Signature.....Date.....

 <p style="margin: 0;"><b>RCPA</b> The Royal College of Pathologists of Australasia</p>	<h2 style="margin: 0;">Chemical Pathology Patient consultations Log</h2>
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**How to use this form**

From the beginning of training, trainees should log the number of inpatient and outpatient consultations.

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 consultation per week should be recorded during training.**

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

<b>Trainee name</b>	<b>Trainee ID</b>	<b>Stage of training</b> Y1 Y2 Y3 Y4 Y5 If > Y5 please specify
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	Date	New (N) or Follow-up patient (F)	Inpatient (I) or outpatient (O)	Brief description of patient presentation
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Supervisor name.....Signature.....Date.....

 <p style="margin: 0;"><b>RCPA</b> The Royal College of Pathologists of Australasia</p>	<h2 style="margin: 0;">Chemical Pathology Teaching Log</h2>																																																																																																									
<p><b>How to use this form</b> From the beginning of training, trainees should log the number of teaching sessions conducted for students, laboratory colleagues or other audiences.</p> <p>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.</p> <p>Please <b>START A NEW FORM AT THE BEGINNING OF EACH YEAR OF TRAINING</b></p>																																																																																																										
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Supervisor name.....Signature.....Date.....



**Chemical Pathology  
Supervisor sign off form for  
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 ward rounds and clinical meetings per week throughout training
- 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 and appended case lists 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 TRAINING**

<b>Trainee name</b>		<b>Trainee ID</b>	<b>Stage of training</b>				
			Y1	Y2	Y3	Y4	Y5
			if > Y5 please specify				
	<b>Meeting date</b>	<b>Brief description of meeting</b>	<b>Did trainee present cases? Y/N</b>	<b>Supervisor signature</b>			
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