

TRAINEE HANDBOOK 2024



Microbiology

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

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GLOSSARY

AGAR	Australian Group for Antimicrobial Resistance
AIDS	Acquired Immune Deficiency Syndrome
APP	Approved Pathology Provider
ASA	Australian Society for Antimicrobials
ASID	Australasian Society for Infectious Diseases
ASM	Australian (American) Society for Microbiology
BSAC	British Society for Antimicrobial Chemotherapy
BPS	Basic Pathological Sciences examination
CAP	College of American Pathologists
CbD	Case-based Discussion
CDC	Centers for Disease Control and Prevention (USA)
CDS	Calibrated Dichotomous Sensitivity (testing)
CJCT	Committee for Joint College Training
CLSI	Clinical and Laboratory Standards Institute
CPDP	RCPA Continuing Professional Development Program
CRBSI	Catheter related blood stream infection
CVL BSI	Central venous line blood stream associated infection
DFAT	Department of Foreign Affairs and Trade
DoHA	Department of Health and Ageing
DOPS	Directly Observed Practical Skills
EAGAR	Expert Advisory Group on Antimicrobial Resistance
EUCAST	European Committee on Antimicrobial Susceptibility Testing, a standing committee of ESCMID
ESCMID	ESCMID European Society of Clinical Microbiology and Infectious Diseases
FRACP	Fellow of the Royal Australasian College of Physicians
FRCPA	Fellow of the Royal College of Pathologists of Australasia
IANZ	International Accreditation New Zealand
ISID	International Society for Infectious Diseases
ISO	International Organization for Standardization
IT	Information Technology
LI(M)S	Laboratory information (management) system

M Epi	Master of Epidemiology
MB1(2)	RCPA Microbiology Part I (II) examination
MCNZ	Medical Council of New Zealand
MD	Doctor of Medicine
MMWR	Morbidity and Mortality Weekly Report
MPH	Master of Public Health
NAA	Nucleic acid amplification
NATA	National Association of Testing Authorities
NPAAC	National Pathology Accreditation Advisory Council
OHS	Occupational Health and Safety
PCR	Polymerase chain reaction
PhD	Doctor of Philosophy
PHLN	Public Health Laboratory Network (Australia)
POWI/SSI	Post-operative wound infection/surgical site infection
QA	Quality Assurance
QAP	RCPA Quality Assurance Programs Pty Ltd
QC	Quality control
QM	Quality management
RACP	Royal Australasian College of Physicians
RCPA	Royal College of Pathologists of Australasia
RNA	Ribonucleic Acid
SOP	Standard operating procedure
SSBA	Security sensitive biological agents
TB	Tuberculosis
WHO	World Health Organization
WHS	Workplace Health and Safety
WPBA	Workplace-based assessment

Section 1

INTRODUCTION

The discipline of Microbiology involves the use of laboratory techniques to diagnose infectious diseases, recommend antibiotic therapy and to advise, correlate, coordinate and educate clinicians regarding aspects of the pathogenesis, epidemiology, prevention and management of infection. Clinical microbiologists work in diagnostic medical/pathology laboratories. The work focuses on the collection, analysis, reporting and interpretation of results to aid in the diagnosis, treatment and surveillance of infectious diseases. Opportunities exist to conduct research in the subspecialties of bacteriology, virology, mycology, parasitology, serology or molecular microbiology.

PERSONAL CHARACTERISTICS NEEDED

The Clinical Microbiologist needs to have:

- the ability to make sound clinical judgments;
- good computing skills and organisational ability;
- 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;
- ability to be patient, inquiring, accurate, listen attentively, be persistent and self-motivated;
- good observation, interpretation and report-writing skills;
- an enjoyment of the scientific basis of medicine and research;
- the ability to communicate well orally and in writing;
- the ability and willingness to offer guidance and teaching to trainees in microbiology, medical, nursing and science undergraduate and postgraduate students

GENERAL AIMS OF THE TRAINING PROGRAM

The general aims of the training program are set out below and are elaborated as specific training outcomes and activities in **Section 2**. By the time trainees complete the requirements for Fellowship, they should be able to:

- Competently use a microscope to examine specimens, troubleshoot problems, identify artefacts and staining problems and to ensure accurate and high quality material is available for the formulation of diagnostic opinions, as well as to be able to talk to scientific staff about the laboratory and its problems, and write a relevant report;
- Competently examine cultures, recognise contaminants, interpret antimicrobial susceptibility results and write a relevant report;
- Competently interpret serological and molecular microbiology techniques and write a relevant report;
- Apply and interpret laboratory information relevant to clinical care;
- Apply clinical information to cost effective laboratory practice;
- Participate in and advise as part of the infection control team;
- Function effectively as a team member;
- Demonstrate sufficient knowledge and personal communication skills to regularly participate in microbiology review meetings and clinical rounds;
- Have a working knowledge of laboratory management procedures including budgeting and financial probity, safety and human resources;
- Understand the need for, and principles of, continuing education and participation in the continuing professional development program (CPDP);
- Be prepared and able to offer guidance and teaching to trainees in microbiology; junior medical staff and undergraduate students;
- Be open to research opportunities and applications;
- Demonstrate commitment to professional and ethical values in the workplace and in clinical practice.

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

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

TRAINING REQUIREMENTS

RCPA Single Discipline Training

To gain the FRCPA in microbiology 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. Trainees must spend a minimum of four (4) years under the supervision of a medical microbiologist in a laboratory site accredited by the RCPA: this must include 12 months at an alternative site or sites. The fifth year of training may involve clinical practice in infectious diseases or in another pathology discipline. Please refer to the *RCPA Trainee Handbook - Administrative Requirements* for essential information regarding training limitation, retrospective accreditation of training and temporary suspension of training

Research Stream

RCPA single discipline trainees who complete the Part I examination may opt to take a research stream for Part II training. They need to apply prospectively to the Board of Education and Assessment for approval of their application, project, laboratory and supervisor, and the research plan must be relevant and lead to a Doctorate by thesis. During the years spent on the thesis, trainees are expected to maintain competence in clinical general microbiology. Granting of Fellowship is conditional upon being awarded the PhD or MD degree. Research stream trainees must complete all assessment requirements except for the major project.

Joint Training in Microbiology and Infectious Diseases

A joint training program is available with the Royal Australasian College of Physicians (RACP). Joint training is a five-year training program combining two (2) years advanced infectious diseases training and three (3) years laboratory training in microbiology. Candidates may enter the joint program when they have completed all the requirements of Basic Physician Training. Joint trainees must be registered with and supervised by the Committee for Joint College Training (CJCT) in Microbiology and Infectious Diseases and registered with the RCPA.

Joint trainees are required to sit the same examinations as RCPA trainees in microbiology and to attain the same standard. Prospective candidates should refer to the [RCPA Trainee Handbook – Administrative Requirements](#) regarding registration with the RCPA and should note that candidates who register from 2020 will not be automatically exempt from the RCPA Basic Pathological Sciences examination.

On completion of the five-year joint training program, trainees will be eligible for FRCPA and FRACP.

Components of Joint Training

The training period of 5 years is expected to encompass 2 years of core training in infectious diseases and 3 years in laboratory microbiology. These years can be undertaken in any order or, in some cases trainees may occupy joint laboratory/clinical positions. In this case trainees will be required to nominate the breakdown of time sought for approval for each of the core infectious diseases or microbiology training.

- Core training in infectious diseases (2 years): The two required clinical years must be a comprehensive and structured program, prospectively approved by the Committee for Joint College Training. Exposure to inpatients and outpatients with a broad range of infectious diseases is required. There is a requirement to undertake two clinical projects while in advanced infectious diseases training. These must be commenced and relate to work undertaken in the two core clinical years of training. This is a requirement of the RACP and is separate and additional to the RCPA project requirements.
- Laboratory training in microbiology (3 years) for joint microbiology/infectious diseases trainees: Over the three years, training must be undertaken in two or more different microbiology laboratories accredited with the RCPA Board of Education and Assessment and under approved supervision. A maximum of two years can be spent in any single laboratory; a total minimum 12 months must be spent training in another laboratory or laboratories, subject to RCPA policy regarding the length of rotations. It is expected that only a small proportion of time (less than 10%) will be spent in direct patient care. Joint trainees cannot elect laboratory research stream training.

Trainees will be expected to develop comprehensive knowledge and practical skills in all facets of microbiology and to be proficient at collection and handling of specimens and identifying the range of organisms expected to be encountered in a tertiary care hospital, with attention to safety and quality assurance.

Policies and Procedures for Joint Training

The Joint Training Program is managed by the Committee for Joint Training in Infectious Diseases and Microbiology (CJCT), which comprises representatives of the RCPA and RACP. Training is monitored through annual training program approval and accreditation after submission of the supervisor report each year.

Joint trainees may not complete both their clinical and laboratory training entirely within one service of an institution nor may they complete their laboratory training within a single microbiology laboratory.

Please refer to [RCPA Trainee Handbook – Administrative Requirements](#) regarding the submission of supervisor report forms, training limitations, retrospective credit of prior training and other RCPA conditions.

Trainees are also strongly advised to consult the Royal Australasian College of Physicians (RACP) website for documents relevant to the RACP requirements for joint training.

SUPERVISION

All training must be supervised. 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.

Who can be a supervisor?

The supervisor will normally be a Fellow of the RCPA; however non-Fellows may be approved by the Board of Education and Assessment if no Fellow is available. Normally, only one supervisor is nominated, but joint trainees may have an additional RACP supervisor. 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 RCPA Fellow as co-supervisor.

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

The role of the supervisor

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. In addition to the formal meetings with the trainee which should occur every three months, they 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, e.g., when the trainee is on secondment to another laboratory for a segment of training.

Detailed information about the formal duties of supervisors, such as requirements to report the Trainee's progress to the Board of Education and Assessment, are described in the RCPA Supervisor Manual and the RCPA policy on Supervision of Training and Accreditation of Supervisors. These and other resources for supervisors are available in the supervisors' section of the RCPA website.

ASSESSMENT

Assessment is by formal examination, workplace-based assessment, a portfolio of evidence of the trainee's achievements during training and the annual supervisor reports. The requirements are summarised below. **Please refer to the Appendices for detailed requirements.**

Formal 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. Please note that from 2020 joint trainees are no longer automatically exempt from the examination. See Appendix 1 for detailed requirements.
- Microbiology Part I Examination: emphasises the theoretical, practical and interpretative aspects of investigations in all fields of clinical Microbiology. The Part I examination is taken after at least 18 months of training in diagnostic and clinical microbiology. There are no automatic exemptions given to any Trainee for any component of the examinations. See Appendix 2 for detailed requirements.
- Microbiology 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 microbiology training. There are no automatic exemptions given for any component of the examination. See Appendix 3 for detailed requirements.

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

Projects

A major project and a minor project are required. See **Appendixes 7 and 8** for detailed requirements.

The Portfolio and Workplace-based Assessment

The portfolio is a physical collection of 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 responsibility for 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. It is important to refer to the detailed portfolio requirements in **Appendix 5**.

Supervisor reports

Trainees must submit to the College a supervisor report for each year of training, including periods of rotation. Copies of all reports should be kept in the portfolio.

LEARNING RESOURCES

Texts, journals and weblinks are in the [Microbiology](#) section of the RCPA website. Other peer-reviewed resources should be consulted as necessary for comprehensive coverage, especially contemporary reviews and key papers in the general microbiology literature.

Section 2

LEARNING OUTCOMES AND RECOMMENDED TRAINING ACTIVITIES

In Section 2, the four broad functions of microbiologists are elaborated as a list of training outcomes and activities. Where possible, learning outcomes are denoted as needing to be achieved early in training [E] or at a more advanced stage [A]. Competence in outcomes achieved early in training should be maintained throughout. Familiarity with new and emerging topics that may not appear in the Handbook is also expected.

Trainees are not expected to do every 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.

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1 DISCIPLINE-SPECIFIC FUNCTIONS AS MEDICAL SPECIALIST IN THE LABORATORY

Central to the role of the medical microbiologist is the interaction with the laboratory scientist who processes requests and the clinician who has requested the test or advice on behalf of the patient. Experienced medical microbiologists demonstrate a range of knowledge, skills and abilities, including:

- Synthesise laboratory and microbiological knowledge with clinical information to formulate and convey a plan of specimen management, reporting and result interpretation;
- Apply technical expertise in carrying out processing and reporting of sample results involving bacteria, fungi, viruses, parasites, infection control, serology, public health, antibiotic use and stewardship and use of molecular tests;
- Devise and conduct an effective system of laboratory management to ensure quality processing and reporting of samples;
- Coordinate laboratory and clinical information including the appropriate and cost-effective collection of samples for further investigation and management of microbial treatment-related problems and participate in antimicrobial stewardship activities;
- Advise clinicians regarding test selection, interpretation and clinical application of microbiological test results;
- Participate in infection control and public health activities to promote the well-being of patients and the community, including advocacy for the appropriate use of vaccinations to control spread of disease;
- Facilitate and initiate clinicopathological research activities;
- Show antimicrobial stewardship by supporting, developing, teaching, participation in and implementation of antimicrobial control policy in the training institution.

By the end of training, trainees are not expected to have developed expertise in all these areas. However, they should be technically fully knowledgeable and competent in the routine aspects of the investigation and management of microbial treatment-related problems. They should also have observed and reflected on the way senior microbiologists fulfil the role of medical specialist in the laboratory and have participated in the more demanding aspects of the role as appropriate for the stage of training, assuming increasing levels of responsibility as they progress. They also should know how to access experts in all these areas and consider where their own interests lie and need to be developed to provide a value-added clinical service in their areas of practice

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

Outcomes

- [E] Taxonomy and biology of recognized, new and potential human pathogens, including ecology, evolution, metabolism (identification) and replication and treatment;
- [E] Principles of diagnostic medical laboratory identification to the species level of pathogens causing clinical disease, using manual or automated phenotypic, mass spectrometry and molecular methods, with emphasis on newer techniques;
- [E] Pathogenesis of infectious diseases, including host susceptibility and host responses;
- [E] Essential cellular and histological responses to infection;
- [E] Virulence mechanisms of human pathogens;
- [E] Microbial genetics and current and potential applications of genomics, bioinformatics and whole genome sequencing in the diagnostic microbiology laboratory;
- [E] Antimicrobial resistance emergence, detection and reporting, including an understanding of the nature and mechanisms of antibiotic resistance and the implications of these findings on treatment, infection control antimicrobial stewardship and public health, veterinary, and horticultural practices and the environment;
- [E] Principles of pharmacokinetics and pharmacodynamics and their application to the use of antimicrobial agents;

[E] Effect of microbial biology and pathogenesis on the selection, sampling and testing of human tissue for diagnosis of microbial infections including a basic recognition of infective processes as identified in histopathological specimens;

[E] Technical literacy associated with the selection, operation and maintenance of equipment used in the microbiology laboratory.

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, e.g.:

- Attend relevant lectures, conferences, training weekends and web-based resources;
- Study authoritative texts and laboratory manuals;
- Review past written questions with supervisors;
- Develop training notes on the above areas in conjunction with experts in the fields;
- Under technical supervision, operate equipment used in the microbiological laboratory including that used for identification of organisms, monitoring blood cultures, antimicrobial susceptibility testing and detection of nucleic acids, antigens and antibodies, autoclaves, equipment used for the detection and measuring of blood levels of antibiotics and other relevant equipment;
- Prepare and/or undertake quality control of media;
- Refer to regulatory documents (e.g. Security Sensitive Biological Agents) relevant to pathogen security.

1.2 Public health and preventive medicine

Learning outcomes

[E] Notify the detection of infectious agents in accordance with local statutes;

[A] Advise on detection, surveillance and intervention with respect to infectious diseases of public health importance;

[A] Formulate strategies to investigate and manage outbreaks of infectious disease as part of a team of public health, infection control, infectious diseases physicians and microbiologists;

[A] Ensure laboratory compliance with notification requirements;

[A] Advise on immunisation of staff, patients and other relevant groups;

[A] Maintain up to date knowledge of public health activities and emergence of diseases of public health importance.

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, e.g.:

- Regular interaction with Public Health Units (or equivalent) to learn about procedures for outbreak investigation;
- Attend work health and safety (WHS) committees, infection control/public health committees;
- Retrieve statistical information on notifiable diseases and resistant organisms from laboratory database, using CLSI or other appropriate guidelines, including rationale for selection and reporting of these;
- Read current relevant journals and data notifications, e.g., by subscribing to ProMED, Ozbug, travel advice from the Australian Department of Foreign Affairs and Trade or other relevant data bases and journals (e.g., MMWR) as well as regular national and local public health reports of notifiable diseases (see Resources section for web links);
- Read current relevant local, national and international standards relating to microbiology, sterilisation and infection control;
- Formal, academic study, such as MPH, MEpi, which may be credited towards RCPA training time for single discipline trainees. Joint trainees should note that the RACP does not accredit courses undertaken prior to completing basic RACP training.

1.3 Use of Antimicrobial Agents

Learning outcomes

- [E] Understand mechanisms of action of all classes of antimicrobial agents in current widespread clinical use;
- [E] Maintain up to date knowledge of patterns and mechanisms of resistance, including the molecular basis, and implications for use of antimicrobial agents;
- [E] Apply principles of pharmacokinetics and pharmacodynamics to the use of antimicrobial agents;
- [E] Advise on selection, use, duration and monitoring of treatment with antimicrobial agents to patients, colleagues and institutional bodies;
- [A] Engage in antimicrobial stewardship by supporting, developing, teaching, participation in and implementation of antimicrobial control policy in the training institution.
- [A] Understand current national and global policy development on antimicrobial resistance control and prevention

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, e.g.:

- Read relevant and up to date articles and attend relevant meetings on the use and development of antibiotics and the emergence of antimicrobial resistance;
- Participate in, initiate and teach about measures to promote antimicrobial stewardship practices;
- Access relevant drug policies in training institution;
- Provide clinical advice on appropriate antibiotic use;
- Seek involvement in institutional drug committee activities, e.g., audits and meetings;
- Audit antibiotic use in collaboration with a pharmacist;
- Attend relevant sessions of RCPA update and access relevant RCPA on-line resources;
- Review laboratory antibiotic reporting policies and liaise with supervisors regarding suggested changes;
- Undertake laboratory audits on antimicrobial sensitivity testing and provide reports on trends in local and institutional antimicrobial sensitivity results linked with institutional and individual patient antibiotic use;
- Seek to participate in studies on new antibiotics either laboratory based or combined with clinical colleagues while maintaining awareness of the role and influence of the pharmaceutical companies in the process and declare any possible conflicts of interest.

1.4 Infection Control

Learning outcomes

- [E] Understand mechanisms of transmission of microbiological agents and the epidemiological basis of surveillance programs for infection control;
- [E] Understand the principles of sterilisation and disinfection;
- [E] Understand and comply with legislative and regulatory framework in geographic area of practice;
- [A] Advise on infection control measures to patients, colleagues and institutional bodies as part of the infection control team, including hand hygiene, central venous line blood stream infections (CVLBSI) and postoperative wound infection/surgical site infection, (POWI/SSI);
- [A] Implement, support and provide expert input into infection control policies in training institution;
- [A] Liaise between laboratory practice and infection control requirements, e.g., outbreak surveillance, phenotypic or molecular typing.

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, e.g.:

- Access relevant infection control policies in training institution;
- Access state and national guidelines, regulations and legislation;
- Observe, understand principles and prepare articles for sterilisation by various methods;

- Understand principles, observe the operation and monitoring of heat-sterilising apparatus and understand the safe and effective use of this equipment;
- Practise safe handling and disposal of biohazardous materials, chemicals and radioactive materials and other laboratory waste;
- Participate in institutional infection control committee activities, e.g., audits and meetings;
- Participate in infection control rounds, investigation of outbreaks or case reviews/audits of hospital acquired investigations;
- Prepare reports of institutional infection outbreaks and forward to relevant personnel after discussion with supervisor and infection control team.
- Maintain knowledge of current literature and innovations in infection control.

1.5 Pre-analytic phase: specimen selection, collection & transport

Learning outcomes

- [E] Understand how the biology of microorganisms and pathogenesis of infection influences the optimal sampling of human tissue for diagnosis;
- [E] Advise on and review methods for the selection, collection and transport of specimens so as to optimize diagnostic yield, based on up-to-date knowledge of developments in this area and knowledge of the regulatory framework;
- [E] Review samples designated as “not for testing” to ensure that rejecting these samples is justifiable and communicate with the relevant requestor to educate and inform them as to why the samples were so designated and confirm that the decision is acceptable to the treating clinicians;
- [E] Triage, examine and set up specimens;
- [E] Solve problems in unusual situations;
- [A] Prepare standard operating procedure (SOP) documents to fill any gaps identified in the laboratory manual in consultation with supervisor and in line with the current laboratory SOPs.

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, e.g.:

- Access relevant sections of the laboratory manual;
- Ensure appropriate collection and transport of specimens and clinical advice by reviewing specimens designated “not for processing” and samples of tissue for microbiology processing;
- Write relevant referral letters to accompany selected important samples referred to a reference laboratory;
- Maintain up to date knowledge of the literature, regulations and innovations in methods of specimen selection, collection and transport;
- Participate in RCPA QAP or similar external QAP activities undertaken by the laboratory.

1.6 Pre-analytic phase: selection of tests

Learning outcomes

- [E] Advise on the optimal diagnostic algorithm (e.g., samples to be collected, tests to be undertaken, time for a result to be available, costs) for a given clinical problem;
- [E] Resolve uncertainty in situations not addressed by the laboratory manual;
- [E] Contribute to the evaluation and implementation of new and existing tests and new equipment.

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, e.g.:

- Supervised clinical liaison;
- Access relevant sections of the laboratory manual;
- Execute tests and participate in other relevant laboratory activities;
- Maintain up to date knowledge of the literature and innovations in microbiological testing;
- Compile reports on participation and resolution of uncertainties to assist laboratory to improve standard operating procedures and quality manuals in consultation with supervisor;
- Participate in RCPA QAP or similar external QAP activities undertaken by the laboratory.

1.7 Analytic phase: microscopy

Learning outcomes

- [E] Prepare specimens for microscopy;
- [E] Examine material stained with routine stains using light and digital microscopy, demonstrating an understanding of the principles involved
- [E] Interpret microscopic findings appropriately, demonstrating awareness of pitfalls and the limitations of the techniques;

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, e.g.:

- Access relevant sections of the laboratory manual;
- Participate in laboratory activities including, but not limited to:
- Prepare faecal and other parasite stains and concentrates
- Identify ova cysts and parasites;
- Prepare and examine skin scrapings and other tissues for fungal examination;
- Prepare and examine specimens by Gram's, acid-fast, toluidine blue, India ink, Giemsa, fluorescent antibody stains, and other stains which may be relevant to local practice;
- Prepare and examine blood films for blood-borne parasites;
- Attend, observe and undertake the above activities with the relevant laboratory section responsible for any of the above activities if not part of the routine microbiology laboratory activities;
- Participate in RCPA QAP or similar external QAP activities undertaken by the laboratory.

1.8 Analytic phase: culture

Learning outcomes

- [E] Understand the principles and quality control requirements of media preparation and supply;
- [E] Select media appropriately for specimen inoculation according to laboratory protocols;
- [E] Select appropriate atmosphere, temperature and duration of culture;
- [E] Process specimens appropriately;
- [E] Recommend problem solving strategies in the event of unexpected results.

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, e.g.:

- Access relevant sections of the laboratory manual;
- Participate in laboratory activities, including but not limited to:
- Observe and prepare culture media and agar plates;
- Review the regular and boutique media available in the laboratory, the media quality control and test organisms especially for bulk media purchased from outside the training institution;
- Plate out clinical specimens;
- Set up anaerobic cultures;
- Set up pure cultures from mixed growth on a primary plate;
- Maintain and inoculate tissue culture for virus isolation;
- Detect viral replication in tissue culture;
- Prepare mycological slide cultures;
- Maintain up to date knowledge of the literature and innovations in culture methods;
- Participate in RCPA QAP or similar external QAP activities undertaken by the laboratory.

1.9 Analytic phase: identification of microorganisms to species level

Learning outcomes

- [E] Correctly select significant organisms and identify them by colony and cell morphology, biochemical, mass spectrometry, molecular and other methods, both manual and automated;
- [E] Explain the basic principles of phenotypic and biochemical identification;

- [E] Understand the principles of mass spectrometry, prepare specimens and understand the generation of spectral scores, operation of the equipment and necessary troubleshooting including the software and interfaces;
- [E] Understand the theory and processes of molecular identification and essential bioinformatics related to molecular sequences, the limitations of molecular techniques and the pitfalls of online databases;
- [E] Understand the strengths, limitations and applications of current and emergent methods for microbial identification and justify the most appropriate approach in a given situation;
- [E] Apply problem solving strategies or recommend alternative approaches in the event of unexpected or inconclusive results.

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, e.g.:

- Access relevant sections of the laboratory manual.
- Access relevant textbooks, journals and internet to assist with organism identification;
- Attend meetings, seminars, symposia, etc, dealing with current and emerging methods in microbiology;
- Participate in laboratory activities, including but not limited to:
- Recognise the colonial and microscopic appearance of commonly encountered or medically important organisms (i.e., phenotypic methods of identification);
- Perform and interpret tests commonly used to identify microorganisms;
- Determine viable counts in bacterial suspensions;
- Use automated apparatus to detect bacteraemia and identify microbes;
- Identify medically important fungi;
- Use phenotypic and biochemical methods to identify organisms unable to be identified by mass spectrometry or molecular methods;
- Undertake audits of selected isolates and methods of detection, and suggest updates if relevant;
- Participate in RCPA QAP or similar external QAP activities undertaken by the laboratory.

1.10 Analytic phase: non-culture detection of microorganisms (excluding microscopy)

Learning outcomes

- [E] For serological assays, know the principles of manual and automated methods, their applications, limitations and technical factors affecting validity and interpretation;
- [E] For molecular biologic assays, know the principles of manual and automated methods, their applications, limitations and technical factors affecting validity and interpretation;
- [E] Recommend problem solving strategies in the event of unexpected or inconclusive results

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, e.g.:

- Access relevant sections of the laboratory manual;
- Participate in laboratory activities, including but not limited to preparing, reading and interpreting assays for the detection of antigens and antibodies, including manual and automated methods such as:
 - o agglutination
 - o precipitation
 - o immunoassay
 - o complement fixation
 - o immunofluorescence
 - o immunoblotting
 - o Rapid, e.g., strip tests
- Review literature related to historical development of serological tests, automation and manual tests;
- Appraise the role of near patient /point of care tests and the microbiology laboratory

- Understand the principles of molecular diagnostics and participate in laboratory activities, including but not limited to:
- The design and maintenance of molecular suites
- The appropriate specimen type and collection methods used
- The extraction of nucleic acids from specimens;
- The running of and troubleshooting of polymerase chain reaction (PCR) assays;
- The interpretation of real time polymerase chain reaction (PCR) graphs;
- The principle and methods used in sequencing of nucleic acids of microbes;
- Understand the requirements for detection of 16s rRNA, 18s rRNA etc in relevant samples and the use and limitations of these and other relevant microbial molecular tests.
- Participate in RCPA Quality Assurance Programs Pty Ltd (QAP) or similar external quality assurance activities undertaken by the laboratory.

1.11 Analytic phase: susceptibility testing

Learning outcomes

- [E] Understand principles, theory and limitations of susceptibility testing and interpretations of breakpoints
- [E] Be able to carry out under supervision, manual, molecular, automated and other relevant methods in relation to antibiotic susceptibility testing and detection of resistance mechanisms;
- [E] Observe and understand the principles of antifungal and antiviral susceptibility testing.

Activities

Select activities that are appropriate to your training environment and, if relevant, keep a record for your portfolio, e.g.:

- Access relevant sections of the laboratory manual
- Participate in laboratory activities, including but not limited to:
- Prepare and interpret antibiotic susceptibility tests;
- Detect beta-lactamases and other bacterial enzymes;
- Determine the synergy between combinations of antibiotics;
- Perform antimicrobial assays on blood and body fluids by bioassay or other methods;
- Participate in laboratory activities, including but not limited to:
- Observe and interpret antifungal susceptibility tests;
- Determine synergy between combinations of antifungal agents;
- Observe and interpret antiviral susceptibility testing.
- Observe and determine relevant test methodology, for example
- Automated testing;
- Disc-diffusion testing
- MIC determination using eTest, microbroth or agar dilution
- Molecular detection of resistance factors;
- Utilise relevant quality control/quality assurance methods to validate all results.

1.12 Analytic phase: management of laboratory equipment and laboratory data

Learning outcomes

- [E] Understand principles, communicate with scientific staff members and laboratory managers, and provide expert input regarding the operation and maintenance of laboratory equipment.
- [E] Collaborate in the application of problem-solving strategies in the event of unexpected results or equipment failure.

Activities

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

- Access relevant sections of the laboratory manual;
- Maintain current knowledge by reading relevant journals and textbooks; to supplement laboratory manuals;
- Participate in relevant sections of the laboratory;
- Use and maintain (under supervision) laboratory equipment, including but not limited to:

- Incubators
- Centrifuges
- Safety cabinets
- Refrigerators
- Freezers (-20°C, -80°C)
- Liquid nitrogen
- Autoclaves
- Hot air ovens
- Microscopes
- Anaerobic cabinets
- Gram staining equipment
- Microwaves
- Water baths
- Heating blocks
- Automated equipment used in serology, NAA testing, bacterial/fungal ID and susceptibility testing.

1.13 Post-analytic phase: report generation (Also see 4.3)

Learning outcomes

- [E] Communicate and interpret results to clinicians, (initially under supervision pre part 1) including urgent results;
- [A] When reporting, comply with principles involved in the formulation of an opinion and generation of a laboratory report, including review, synthesis and interpretation of all relevant clinical and laboratory information (including quality control data) pt 2;
- [A] Report in accordance with the relevant regulatory framework;
- [A] Utilize concepts of selective reporting and antimicrobial stewardship, including reasons for testing and instances where special tests are needed or indicated;
- [A] Use the laboratory information system to develop and apply algorithms and rules for the production of results, interpretative comments and recommendations for further tests and alerts for non-routine action.

Activities

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

- Access relevant sections of the laboratory manual;
- Maintain current knowledge by reading relevant journals and textbooks to supplement laboratory manuals;
- Participate in laboratory activities, including but not limited to:
 - record, verify and interpret laboratory test results
 - Identify parameters of measurement uncertainty
 - Develop and apply action limits
 - Notify abnormal results to pathologists and clinicians
 - Appraise quality control relevant to result;
 - Assess relevance of the result in conjunction with previous laboratory data, clinical history and response to therapy prior to finalization of the microbiology laboratory result;
- Participate in teaching, grand rounds, clinical rounds and contribute effectively to these;
- Review relevant reports from RCPA Quality Assurance Programs Pty Ltd (QAP).

2 FUNCTIONS OF THE PATHOLOGIST AS MANAGER IN THE LABORATORY

With growing experience, medical microbiologists are expected to assume managerial responsibilities in the laboratory. In this role they are expected to:

- Apply clinical information to cost effective laboratory practice;
- Supervise and manage the microbiology laboratory safely and effectively in the context of finite resources;
- Ensure effective work practices through staffing and by developing policies and procedures based on appropriate use of information and evidence;
- Demonstrate leadership in an organisation to promote safe patient care.

By the end of training, trainees are not expected to be fully competent in all these areas, however they are expected to have become familiar with managerial tasks by observing and reflecting on the duties of senior microbiologists and to have participated in managerial activities that are appropriate for their stage of training, assuming increasing levels of responsibility as they progress.

The tables describe the outcomes and training activities laboratory at three stages of training: foundations, core and transition to fellowship.

2.1 Leadership

Foundations	Core	Transition to Fellowship
Describe how self-awareness, self-reflection, and self-management are important to developing leadership skills	Observe and describe leadership styles as they apply to the pathology team as a basis for understanding your own leadership style, including strengths, weaknesses, and biases	Be aware of key health policy and organisational issues affecting pathology practice, and the roles of professional bodies, clinical governance and leadership in bringing about improvements when required

Activities

Select activities that are appropriate to your training environment and stage of training and keep a record for your portfolio, e.g.,

- Participate in departmental and institutional management meetings
- Participate in the RCPA Trainees' Committee or network-based trainee committees
- Participate in leadership roles for external organisations, e.g., sporting or cultural
- Seek mentorship to develop leadership abilities

2.2 Quality management and patient safety

Foundations	Core	Transition to Fellowship
Demonstrate a commitment to patient safety and quality improvement through adherence to institutional policies and procedures	Recognise factors that may lead to adverse events at each stage of the test cycle, and contribute to team efforts to prevent them	Document, notify and apply corrective actions at an individual and team level, employing laboratory information systems where appropriate, in the event of incidents, errors and adverse events
Describe types of laboratory error, how and when they may arise, and report any concerns about possible errors to a senior person	Describe basic processes for investigation, corrective action and prevention of error, and report errors or adverse events, recognising the learning opportunities that arise from addressing them	Employ quality improvement methods and root cause analysis of adverse events and near misses to prevent future errors and enhance patient safety

Define quality control, quality assurance and quality improvement	Describe principles and implications of internal and external quality assurance, quality improvement methodology and the quality improvement cycle	Describe the use of continuous improvement tools, such as Lean and Six Sigma
Understand and apply the steps involved in the patient verification process to avoid misidentification	Apply pre-analytical quality control procedures to sample handling, including collection, identification, acceptance, storage and disposal	Be able to recognise and troubleshoot failure of quality control systems
Be aware of uncertainty in the performance and interpretation of laboratory tests	Explain the principles and clinical relevance of measurement uncertainty	Apply statistical concepts, methods and tools to assess the accuracy, uncertainty, variation and reproducibility of test results, including data for both individual patients and populations, and to be able to determine confidence levels, reference or expected values and the clinical significance of testing.
Understand the requirement for external quality assurance	Identify external quality assurance, technical performance and proficiency testing schemes, and requirements for participation in these	Be familiar with the roles and requirements of relevant local, national and international laboratory accreditation bodies and standards (including ISO 900 and ISO 15189) and know how to access specific details.
Be aware of the need for a planned and controlled process in implementing new technology	Describe general processes for implementing new technology	Describe steps involved in implementing new technology, including instrument and test selection, verification, implementation, validation and reference range determination

Activities

Select activities that are appropriate to your training environment and stage of training and keep a record for your portfolio, e.g.

- Complete the [Quality Management](#) eLearning module in RCPA Education Online and print the certificate of completion for your portfolio
- Access relevant websites and review the roles and standards of the National Pathology Accreditation Advisory Council (NPAAC), National Association of Testing Authorities (NATA) or International Accreditation New Zealand (IANZ), ISO 900, ISO 15189 or other relevant local, national and international laboratory accreditation bodies and registration requirements
- Read current literature on quality assurance strategies, risk management, and evidence-based medicine in pathology laboratories
- Participate in external quality assurance (e.g., RCPA QAP) activities. Interpret reports and discuss sources of variation in the results of assays in different laboratories
- Participate in a quality audit and review the last audit assessment reports of your laboratory and identify any contentious issues
- Participate in the implementation of a plan for testing and evaluating new technology or advances that may improve the quality of laboratory practice and patient care
- Participate in workflow checks to ensure effective and efficient laboratory function
- Participate in case review meetings

2.3 Workplace health and safety

Foundations	Core	Transition to Fellowship
Locate safety manuals and equipment and comply with all laboratory safety directions including use of appropriate personal protective equipment, waste disposal, reporting of all hazards and safety-related incidents, and actions for exposures	Explain and act in accordance with relevant workplace health and safety legislation and departmental requirements, especially relating to biohazard, chemical, fire and physical safety, and in relation to specific tissues and procedures encountered in your discipline, contributing to staff protection in the event of an adverse event in the laboratory.	Demonstrate a high level of understanding of workplace health and safety risks, and the ability to evaluate and plan processes for assessing risk, investigating and reporting hazards, in accordance with legal requirements
Collect, transport, store and dispose of biological and hazardous materials safely, seeking advice if needed		Explain local, national and international regulatory frameworks surrounding the collection, packaging, transport, storage and disposal of laboratory specimens.
Seek advice when needed to prevent ergonomic injury when using microscopes or other equipment	Explain and apply basic aspects of ergonomics in the workplace	Be able to advise others on correct use of microscopes and other equipment to avoid ergonomic injury

Activities

Select activities that are appropriate to your training environment and stage of training and keep a record for your portfolio, e.g.,

- Complete the mandatory personal safety checklist in the trainee handbook
- Complete the [Laboratory Safety](#) eLearning module in RCPA Education Online and print the certificate of completion for your portfolio
- Participate in workplace health and safety training as soon as possible after commencing work in the laboratory, particularly in relation to biological, chemical and fire safety, first aid and resuscitation
- Locate and ensure ability to use equipment for biological, chemical and fire safety, first aid and resuscitation;
- Analyse incident reports and near misses to identify opportunities for improvements in practice.

2.4 Regulation and legal requirements

Foundations	Core	Transition to Fellowship
Be aware of potential risks for litigation in pathology practice, comply with legal and risk management requirements in your workplace, and seek advice from senior staff members if in doubt	Identify sources of information in your jurisdiction regarding a range of legal requirements applicable to pathology practice, particularly privacy, handling of information and specimens, workplace health and safety, and anti-discrimination law	Be mindful of the potential for medical litigation and the role of pathologists as defendants or consultants. Demonstrate awareness of and comply with legal requirements in your jurisdiction and discipline, for example relating to business practice, collection centres, health insurance principles, request forms, retention of reports and patient samples, notifiable diseases, patient privacy, copyright and intellectual property, workplace health and safety, employment provisions and anti-discrimination law
Be aware of and comply with requirements for maintaining medical registration in your place of domicile		Be aware of requirements for registration of medical specialists, CPD standards, credentialing, scope of practice, supervision of laboratories, and Approved

		Pathology Provider (APP) undertakings as relevant to jurisdiction
Be aware that pathology testing is regulated and must be accredited	Identify the bodies concerned with accreditation of pathology testing in your jurisdiction (e.g. NPAAC, NATA/RCPA, IANZ) and locate information about their roles and requirements	Explain the roles and outline basic requirements of regulatory and accreditation bodies in pathology in your jurisdiction
Identify the government agencies that regulate medical funding and billing in your jurisdiction	Identify sources of information relating to pathology financing and billing e.g. Medicare Benefits Schedule, Health Insurance Act (Australia) or other documentation relevant to your jurisdiction	Be familiar with legal requirements relevant to jurisdiction and acceptable standards relating to performance of and billing for pathology services
Comply with workplace policies relating to human resources management and anti-bullying, discrimination and harassment	Describe basic processes, policies and legislation relating to personnel employment and management	Explain institutional governance, structure and responsibilities for supervision of laboratory testing and human resources management

Activities

Select activities that are appropriate to your training environment and stage of training and keep a record for your portfolio, e.g.,

- Review information on AHPRA, MCNZ, Medicare, NATA, IANZ, NPAAC, or other relevant websites
- Review case studies and information provided by medical defence organisations
- Discuss with senior colleagues any situations or incidents that may have medicolegal implications
- Review relevant sections of the RCPA eLearning modules for [Quality Management, Ethics Professionalism and Confidentiality](#) and [Anti-Discrimination, Harassment and Bullying](#) in RCPA Education online
- Attend an RCPA, NATA or similar management course
- Participate in workplace-based anti-bullying and harassment training and/or complete the RCPA online module on [Anti-Discrimination, Harassment and Bullying](#)

2.5 Utilisation of resources

Foundations	Core	Transition to Fellowship
Use clinical and ethical judgment to minimise wasteful practices	Be aware of the costs of common diagnostic tests and identify examples of inappropriate ordering and over-utilisation of pathology testing	Be aware of the possible budgetary effects of indiscriminate ordering of tests, both internal and external to the laboratory, and apply this to your own use of auxiliary investigations and special procedures
	Identify opportunities to reduce waste in the laboratory, for economic and environmental benefit, without compromising clinical care	Propose and practice strategies to reduce wasteful practice in the laboratory, for economic and environmental benefit, while optimising clinical care
Be aware of cost-benefit analysis for new technology	Understand the need for a process and cost-benefit analysis in implementing new technology	Explain factors which determine the cost of a test, considering budget planning
	Identify sources of public and private pathology funding, including government (e.g., Medicare) and patient contributions	Describe factors which influence pathology funding and how these may impact on service provision
Contribute to team efforts for the efficient operation of the department and delivery of patient care, while attending to personal study and wellbeing needs	Explain the importance of balancing service provision requirements with the learning and wellbeing needs of all team members for efficient operation of the department and delivery of quality patient care	Be able to prepare work rosters to meet clinical and operational requirements of the department, in balance with the professional development and wellbeing needs of team members

Activities

Select activities that are appropriate to your training environment and stage of training and keep a record for your portfolio, e.g.,

- Complete the [Quality Management](#) eLearning module in RCPA Education online
- Attend the RCPA Management Course or local courses where available
- Access the Medicare Benefits Schedule or other documents relevant to your jurisdiction
- Discuss with senior colleagues the cost-effectiveness of current and proposed laboratory procedures and equipment in the context of limited resources
- Review and discuss with senior staff laboratory budget reports including income and expenditure
- Review literature concerning the economic and environmental impacts of wasteful practice in the laboratory
- Observe and/or contribute to strategic planning in the department
- Contribute to the preparation of work rosters in the department.

2.6 Information fundamentals

Foundations	Core	Transition to Fellowship
Use digital tools for general purpose applications including word processing, spreadsheets, presentation, data storage and communication	Explain the basics of laboratory systems architecture and the movement of data for communication of requests, reports and instrument interfacing	Explain the use of laboratory specific software, key technical concepts and subsystems on interfaces, workflow, barcode application, automation systems (enterprise systems architecture)
Conform to conventions of security and etiquette in the use of electronic communications such as email and social media	Use digital technology to share images, text and sound for diagnostic, educational and research purposes, ensuring compliance with privacy principles	Access, evaluate and use specific resources, including molecular, image, text and epidemiological data in the context of clinical practice
Use written and electronic health records and laboratory information systems for accurate recording and communication of clinical information, complying with requirements for handling sensitive information, including use of passwords and data encryption	Use standardised information structures, terminology and units for requesting and reporting, and correctly apply the principles of healthcare-related coding systems	Explain evidence-based advice, guideline development, prediction and research, and describe the knowledge and information tools that can be used to help with this
	Identify the information technology environment in which the laboratory information system operates, including integrated systems (i.e., health care information systems, back-ups, reporting, network structure)	Describe the functions, limits and potential of laboratory information systems in enhancing efficient management and providing better reporting and decision support for an effective laboratory
	Use laboratory information systems to retrieve records/reports/ specimens for examination and review and to satisfy clinical audit and/or research purposes	Explain the role of informatics skills in aggregating multiple data sources and/or analytical systems

Activities

Select activities that are appropriate to your training environment and stage of training and keep a record for your portfolio, e.g.,

- Develop computer knowledge and use this to assist with effective teaching, audits & reviews
- Consult employer documentation relating to data security and proper use of electronic communications such as email
- Use laboratory information systems in recording patient and request information, including a storage and retrieval system for specimens, results, comments and final reporting
- Network and share information with colleagues
- Access RCPA PITUS <https://www.rcpa.edu.au/Library/Practising-Pathology/PTIS/PITUS-18-20>
- Access current online information and resources relevant to pathology informatics

3 RESEARCH AND SCHOLARSHIP

Professional microbiologists have responsibilities with regard to the processes of scientific inquiry, research and education. They are expected to:

- Maintain professional competence throughout their careers, by keeping up to date with new knowledge in technical aspects of microbiology and other aspects of the roles of medical microbiology professionals, and integrating this knowledge in their practice;
- Contribute to advancing knowledge and/or enhancing practice in microbiology;
- Critically appraise scientific literature and research;
- Contribute to the collection, analysis and interpretation of data relating to the quality of health care;
- Contribute to the education of peers, trainees, other health care providers and to the understanding of microbiology by the general community.

By the end of training, trainees should be able to critically appraise scientific literature and research in microbiology and be sufficiently skilled in scientific inquiry to conduct a small-scale laboratory investigation or participate in a larger-scale research study. They 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 colleagues and for the general community.

The tables describe the outcomes and training activities laboratory at three stages of training: foundations, core and transition to fellowship.

3.1 Appraising and applying evidence

Foundations	Core	Transition to Fellowship
Identify, select, and navigate information resources including electronic databases and research publications to access clinical and pathology-related information	Identify and evaluate new evidence appropriate to practice through quality-appraised evidence-alerting services, and through interpretation of study findings, using basic statistical concepts where applicable	Apply statistical and epidemiological concepts (including distribution, mean, median, standard deviation, statistical significance, confidence intervals, correlation, sensitivity, specificity, predictive values, incidence and prevalence) to interpret scientific data in conducting or appraising research and integrating best evidence into clinical decisions.
Consult recommended textbooks, journals and online sources to build knowledge in pathology	Apply up-to-date information and evidence to the development of skills in your discipline	Demonstrate up-to-date knowledge and appraise the significance of literature and innovations in relevant areas of medicine and pathology
Describe the scientific principles of research and scholarly inquiry and the role of research evidence in health care	Describe how various sources of information, including studies, expert opinion, and practice audits, contribute to the evidence base of medical practice	Identify the limitations of evidence and discuss the barriers to and facilitators of applying evidence into practice

Activities

Select activities that are appropriate to your training environment and stage of training and keep a record for your portfolio, e.g.,

- Search clinical and laboratory databases to collect, organise and analyse data
- Use a standard bibliographic application to download citations and organise them into a personal database
- Undertake systematic critical review of scientific literature

- Read reference material on basic statistical concepts including distribution, mean, median, standard deviation, statistical significance, confidence intervals, correlation, sensitivity, specificity, predictive values, incidence and prevalence
- Seek expert medical librarian and statistical support where relevant
- Participate in journal club and research meetings.

3.2 Contributing to research and innovation

Foundations	Core	Transition to Fellowship
Use databases and conduct literature searches to identify existing knowledge and identify questions for further research	Frame questions to be answered by a research project and select appropriate methods to address them	Apply analytical and critical thinking approaches to identify clinical problems and service issues, and to propose research strategies to investigate and address them
Demonstrate an understanding of the scientific principles and common research methodologies of research and the role of research evidence in health care	Explain advantages and disadvantages of different study methodologies (e.g., case-controlled cohorts, randomised controlled trials etc)	Demonstrate skill in developing a research proposal, selecting appropriate methods and methodologies, and identifying possible funding sources
Demonstrate a working knowledge of key bio-statistical and epidemiological tools used in research	Explain the applications of quantitative and qualitative analytical processes to address identified research questions	Select and apply appropriate qualitative and/or quantitative methods for data analysis.
Construct written text in a scholarly manner, using correct referencing protocol	Describe the process of preparing research for publication	Prepare reports and papers of a publishable standard, complying with the conventions and guidelines for reporting biomedical research
Explain the principles of research ethics and the importance of ethical approval and participant consent for clinical research	Identify specific institutional and jurisdictional sources of information and approval processes applicable to research ethics	Comply with conventions for ethical treatment of humans and animals, confidentiality and privacy, attribution of credit (including authorship), intellectual property and copyright, malpractice and misconduct
Summarise and communicate to peers the findings of applicable research and scholarship	Communicate research findings in accordance with conventions for presenting clinical and biomedical research, demonstrating appropriate skills in presentation and discussion	Clearly articulate ideas, construct cohesive arguments, and translate and convey research findings to a variety of stakeholders using oral, poster and written formats
Identify the roles and contributions of members of a research team	Identify opportunities to participate as part of a team involved in a research project	Participate in research activities, balancing this with clinical roles and responsibilities

Activities

Select activities that are appropriate to your training environment and stage of training and keep a record for your portfolio, e.g.,

- Add to a portfolio of scholarly activities, which may include an oral or poster presentation at a local, regional or national meeting, or other scientific presentation
- Participate in and present cases, reviews and original work to peers at grand rounds, multidisciplinary meetings and journal clubs
- Write abstracts and scientific articles suitable for presentation or publication, using appropriate referencing and referencing software
- Participate in the establishment of a new diagnostic test
- Contribute collaboratively to the work of a research program, including developing a proposal, seeking funding and ethics approval, study design, analysis and presentation of findings
- Attend research meetings and learn from the skills of experienced researchers.

3.3 Learning and continuing professional development

Foundations	Core	Transition to Fellowship
Identify personal, educational, and professional goals, incorporating these into a learning plan	Review and update earlier learning plan(s) with input from others, identifying learning needs to generate immediate and longer-term career goals	Align expectations for practice with job opportunities and workforce needs, and seek further educational experiences as required to gain competencies necessary for future specialist practice
Identify resources for learning in your discipline	Identify, record, prioritise and answer learning needs that arise in daily work	Improve personal practice by evaluating a problem, setting priorities, executing a plan, and analysing the results
Accept feedback constructively and modify practice in response as required	Demonstrate the ability to respond constructively to the outcome of reviews, assessments or appraisals of performance	Seek multiple sources of feedback to continuously improve personal practice and contribute to collective improvements in practice
Demonstrate a commitment to career-long learning	Show commitment to continuing professional development which involves seeking training and self-development opportunities, learning from colleagues and accepting constructive criticism	Commit to career-long participation in continuing professional development, ongoing peer review, and monitoring of team and personal practice to maintain and demonstrate professional competence and optimise patient safety. This includes understanding the responsibilities of maintaining currency of practice, updating qualifications as required, and knowledge of requirements of medical registration authorities, e.g. MBA, MCNZ

Activities

Select activities that are appropriate to your training environment and stage of training and keep a record for your portfolio, e.g.,

- Create a learning plan in collaboration with your supervisor, identifying learning needs related to the discipline and training opportunities
- Review your learning plan regularly with feedback from your supervisor and others
- Plan, implement and monitor a personal continuing education strategy, including self-assessment activities
- Use technology to schedule, record, monitor, revise, and report on learning
- Seek advice from a mentor or educational psychologist if needed to enhance study effectiveness
- Regularly review relevant journals and participate in educational meetings and journal clubs and case reviews
- Review the RCPA Continuing Professional Development Program manual to become familiar with requirements and plan for activities post-fellowship.

3.4 Educating others

Foundations	Core	Transition to Fellowship
Demonstrate basic skills in teaching adults, including peers	Prepare, deliver and evaluate educational sessions to students, peers, staff members and other health professionals, incorporating the principles of adult learning and using effective oral, visual and written modalities	Communicate effectively with learners, incorporating up-to-date medical literature into presentations, and being able to translate and convey technical concepts and information in an understandable manner to those without technical expertise in the discipline

Activities

Select activities that are appropriate to your training environment and stage of training and keep a record for your portfolio, e.g.,

- Participate in and contribute to formal and informal departmental teaching sessions
- Develop or contribute to educational case-studies and tutorials for trainees, using face-to-face or online formats
- Seek feedback on your own teaching effectiveness
- Provide feedback to juniors to help them improve their teaching
- Mentor students and other trainees and advise on effective preparation for examinations
- Review or develop educational materials for non-pathologists, e.g., Lab Tests Online

4 PROFESSIONAL QUALITIES

Medical microbiologists are required to uphold the legal and ethical responsibilities of the profession and to behave with diligence, integrity and compassion. Their concern for patient safety and the reputation of the profession should be evident in their daily practice. They should:

- Maintain their professional competence throughout their career;
- Act with honesty, trustworthiness, diligence, and integrity at all times.
- Conduct respectful communications with colleagues, patients and others;
- Be skilled in a variety of modes of communication and able to use them appropriately depending on the circumstances;
- Establish and maintain co-operative relationships with colleagues, patients and others in health services.

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 tables describe the outcomes and training activities laboratory at three stages of training: foundations, core and transition to fellowship.

4.1 Professional interactions and communication

Foundations	Core	Transition to Fellowship
Describe the roles and scopes of practice of pathologists and other members of the pathology team, being willing and able to listen with respect and learn from them	Consult and collaborate with pathologists, laboratory scientists and other laboratory colleagues, recognising your own responsibilities and limitations, and contributing effectively to the team as needed	Promote constructive collegiality and teamwork within the laboratory to optimise communication and co-education among members, and to promote safe patient care
Describe and acknowledge factors that contribute to misunderstandings, differences, and conflicts in the health care setting, and demonstrate respect for a diversity of perspectives	Be able to use strategies to promote understanding, manage differences, and resolve conflicts in a manner that supports a collaborative culture	Work with colleagues to promote understanding, manage differences, resolve conflicts, and cultivate a collaborative culture
Maintain clear, respectful and effective channels of communication with other health professionals, recognising the importance of clinical input in selecting appropriate tests, formulating results and diagnoses, and contributing to clinical care	Consult with, seek information and advice, and respond to enquiries as needed with other health care professionals, including clinicians, to contribute to patient care	Offer expert opinion to clinicians regarding the choice of specimen(s) and test request(s) most likely to yield relevant information for the suspected disease process being investigated, and to formulate differential and final diagnoses
Identify clinically significant pathology results	Assess, analyse, and interpret pathology results and reports, and discuss clinically significant, unexpected or critical findings in consultation with clinical colleagues	Communicate with clinicians regarding significant and/or unexpected results, explaining potential sources of error and possible uncertainties, and where appropriate, use consultation as an opportunity to improve quality of care and patient safety by sharing expertise
Draft coherent written reports for review by a pathologist	Prepare written reports under supervision, with clear conclusions and correct terminology	Demonstrate the ability to prepare timely, clinically appropriate and accurate written reports using correct terminology and unambiguous wording

Participate attentively in meetings	Demonstrate personal communication skills to participate and contribute effectively in peer group, departmental and institutional meetings	Demonstrate the ability to prepare properly for meetings by reading agendas, understanding minutes, action points and doing background research on agenda items
Understand the purpose of multi-disciplinary team meetings in optimising patient care	Attend and prepare for multi-disciplinary team meetings, contributing relevant information and constructive clinical/diagnostic input	Play a leading role in multidisciplinary team meetings, ensuring all relevant information is at hand, reviewing cases and carrying out or arranging additional work that may have to be done post-meeting

Activities

Select activities that are appropriate to your training environment and stage of training and keep a record for your portfolio, e.g.,

- Identify the elements of effective teams based on observation in different work situations
- Attend departmental, institutional and multidisciplinary team meetings
- Present cases at meetings
- Attend formal communications courses offered by the RCPA, employers or other providers
- Communicate clinically significant and urgent results to 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
- Reflect on observation of interactions in the workplace
- Network and share information with colleagues, using available technologies
- Participate in groups to accomplish goals
- Produce written reports, initially drafting under supervision, and taking increasing responsibility for final reports in senior years

4.2 Ethical principles

Foundations	Core	Transition to Fellowship
Define essential ethical principles and identify relevant frameworks, codes and standards relating to medicine and pathology practice	Apply appropriate ethical principles, frameworks and standards to guide personal behaviour and address ethical issues encountered during clinical and academic activities	Use appropriate methods of ethical reasoning to reach balanced decisions where complex and conflicting issues are involved
Adhere to the applicable codes, guidelines and policies of the RCPA, the Medical Board of Australia, the Medical Council of New Zealand, or other relevant professional bodies at all times		

Activities

Select activities that are appropriate to your training environment and stage of training and keep a record for your portfolio, e.g.,

Complete the RCPA Ethics Professionalism and Confidentiality eLearning module and refer to relevant codes and standards listed in the module. This should be completed in the first year of training

4.3 Professional conduct

Foundations	Core	Transition to Fellowship
Exhibit honesty, integrity, respect and empathy with patients, colleagues and other health care professionals, including during times of stress		Model honesty, integrity, respect and empathy, including in difficult circumstances
Exhibit timeliness in reporting for duty and being ready for work	Respect assigned schedules, dependably complete assigned tasks in a timely manner, and assist team members when reasonably requested	Anticipate time management needs of the team, planning and assisting as required
Be aware of your own limitations and seek advice when needed		Demonstrate significant awareness of, and ability to address your own limitations and blind spots
Recognise and declare personal conflicts of interest when required	Describe the implications of potential personal, financial, and institutional conflicts of interest, including conflicts of interest with industry	
	Demonstrate an approach to managing your own or others' conflicts of interest in accordance with ethical, legal, and moral obligations when required	
Describe key behaviours that are unprofessional, unethical or may indicate impairment in others, while understanding the importance of early intervention	Recognise and respond promptly and non-judgmentally to unprofessional behaviours or impairment in others, reporting to a relevant authority in accordance with ethical and legal obligations	Promote a culture that recognises and responds effectively to unprofessional behaviour and colleagues in need

Activities

Select activities that are appropriate to your training environment and stage of training and keep a record for your portfolio, e.g.,

- Observe positive professional role models to identify appropriate conduct
- Access institutional and jurisdictional codes of conduct and legal documents concerning conflict of interest and mandatory reporting obligations if needed
- Read the RCPA position statement: Patient Expectations of Pathologists
- Seek advice and support from a mentor

4.4 Patient privacy, confidentiality and consent

Foundations	Core	Transition to Fellowship
Comply with legal, ethical and medical requirements related to privacy and confidentiality and obtaining consent from patients when required	Consistently maintain confidentiality in the clinical setting, while recognising special limitations on confidentiality for legal and public health purposes	Demonstrate ability to manage complex issues while preserving confidentiality

Activities

Select activities that establish knowledge and proficiency (where applicable, retain records for portfolio) e.g.,

- Complete the RCPA Ethics Professionalism and Confidentiality eLearning module and file evidence of successful completion in your portfolio

4.5 Disclosure and handling of error

Foundations	Core	Transition to Fellowship
Comply with workplace requirements for truthful reporting to the supervisor or head of department in the event of a personal error that could impact on patient care	Describe the ethical, professional, and legal obligations, and policies for, disclosure and reporting of patient safety incidents in the workplace and broader context	Identify, acknowledge, communicate, and explain errors. Contribute to root cause analysis if required, and be able study errors and discrepancies to recommend improvements to enhance patient safety

Activities

Select activities that establish knowledge and proficiency (where applicable, retain records for portfolio) e.g.,

- Complete the RCPA Ethics Professionalism and Confidentiality eLearning module which includes a section regarding disclosure of error

4.6 Public health promotion and protection

Foundations	Core	Transition to Fellowship
Demonstrate a commitment to the protection of patient rights and the promotion of the public good in health care	Identify key and emerging public health problems and describe the processes of disease prevention, screening, health promotion, and health surveillance	Explain how public health measures and processes can be applied cost-effectively to improve patient care and promote public health
Describe the types of patients or communities who may experience health inequities	Describe obstacles that patients may face in accessing pathology services and other health care resources	Describe strategies to promote equity of access to pathology services and public health interventions in a socially accountable manner
Understand basic epidemiological concepts	Identify determinants and potential threats to health (including socio-economic, environmental, behavioural, biomedical and genetic determinants) and the indicators for measuring health and disease status, such as morbidity, mortality, incidence and prevalence	Use evidence from research and analysis of health status data to link health issues to their determinants and to clarify the mechanisms by which these factors combine to cause illness or death and use data to inform and contextualise clinical and preventive practice
Be aware of requirements for notifiable diseases and patient registers	Demonstrate familiarity and comply with requirements regarding notifiable diseases and patient registers in your jurisdiction	Be able to recognise and report outbreaks or clusters of unusual cases if seen in practice, and describe strategies to investigate and manage them in the interest of public health where relevant
Understand the role of pathologists as vital contributors to patient care	Describe the roles of pathologists as health advocates in disease prevention, health promotion, and health surveillance including screening programs	Promote the role of pathologists as vital contributors to patient care, and identify opportunities for pathologists to enhance disease prevention, health promotion, and health protection

Activities

Select activities that establish knowledge and proficiency (where applicable retain records for portfolio) e.g.,

- Read epidemiological reports relevant to your discipline
- Practice using epidemiological software (e.g., Epi Info)
- Study basic epidemiological texts
- Locate information about notifiable diseases and patient registers relevant to your discipline and jurisdiction
- Be aware of and notify colleagues about promotional resources, fact files and relevant position statements on the RCPA website

- Evaluate publications concerning potential health impacts of environmental change

4.7 Cultural competence and safety

Foundations	Core	Transition to Fellowship
Define concepts relevant to cultural awareness, sensitivity, competence and safety	Identify and mitigate risks to culturally safe practice in the workplace	Promote diverse and culturally safe work and clinical environments
Demonstrate an awareness of cultural diversity (including, but not limited to ethnicity, gender, spiritual beliefs, sexual orientation, lifestyle, beliefs, age, social status or perceived economic worth)	Understand the origins and health consequences of discrimination, socio-economic and other forms of disadvantage	Apply knowledge of population health, including issues relating to health inequities and inequalities; diversity of cultural, spiritual and community values; and socio-economic and physical environment factors; to specialist pathology practice
Acknowledge and reflect on the potential for one's own bias or cultural differences to affect health status, clinical care and interactions with others	Embrace diversity and demonstrate the ability to function effectively and respectfully when working with people of different cultural and linguistic backgrounds	
Acknowledge and respect the culture, spirituality and histories of Aboriginal, Torres Strait Islander and/or Māori peoples as applicable, and understand the implications for health care	Identify health care needs of Aboriginal, Torres Strait Islander and/or Māori peoples as applicable, and respect cultural traditions in relation to pathology practice	Apply knowledge of the culture, spirituality, histories and health of Aboriginal, Torres Strait Islander and/or Māori peoples as applicable to specialist pathology practice and advocacy.

Activities

Select activities that establish knowledge and proficiency (where applicable, retain records for portfolio) e.g.,

- Complete the Cultural Safety eLearning module in RCPA Education Online and print the certificate of completion for your portfolio, or provide evidence of completion of cultural competence/safety training provided by your employer
- Access and use information about indigenous populations, their histories and specific health issues as the context for understanding culture and health interactions

4.8 Self care

Foundations	Core	Transition to Fellowship
Sustain sufficient levels of physical energy and mental attention to complete required tasks in a timely and reliable manner throughout designated periods of duty	Demonstrate sufficient behavioural stability, resilience and flexibility to work constructively in a diverse and changing academic and clinical environment, dealing with the demands of being a specialist trainee	Plan strategies to deal with the physical, psychological and time management demands of transition to specialist practice
Monitor your own health and behaviour, recognise and respond appropriately to any condition that may lead to a lapse in capacity, and seek help when required		
Be familiar with mechanisms to draw to the attention of employers and/or the RCPA any significant concerns about workplace or training stressors that may impact adversely on your wellbeing		
Seek mentorship to address personal and professional development needs	Build relationships with mentors	

Activities

Select activities that establish knowledge and proficiency (where applicable, retain records for portfolio) e.g.,

- Identify strategies to support personal well-being, a healthy lifestyle and appropriate self-care, with the help of friends, family and a primary healthcare professional
- Manage time efficiently and mitigate stressors such as fatigue and sleep deprivation
- Plan and take breaks and holidays as needed to maintain wellbeing
- Consult the 'Trainee Solutions' section of the RCPA website
- Undertake workplace based or RCPA online education relating to anti-discrimination, harassment and bullying
- Review the RCPA [mentoring](#) online module

Section 3

Appendices

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Appendix 1

Basic Pathological Sciences Examination

All trainees must pass or be [exempted](#) from the Basic Pathological Sciences examination. The examination may be taken before commencement of training and is open to registered trainees as well as any medical graduate or medical student.

Joint trainees who commenced training from 2020 will not automatically be exempt from the RCPA Basic Pathological Sciences Examination. This will include joint New Zealand trainees who registered from December 2019.

Joint trainees who have delayed registering with the RCPA, but have completed RACP training prior to 2020, will need to provide evidence that they were approved for training in the Joint Training Program by providing the RCPA with a copy of their RACP Annual Application for Advanced Training and RACP/RCPA Supervisor Report from the training period for exemption of the Basic Pathological Sciences Examination.

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

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

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

Examination Format and Content

The examination is a single 2.5 hour paper of 100 one-best-answer multiple choice questions, based on the [BPS syllabus](#) on the RCPA website. From 2023 the BPS examination will be moving to the online training portal. For more information see [RCPA - Online Training Portal](#).

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

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

The current syllabus is primarily based on the first 11 chapters of Robbins and Cotran Pathologic Basis of Disease, by Vinay Kumar, Abul K. Abbas, and Jon C. Aster (editors), 10th Edition, 2020, Elsevier (including the online version). References to supplementary materials are also given, which explain details more clearly than the textbook or contain helpful diagrams. As much as possible these references are from Open Access journals, but for copyright reasons the actual articles are not able to be placed on the College website.

Appendix 2

Part I assessment

Assessment in Part I for RCPA single discipline trainees and for Joint Trainees is by

Formal examinations

A portfolio of evidence of having participated in a sufficient number and type of activities

Satisfactory progress (supervisor reports).

See assessment matrix in **Appendix 9** and examination progression flow chart in **Appendix 10**.

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

Part I formal examinations

The Part I examination may be taken by RCPA single discipline trainees after having completed at least 24 months full-time or equivalent part-time training in an approved microbiology laboratory.

Joint trainees may sit the Part I examination after at least 18 months fulltime (or pro-rata part-time) training in an accredited microbiology laboratory.

The Part I examination has an emphasis on the theoretical, practical and interpretative aspects of investigations in all fields of clinical microbiology. It is taken after at least 18 months of training in diagnostic and clinical microbiology. There are no automatic exemptions given to any trainee for any component of the examinations. The Part I examination must be taken during a year of laboratory training.

The Part I examination has two phases and addresses issues including but not limited to:

- Epidemiology, pathogenesis and prevention of infectious diseases;
- Sterilisation and disinfection, media production, QC and laboratory safety;
- Basic microbial structure and metabolism and genetics;
- Host-pathogen relationships;
- Specimen collection, processing, identification and further testing (e.g. antimicrobial susceptibility) of the full range of likely samples and pathogens to be experienced at the tertiary care level hospital, including bacteriology, mycology, virology and parasitology;
- Contemporary issues in microbiology, including for example, emerging pathogens, bioterrorism;
- Molecular biology techniques relevant to diagnostic microbiology, microbiology research and molecular epidemiology.

Phase 1:

- Written paper A, duration 3 hours 15 minutes, with 20 questions requiring extended answers;
- Written paper B, duration 2 hours 15 minutes, with 30 short answer questions including images to be identified, data to be interpreted, problems to be solved.
- A 'wet' practical examination, testing practical ability to identify up to 10 unknown organisms such as those in the RCPA QAP. Antibiotic susceptibility testing and microscopy may be required. This examination is held over one week in the Trainee's own laboratory.

From 2024, the written examinations will be facilitated online – please consult the RCPA's [Online Training Portal](#) (OTP) for more information.

Phase 2 (only offered to those who pass or obtain borderline in any of the Phase 1 components)

- An oral examination, in which candidates rotate through eight (8) structured interview stations. Reading time is allowed prior to the examination.
- Note: A fail in the oral examination (after 1 or more borderline in Phase 1) will result in a repeat of the Oral and a repeat of any borderline Phase 1 the following year.

Results

Candidates must pass the Part I Phase 2 Oral examination for an overall pass result. Candidates who pass Phase 1 (Written A, B, and Wet Practical) at a sufficiently high level (i.e., no borderline awarded) but are unsuccessful in Phase 2 will be given an exemption (valid for one year/attempt only) from the Phase 1 examination/s.

Minor project

The minor project is a written report demonstrating the trainee's understanding of laboratory practice. See **Appendix 8**.

Portfolio

The portfolio is a record of activities associated with the trainee's daily work. Trainees are advised to commence these activities at the earliest possible time after commencing training. The hard copy portfolio must be made available to the supervisor to check periodically. A print-out of the portfolio summary spreadsheet must be included as the front page of the portfolio.

The hard copy portfolio and summary spread sheet will be checked for completeness by the supervisor before the Part I examination.

Please refer to the portfolio requirements which are set out in Appendix 5.

Detailed instructions are included on the forms that must be used to record the activities. The forms are in **Appendix 6**. The portfolio summary spread sheet (Excel file) may be downloaded from the RCPA website.

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

A print copy of the portfolio summary spreadsheet should be appended to the annual report (in a laboratory year for Joint Trainees) and to the supervisor report which is sent to the RCPA prior to the Part I oral examination. The summary spreadsheet will be reviewed by the Chief Examiner and the Registrar of the Board of Education and Assessment. The signatories and trainee may be contacted to confirm evidence of satisfactory completion.

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

Supervisor Reports

Trainees must submit a [supervisor report](#) for each year of laboratory training, including periods of rotation. There are different forms for single discipline and joint trainees. Trainees who are sitting the Part I examination must submit an additional pre-examination supervisor report and a print-out of the portfolio summary spreadsheet in the year of the examination.

Please refer to *RCPA Trainee Handbook – Administrative Requirements* (on the RCPA website) for the due dates for these reports.

It is the trainee's responsibility to ensure that the pre-examination supervisor report is completed and submitted by the due date. Failure to do so may jeopardise the accreditation of training time or finalisation of examination results. The supervisor report for both single discipline and joint trainees can be downloaded from the RCPA website.

Submission of supervisor reports: Single discipline and joint trainees should ensure that they use the appropriate form and follow the advice in **Appendix 4**.

Summary of assessment requirements for Part I

Item	Completion	Assessed by	Comments
Written exam A	Before oral exam	Chief Examiner. Questions are double marked by examiners.	Questions set by the MB examinations subcommittee
Written exam B	Before oral exam		
Wet practical exam	Before oral exam	Marked by QAP representative. Results reviewed by Chief Examiner	Samples prepared by QAP Exam held in own laboratory
Structured oral examination: up to 8 structured interviews	After pass/borderline in written and wet practical exams.	Appropriately trained examiners with at least 5 years post-Fellowship experience	Questions set by the MB examinations subcommittee See Appendix 2
Portfolio items to be signed off by supervisor or delegate (see Appendix 5 for items to complete)	Before the oral MB1 exam.	The Portfolio summary spreadsheet is checked for completeness by BEA Registrar or Deputy Registrar. If incomplete, the candidate may be required to undertake further activities.	Portfolio items are to be reviewed by the supervisor when preparing the supervisor report The portfolio itself should not be sent to the College unless requested for audit
Supervisor reports: end-of-rotation, annual and pre-exam reports, with print copy of portfolio summary spreadsheet appended to the annual and pre-exam reports. Note for Joint Trainees, send the pre-exam spreadsheet directly to RCPA.	See RCPA or RACP website for submission dates	Reviewed by the Registrar and chief examiner or delegate. Joint trainees reports are also reviewed by CJCT Coordinator of Advanced Training	Referral to Chief Examiner if necessary See Appendix 4

Note: Minor project may be started during Part I but is a Part II requirement.

Assessment calendar

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

Appendix 3

Part II assessment

All trainees must have passed the Part I Phase II Oral examination to be eligible to enrol in the Part II assessment. RCPA trainees are ordinarily eligible to sit the Part II examination in the final year of training. Joint RCPA/RACP trainees must sit this examination no earlier than their final (third) year of laboratory microbiology training. As with the Part I examination, the Part II examination can only be attempted during a year of laboratory training.

Assessment in Part II is by:

- Formal structured oral examination
- A major project
- A minor project
- Portfolio: successful completion of the required number and type of activities
- Satisfactory supervisor reports.

The same requirements apply to RCPA-only trainees, Joint RCPA/RACP trainees and research stream trainees, **except** that research stream candidates complete a PhD or MD thesis instead of the major project. All components must be completed satisfactorily for a pass result.

See Assessment Matrix in **Appendix 9** and examination progression flow chart in **Appendix 10**.

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

Oral examination

Candidates rotate through a multi-station set of structured interviews (8 stations). There is reading time before the stations. The topics examined may include quality assurance, safety, management, medico-legal issues, communication and teamwork as well as technical aspects of microbiology. The issues are those which it is likely that a recently qualified Fellow would have to deal with.

A repeat examination later in the same year may be offered to unsuccessful candidates, as per the RCPA Policy on Repeat Examinations 7/2001.

Major project

The major project is a significant piece of laboratory-based research and is due in the year the trainee sits the Part II examination. See **Appendix 7**.

Minor project

The minor project is a written report demonstrating the trainee's understanding of laboratory practice. See **Appendix 8**.

Portfolio

The portfolio is a record of activities associated with the trainee's daily work. Trainees are advised to commence these activities at the earliest possible time after commencing training. The hard copy portfolio must be made available to the supervisor to check periodically. A print-out of the portfolio summary spreadsheet must be included as the front page of the portfolio.

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

Portfolio requirements are in **Appendix 5**.

Detailed instructions are included on the forms that must be used to record the activities. The forms are in **Appendix 6**. The portfolio spread sheet (Excel file) may be downloaded from the RCPA website.

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

A print copy of the summary spreadsheet should be appended to the annual report (only in a laboratory year for Joint Trainees) and to the supervisor report which is sent to the RCPA prior to the Part II oral examination. The summary spreadsheet will be reviewed by the Chief Examiner and the Registrar of the Board of Education and Assessment. The signatories and trainee may be contacted to confirm evidence of satisfactory completion.

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

Supervisor Reports

Trainees must submit a [supervisor report](#) for each year of laboratory training, including periods of rotation. There are different forms for single discipline and joint trainees. Trainees who are sitting the Part II examination must submit an additional pre-examination supervisor report and a print-out of the portfolio summary spreadsheet in the year of the examination.

Please refer to *RCPA Trainee Handbook – Administrative Requirements* (on the RCPA website) for the due dates for these reports.

It is the trainee's responsibility to ensure that the pre-examination supervisor report is completed and submitted by the due date. Failure to do so may jeopardise the accreditation of training time or finalisation of examination results. This can be downloaded from the website:

Submission of supervisor reports: Single discipline and joint trainees should ensure that they use the appropriate form and follow the advice in **Appendix 4**.

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

A pass or exemption in the BPS examination is required before enrolling for the Part II examination.

Item	Completion	Assessed by	Comments
Major project proposal	Before commencing the major project	Major Project Review Panel	Trainee must not commence until receiving approval to proceed.
Major project	In the year of sitting the MB II oral exam	Chief examiner and two additional examiners	Trainee and supervisor declarations to be completed.
Minor project	Before the MB II oral exam	Member of Microbiology Examiners Panel	Trainee and supervisor declarations to be completed.
Oral examination: multi-station set of structured interviews	After submission of projects and Portfolio	Appropriately trained examiners with at least 5 years post-Fellowship experience	Questions set by the Microbiology examinations sub-committee
Portfolio items to be signed off by supervisor or delegate (see Appendix 5 for items to complete)	Before the oral MB II exam	The Portfolio summary spreadsheet is checked for completeness by BEA Registrar or delegate. If incomplete, the candidate may be required to undertake further activities.	Portfolio items are to be reviewed by the supervisor when preparing the supervisor report The portfolio itself should not be sent to the College unless requested for audit

Supervisor reports: end-of-rotation, annual and pre-exam reports, with print copy of portfolio summary spreadsheet appended to the annual and pre-exam reports.	See RCPA or RACP website for submission dates	Reviewed by the BEA Registrar and Chief Examiner or delegate. Joint trainees: also reviewed by CJCT Coordinator of Advanced Training	Referral to Chief Examiner if necessary See Appendix 4
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Assessment calendar

Please refer to the [RCPA Trainee Handbook – Administrative Requirements](#) (on the RCPA website) for key assessment dates

Appendix 4

Guidelines for completing the Supervisor Report Form

Please refer to the following documents:

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

The [supervisor report](#) form should be completed by the supervisor in consultation with other laboratory staff who have a significant role in the trainee's training program and with reference to the trainee's portfolio.

Please refer to the portfolio requirements which are set out in Appendix 5.

Trainees must make their up-to-date portfolio 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.

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

Trainees are responsible for the safe keeping of all these records and should **not** contact the College for the previous year's supervisor report.

Submitting the Supervisor Report

It is the trainee's responsibility to ensure that the form is completed and submitted by the due date. At least one supervisor report is due annually 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 report with a print copy of the portfolio summary spreadsheet is to be submitted to the RCPA by the date specified in the *RCPA Trainee Handbook – Administrative Requirements* (on the RCPA website).

Joint Trainees should use the Joint RCPA-RACP Joint Trainee Supervisor Report form and follow the submission guidelines on the final page. The RCPA will accept the mid-year supervisor report as the pre-examination report. A print-out of the RCPA portfolio summary sheet must be appended.

Single Discipline Trainees should use the RCPA supervisor report on the website return to: bea@rcpa.edu.au

Appendix 5

Portfolio Requirements

The table below contains guidelines to assist trainees to compile the portfolio and the portfolio summary spreadsheet.

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

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

Appendix 6 contains the forms and detailed instructions for recording these workplace activities. Please file the (hard copy) forms in a **portfolio folder** with separate sections for each category of activity.

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 items on the annual, rotation and pre-exam supervisor report.

The portfolio summary spreadsheet should be printed and appended to the pre-exam supervisor 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 Education and Assessment and the Chief Examiner. The signatories and trainees may be contacted to confirm evidence of satisfactory completion.

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

Cat	Item	Part I	Part II	Evidence
1	Laboratory safety checklist.	Checklist to be completed within 3 months of starting training. eLearning module to be completed during training		Checklist – one required Certificate of completion of eLearning module (see point 12 below)
1	DOPS 12 to be completed satisfactorily during training	At least eight (8) before Part I The other four (4) DOPS can be done at any stage of training but are not required until Part II. Note: the Serology DOPS will be mandatory for all trainees from 2023.		DOPS form All forms to be signed by supervisor or other appropriately qualified person. See Appendix 6
1	CbD	Four (4) per year. These must come from five (5) different sites of infection. Cases must come from a wide range of infections and/or results.		CbD form All forms to be signed as satisfactory by supervisor or other appropriately qualified person. See Appendix 6
1	Incident reports Reflections on significant incidents during the year	2 per year throughout training.		Significant incident report form See Appendix 6

Cat	Item	Part I	Part II	Evidence
1	Supervisor report/s for each year and/or rotation. Must have a brief reflection (max 1 page) on the supervisor's comments for each report.	End-of-rotation and annual reports. An additional pre-exam report is required in the year of the Part I and II assessments See RCPA website for submission dates.		Supervisor Guidelines See Appendix 4
2	Clinical meetings Chosen from the list on the form in Appendix 6.	3 per year throughout training,		Clinical Meetings Report Form See Appendix 6
3	Research and scholarly activities Chosen from the list on the form in Appendix 6.	2 per year throughout training		Research and scholarly activities form Note: some activities have maximum and minimum restrictions. See Appendix 6
4	Quality activities Chosen from the list on the form in Appendix 6. Note mandatory activity	2 per year throughout training		Quality activities form Certificate of completion of activity 4.6 See Appendix 6
5	Management, safety, ethics, cultural competence Chosen from the list on the form in Appendix 6. Note some mandatory activities	1 per year throughout training		Management, ethics, safety, cultural competence form. Certificate or email verifying completion of activities 5.3, 5.4, 5.5 See Appendix 6
6	Infection control and public health Chosen from the list on the form in Appendix 6.	2 per year throughout training		Infection control and public health form See Appendix 6
7	Antimicrobial stewardship Chosen from the list on the form in Appendix 6.	1 per year throughout training		Antimicrobial stewardship form See Appendix 6

Summary of requirements

	Cat 1				Cat 2	Cat 3	Cat 4	Cat 5	Cat 6	Cat 7
	DOPS	CbD*	Incident reports	Lab safety	Meetings	Research scholarship	Quality activities	Mgmt, Ethics, Safety	Infection control & pub health	Antibiotic stewardship
Part I	At least 8	4/yr	2/yr	1	3/yr	2/yr	2/yr	1/yr	2/yr	1/yr
Part II	Remaining DOPS for a total of 12 during training	4/yr	2/yr	0	3/yr	2/yr	2/yr	1/yr	2/yr	1/yr
Total for joint trainees (3 years MB)	12	12	6	1	9	6	6	3	6	3
Total for single trainees (5 years MB)	12	20	10	1	15	10	10	5	10	5

* NOTE: The requirement for CbDs was changed in 2022 from 2 CbD's per year to 4 CbD's per year.

Appendix 6

Forms and logbook pages

Appendix 6 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 in the portfolio folder.

The forms are:

- Laboratory safety checklist
- DOPS forms
- CbD form
- Significant incident report form
- Clinical meetings sign off form (portfolio category 2)
- Research and scholarly activities sign off form (portfolio category 3)
- Quality activities sign off form (portfolio category 4)
- Management, safety, ethics and cultural competence sign off form (portfolio category 5)
- Infection control and public health sign off form (portfolio category 6)
- Antimicrobial stewardship sign off form (portfolio category 7)
- Major project proposal, project guidelines and cover page
- Minor project guidelines and cover page



Laboratory Safety Checklist

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

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

Trainee name (print) Signature.....

Witness (supervisor or other senior member of staff):

Name (print) Signature.....

Date:

Directly Observed Practical Skills

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 on progress by highlighting strengths and areas for improvement, thereby encouraging their professional development.

12 DOPS are required including the serology and sequencing DOPS; eight (8) DOPS are required before Part I. The four (4) remaining DOPS can be done prior to Part I but must be completed by the Part II exams.

It is important to observe the trainee doing the activity. Observations can be made by the supervisor and also by suitably qualified scientific staff.

Trainees should initiate the DOPS assessment by requesting an appropriate assessor to observe them when they are confident, they can complete it satisfactorily. The time taken will vary according to the skill. QAP specimens may be used for DOPS.

When observing competence in a multi-part skill, the assessor should tick the bench in Section A of the form and as many of the Section B boxes as have been observed. Observations might take place as a single session or intermittently, as time allows. Assessors should observe all Section B steps at least once but it is not necessary to observe the same step repeatedly.

Over time the assessments should cover each general and special bench and all the skills of microscopy, staining, culture, reading, microbial identification, susceptibility testing, molecular techniques and antigen testing. If a laboratory is unable to provide all 8 Section A benches, one (1) unspecified bench may be substituted.

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

Grading, standards and outcome of assessment

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

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

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

Record keeping

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

		Microbiology DOPS Assessment Form Directly Observed Practical Skills			
Trainee name		Trainee ID (RCPA)	Stage of training Y1 Y2 Y3 Y4 Y5 if >Y5, please specify		
Assessor name		Assessor position ☐ Pathologist ☐ Scientist ☐ Snr Trainee ☐ Other (pls specify)			
USE ONE FORM PER BENCH. <i>For Section A and tick as many from Section B as apply.</i>					
Section A: Benches (tick box that applies) ☐ Specimen reception and accessioning ☐ Urine bench ☐ Faeces examination for parasites ☐ General bacteriology, e.g., respiratory, faeces, genital, pus ☐ Microscopy of fluids, e.g., joint fluids, CSF ☐ Blood culture bench ☐ Mycology bench ☐ Organism not identifiable on MALDI-TOF ☐ Quality Control ☐ Molecular (other than sequencing) ☐ Other (please specify)		Section B (tick as many as apply) ☐ Microscopy/staining ☐ Culture set up (e.g., media, atmosphere, etc) ☐ Culture reading ☐ Microbial identification ☐ Susceptibility testing ☐ Quality Control ☐ Other (please specify)			
Brief description of procedure to be observed and assessed					
Please comment on whether these aspects of the trainee's performance are as expected for the stage of training			Yes	No	n/a
Specimen handling, preparation, laboratory information system requirements					
Select appropriate media/equipment; use according to standard operating procedures					
Interpret and discuss findings, with reference to specimen, test and patient type					
Investigation of possible laboratory error					
Perform and record quality control information relevant to the bench					
Safe handling and observes appropriate occupational health and safety requirements					
Final written report					
Timely, efficient, cooperative performance					
Please comment on other relevant aspects, especially on aspects for improvement (use the reverse side if insufficient room)					
Final outcome (tick one) ☐ As expected for the stage of training ☐ Below expected for the stage of training		Date of DOPS		☐ Feedback given	
Name (print) and signature of assessor				Signature of trainee	
Name of laboratory					

 RCPA The Royal College of Pathologists of Australasia		Microbiology DOPS: Sequencing Directly Observed Practical Skills		
Trainee name		Trainee ID	Stage of training (<i>circle</i>) Y1 Y2 Y3 Y4 Y5 If >Y5, please specify:	
Assessor name		Assessor position ☐ Pathologist ☐ Scientist ☐ Snr trainee ☐ Other (pls specify)		
Techniques/methods (tick the box that applies). Please note that the minimum requirement is for trainees to observe the tests. If possible, the trainee should perform the tests.				
1. Nucleic acid preparation method(s), quantification/purity, storage ☐ Observed ☐ Completed by the trainee				
2. Single gene sequencing (e.g., 16S rRNA, ITS, <i>recA</i>) ☐ Observed ☐ Completed by the trainee				
Optional: 3. Whole-genome sequencing (WGS) ☐ Observed ☐ Completed by the trainee				
Please comment on whether these aspects of the trainee's performance are as expected for the stage of training			Yes	No
Understands the principles of the method				
Understands and complies with the laboratory documentation, package inserts, manuals, etc.				
☐ Has completed an assay successfully and produced a valid result that can be reported (sequenced-based assay) OR ☐ Has observed the completion of an assay and discussed the results				
Able to explain the Quality Control (QC) procedures for this method, including internal and external Quality Assurance (QA)				
Able to discuss anomalies and resolve uncertainties for the method				
Able to explain maintenance and trouble-shooting requirements for the method				
Please comment on other relevant aspects, especially on aspects for improvement (use the reverse side if insufficient room)				
Final outcome (tick one) ☐ As expected for the stage of training ☐ Below expected for the stage of training		Date of DOPS	☐ Feedback given	
Name (print) and signature of assessor			Signature of trainee	
Name of laboratory				

 RCPA The Royal College of Pathologists of Australasia		Microbiology DOPS Assessment Form - Serology Directly Observed Practical Skills		
Trainee name		Trainee ID (RCPA)	Stage of training Y1 Y2 Y3 Y4 Y5 if >Y5, please specify	
Assessor name		Assessor position ☐ Pathologist ☐ Scientist ☐ Snr Trainee ☐ Other (pls specify)		
How to use this form: Group A assays must be carried out by trainee personally. Group B assays are optional and must be observed, understood and discussed by the trainee but not necessarily performed (although this is ideal if the opportunity arises). For automated tests, it is sufficient to discuss the interpretation of findings, QC, potential errors, WHS with the supervisor or other senior qualified personnel.				
Group A (all mandatory) ☐ Immunoassay ☐ Lateral flow ☐ Agglutination		Group B (Optional) (choose at least 3) ☐ Blotting ☐ Immunofluorescence ☐ Complement fixation ☐ Neutralisation ☐ Other		
Description of type of assay				
Please comment on whether these aspects of the trainee's performance are as expected for the stage of training			Yes	No
Specimen handling, preparation, laboratory information system requirements				
Interpret & discuss findings, with reference to specimen, test and patient type				
Investigation of possible laboratory error				
Perform and record quality control information				
Safe handling & observes appropriate worker health and safety requirements				
Final written report				
Timely, efficient, cooperative performance				
Please comment on other relevant aspects, especially on aspects for improvement (use the reverse side if insufficient room)				
Final outcome (tick one) ☐ As expected for the stage of training ☐ Below expected for the stage of training		Date of DOPS	☐ Feedback given	
Name (print) and signature of assessor			Signature of trainee	
Name of laboratory				

CbD (Case-based Discussion) Assessment Form

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 four (4) of these sessions per year. (The requirement for CbDs was changed in 2022 from 2 CbD's per year to 4 CbD's per year).

At least five (5) CbD forms should be signed off as satisfactory before the Part I examination. These should be for routine situations and those with frequently occurring, manageable complications. A minimum of four (4) cases per year should be signed off as satisfactory between the Part I and Part II examinations. The cases should cover a wide range of infections and/or results.

CbD assessments in microbiology indicate the trainee's ability to interpret and relate pathological results to clinical findings, to plan appropriate investigations and make decisions regarding patient care, including decisions with ethical and legal dimensions. The purpose of the CbD assessment is also to provide feedback about trainees' progress by highlighting strengths and areas for improvement.

The trainee should initiate each CbD assessment by selecting a recent case in which s/he has been involved clinically or through laboratory tests. The assessor should be an RCPA Fellow but not necessarily the listed supervisor. The trainee should request a mutually convenient time for a 30-minute discussion, which allows 15-20 minutes for the presentation/discussion and 5-10 minutes for the assessor to give immediate feedback and complete the CbD form.

Each CbD topic should exemplify a **different** site of infection (see CbD form) and can focus on one or more of the following aspects:

- medical record keeping;
- clinical/microbiological assessment;
- clinical management, i.e., selection of investigation(s), interpreting and reporting results, advice regarding antimicrobial therapy, prophylaxis or immunisation;
- infection control and health protection/public health;
- quality improvement;
- professionalism, e.g., ethical/legal aspects, teamwork

Grading, standards and outcome of assessment

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

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

Record keeping

The CbD forms must be fully completed, signed and dated by the trainee and the assessor. The forms must be retained by the trainee

 RCPA The Royal College of Pathologists of Australasia		Microbiology Case-based Discussion (CbD) Assessment Form	
Trainee name		Trainee ID (RCPA)	Stage of training Yr1 Yr2 Yr3 Yr4 Yr5 if more than Yr5, please specify
Assessor name		Assessor position ☐ Pathologist ☐ Senior registrar ☐ other(specify)	
Site of infection (tick box) ☐ Blood stream ☐ Cardiovascular ☐ Respiratory ☐ Bone/joint ☐ Wound/soft tissue ☐ Gastrointestinal ☐ Central nervous system ☐ Intra-abdominal ☐ Urinary tract ☐ Burns/plastics ☐ Sexually transmitted infections ☐ Other (please specify)		Technique ☐ Microscopy ☐ Culture ☐ Serologic diagnosis ☐ Molecular ☐ Other (please specify)	
Complexity of case (tick box)		☐ low	☐ medium ☐ high
Brief description of case presented, discussed and assessed			
Please comment on whether these aspects of the trainee's performance are as expected for the stage of training		Yes	No n/a
Initial assessment of clinical, pathological, microbiological aspects of case			
Appropriate initial and follow up investigation/s selected			
Interpretation of findings			
Clinical management advice (e.g., regarding therapy, prophylaxis, immunisation)			
Infection control/public health advice			
Overall laboratory and clinical judgment			
Reporting of findings			
Ability to present and discuss case			
Please comment on other relevant aspects, especially on aspects for improvement (use the reverse side if insufficient room)			
Final outcome (please circle) As expected for the stage of training Below expected for the stage of training	Date of CbD	Time taken for CbD	Time taken for feedback
Name (please print) and signature of assessor		Signature of trainee	
Name of laboratory			

		Microbiology Significant incident report form	
Trainee name		Trainee ID (RCPA)	Stage of training Year1 Yr2 Yr3 Yr4 Yr5 if more than Yr5, please specify
Nature of incident: what happened and why was it significant?			
What led to the incident?			
Action taken at the time of the incident. Could it have been handled differently?			
Review of similar incidents			
Actions taken (or needed) to prevent future similar incidents			
Reflection by trainee			
Supervisor name (please print) and signature			Date



Microbiology Sign off form for Portfolio Category 2 Clinical Meetings

How to use this form

This form is to be used to record that the trainee has attended at least **3 different clinical activities per year** from the following list:

- Code 2.1** Multi-disciplinary clinical meetings, grand rounds, ward rounds, CPC clinicopathological correlation meetings, morbidity and mortality meetings, etc. Signature required from supervisor or meeting chair.
- Code 2.2** Conferences, courses, seminars, workshops, forums. Please attach receipt or other evidence of attendance.
- Code 2.3** Journal club, small group learning session
- Code 2.4** Other (please specify)

Note: meetings concerned with management, QA, ethics, infection control, etc, are not to be recorded on this form.

For one (1) of the above activities each year, trainees must write a reflection (approx.100 words) on what they gained from the activity.

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

Trainee name			Trainee ID	Stage of training Y1 Y2 Y3 Y4 Y5 if > Y5 please specify				
	Meeting date	Code	Brief description of clinical meeting (include meeting name, location, where relevant)	Signature of supervisor or meeting chair				
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Microbiology

Sign off form for Portfolio Category 3

Research and scholarly activities

How to use this form

This form is to be used to record that the trainee has engaged in at least **2 different activities per year** from the following list:

- Code 3.1** Literature review and preparation of materials (e.g., slides) to support teaching or conference presentation. Record the topic and list the references reviewed. **Minimum 1** during training.
- Code 3.2** Teaching sessions (lecture, seminar) for medical students, lab staff, GPs, etc. **Minimum 1** during training.
- Code 3.3** Oral or poster presentation at scientific meeting. **Minimum 1** during training.
- Code 3.4** Publications, journal articles, book chapter, monograph, published or written to a standard suitable for publication. Cite the reference for published works. Attach the manuscript for unpublished works
- Code 3.5** Develop assessments or educational modules for RCPA. Attach a copy or synopsis of material developed. **Limit of 2** during training.
- Code 3.6** Review or develop educational materials for non-pathologists, e.g., Lab Tests Online. Attach a copy or synopsis of material.
- Code 3.7** Self-assessment activities.
- Code 3.8** Formal self-education study, e.g., on-line educational modules (e.g. College of American Pathologists (CAP) modules), journal review of cases you have worked up.
- Code 3.9** Academic award courses. Attach a copy of transcript of results.
- Code 3.10** Other (please specify)

For one (1) of the above activities each year, trainees must write a reflection (approx.100 words) on what they gained from the activity.

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

Trainee name			Trainee ID	Stage of training Y1 Y2 Y3 Y4 Y5 if > Y5 please specify	
	Date	Code	Brief description of activity (include meeting name, URL, etc where relevant)	Supervisor signature	
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 <b style="font-size: 2em; margin: 0;">RCPA The Royal College of Pathologists of Australasia	Microbiology Sign off form for Portfolio Category 4 Quality activities																																																							
How to use this form This form is to be used to record that the trainee has attended at least 2 different activities per year from the following list. Code 4.1 Participate in external and internal quality management, processing external QA samples, review of documents/manuals, etc. Examples of suitable activities are on the following page. Code 4.2 Attend NATA training courses or RCPA management course. Attach registration or other evidence of attendance. Code 4.3 Clinical or case audit, including review of methods. Examples of suitable activities are on the following page. Code 4.4 Participate in and contribution to meetings concerned with introducing new tests or instruments, altered workflow, etc. Examples of suitable activities are on the following page. Code 4.5 Participate in RCPA committees (e.g., TAC); participate in a planning group for an RCPA-sponsored workshop or course; represent RCPA on other committees, e.g., regulatory or institutional bodies. Attach a letter from RCPA confirming representation. Code 4.6 MANDATORY REQUIREMENT. Complete the Quality Management eLearning Module in RCPA Education Online and attach the certificate of competence. Code 4.7 Other (please specify) For one (1) of the above activities each year, trainees must write a reflection (approx.100 words) on what they gained from the activity. At the end of each year, this form, appended reflections and any other appended documentation should be sighted by the supervisor and signed off on the annual supervisor report.																																																								
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 45%; padding: 5px;">Trainee name</td> <td style="width: 20%; padding: 5px;">Trainee ID</td> <td style="width: 35%; padding: 5px;"> Stage of training Y1 Y2 Y3 Y4 Y5 if > Y5 please specify </td> </tr> </table>		Trainee name	Trainee ID	Stage of training Y1 Y2 Y3 Y4 Y5 if > Y5 please specify																																																				
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<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;"></th> <th style="width: 10%;">Date</th> <th style="width: 10%;">Code</th> <th style="width: 55%;">Brief description of activity (include committee, meeting, location, where relevant)</th> <th style="width: 20%;">Supervisor signature</th> </tr> </thead> <tbody> <tr><td>1</td><td></td><td></td><td></td><td></td></tr> <tr><td>2</td><td></td><td></td><td></td><td></td></tr> <tr><td>3</td><td></td><td></td><td></td><td></td></tr> <tr><td>4</td><td></td><td></td><td></td><td></td></tr> <tr><td>5</td><td></td><td></td><td></td><td></td></tr> <tr><td>6</td><td></td><td></td><td></td><td></td></tr> <tr><td>7</td><td></td><td></td><td></td><td></td></tr> <tr><td>8</td><td></td><td></td><td></td><td></td></tr> <tr><td>9</td><td></td><td></td><td></td><td></td></tr> <tr><td>10</td><td></td><td></td><td></td><td></td></tr> </tbody> </table>			Date	Code	Brief description of activity (include committee, meeting, location, where relevant)	Supervisor signature	1					2					3					4					5					6					7					8					9					10				
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Examples of quality activities

When devising quality activities, trainees should use the following examples as a guide to the type of activity and the amount of effort that is expected.

4.1 External and internal quality management

External quality management: Review a survey report from QAP. Note any errors or discrepancies and write or present a brief discussion about possible sources of error and possible corrective/preventive actions.

4.3 Clinical or case audit, including reviews of methods

Read about [pre-analytical errors](#) and carry out an audit of a selected series of samples in the laboratory, for example document all instances of specimen rejection over a period of time, noting reasons for rejection, appropriateness of actions taken and/or suggestions for preventive strategies.

Review requests for a particular type of test, e.g., hepatitis serology, correlating clinical information with test procedures carried out in the laboratory. If any deficiencies noted, what could be done to correct them?

Carry out an audit relating to post-analytical factors, e.g., assess whether there are appropriate mechanisms to ensure that wound culture reports to surgical units are reviewed by a doctor caring for the patient.

Carry out an audit relating to post-analytical factors, e.g., correlate a series of antibiotic sensitivity reports with patient charts to determine whether antibiotic therapy was appropriate or if suitable modifications were made based on the reports.

4.4 Introduce new tests/instruments, altered workflows, etc

Write a brief discussion about how introduction of MALDI-TOF technology will impact on specimen turnaround times and/or the impact on workflow for scientists and/or the impact on how and when pathologists sign out reports.



Microbiology

Sign off form for Portfolio Category 5

Management, Safety, Ethics, Cultural Competence

How to use this form

This form is to be used to record that the trainee has performed at least **1 activity per year** from the following list:

- Code 5.1** Attend departmental management committees, budget meetings, other management-related meetings, ethics review committees.
- Code 5.2** Undertake significant management roles, e.g., chairperson, secretary, treasurer of microbiology-related committees.
- Code 5.3** **MANDATORY ACTIVITY.** Complete the [Ethics, Professionalism and Confidentiality](#) eLearning module RCPA Education Online and attach evidence of completion.
- Code 5.4** **MANDATORY ACTIVITY** Complete the [Laboratory Safety](#) eLearning module in RCPA Education Online and attach the certificate of competence.
- Code 5.5** **MANDATORY ACTIVITY.** Complete the [Cultural Safety](#) eLearning module in RCPA Education Online. Attach the certificate of competence. OR provide evidence of having completed cultural competence training provided by your employer, if a registered health services provider.
- Code 5.6** Other (please specify)

For one (1) of the above activities each year, trainees must write a reflection (approx.100 words) on what they gained from the activity.

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

Trainee name			Trainee ID	Stage of training Y1 Y2 Y3 Y4 Y5 if > Y5 please specify				
	Date	Code	Brief description of activity (including committee name, location, where relevant)	Supervisor signature				
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Microbiology

Sign off form for Portfolio Category 6

Infection control, public health

How to use this form

This form is to be used to record that the trainee has performed at least **2 different activities per year** from the following list:

- Code 6.1** Participate in WHS committees, infection control/public health committees. Statement from committee chair regarding trainee's role in the committee.
- Code 6.2** Participate in infection control rounds, investigation of outbreaks or case reviews/audits of hospital acquired infection.
- Code 6.3** Visit public health laboratory to learn about procedures for outbreak investigation.
- Code 6.4** Retrieve statistical information on notifiable diseases and resistant organisms from the lab database, using CLSI or other guidelines, including rationale for selection/reporting.
- Code 6.5** Discuss procedures for notification of infectious diseases with supervisor or clinician.
- Code 6.6** Other (please specify)

For one (1) of the above activities each year, trainees must write a reflection (approx.100 words) on what they gained from the activity.

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

Trainee name			Trainee ID	Stage of training Y1 Y2 Y3 Y4 Y5 if > Y5 please specify				
	Date	Code	Brief description of activity (including committee name, location, where relevant)	Supervisor signature				
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Microbiology

Sign off form for Portfolio Category 7

Antimicrobial stewardship

How to use this form

This form is to be used to record that the trainee has engaged in at least **1 different activity per year** from the following list:

- Code 7.1** Participate in drug committee meetings. Statement from committee chair regarding trainees role in the committee.
- Code 7.2** Audit antibiotic use in collaboration with a pharmacist.
- Code 7.3** Read papers on drug resistance (while we encourage you to read as many as you like, one only can be counted for the portfolio)
- Code 7.4** Provide clinical advice on appropriate antibiotic use. Keep a diary that records de-identified patient history, advice given and outcomes on up to 10 patients.
- Code 7.5** Other (please specify)

For one (1) of the above activities each year, trainees must write a reflection (approx.100 words) on what they gained from the activity.

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

Trainee name			Trainee ID	Stage of training Y1 Y2 Y3 Y4 Y5 if > Y5 please specify				
	Date	Code	Brief description of activity (including committee name, location, where relevant)	Supervisor signature				
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Appendix 7

Major project proposal and project guidelines

The major project is a significant piece of laboratory-based research work related to the pathogenesis, antimicrobial therapy or diagnosis of infectious diseases. The trainee must personally have done at least 80% of the bench work, either supervised or unsupervised, during accredited training and must generate as well as analyse the data. The project should demonstrate the trainee's ability to plan, perform and present the results of a scientific investigation in medical microbiology. A solely clinical project is not appropriate for satisfying this component of the joint training program.

Examples of **suitable** major projects would be:

- The development of an assay (molecular or serological), novel bacteriological bench tests, utilisation of MALDI-TOF for novel testing e.g.: susceptibility testing, virulence determination etc.
- The development and assessment of novel media
- Typing studies, e.g., MLST, that have been done by the candidate
- Sequencing projects: It is acknowledged that most trainees would not have the skills to undertake a sequencing project unaided. If this is to be a major part of the project, then the candidate must demonstrate that they have spent sufficient time with the relevant bioinformatics resource person and have significantly participated in the process.

Examples of **unsuitable** major projects would be:

- A basic comparison of commercial test kits or platforms as part of validation
- A review of laboratory data relating to susceptibility testing or test methods used where these tests were not performed by the candidate themselves
- A literature review or meta-analysis
- A report on an outbreak where typing of isolates was not done by the candidate
- A clinically based study e.g.: the efficacy of one intervention compared with another.

Project proposal

Before commencing the project, the topic should be discussed with the supervisor and a written proposal must be prepared in consultation with the supervisor. Joint trainees will need to sign a declaration that their proposal is not based on laboratory work that was done in order to fulfil the requirements of a project for the Royal College of Physicians or any other organisation.

The proposal must be sent to the College bea@rcpa.edu.au with **MB Major Project Proposal** in the subject line. The proposal will be reviewed by the Major Project Review Panel. Trainees must not commence the project without the approval of the panel.

The proposal may be submitted for approval after at least one year of microbiology training. The project proposal form is in this **Appendix**.

The examiners will assess the project as satisfactory or not using the following criteria:

- Introduction and aim
- Literature review and references
- Materials and method
- Results and discussion
- Conclusion

If, in the opinion of the examiners, the project work is not satisfactory, you will be asked to revise and resubmit the work. A pass in the Part II assessment will be delayed until the project has been graded as satisfactory.

Trainees may apply to the chief examiner to have **a publication in a refereed medical journal** considered as an alternative to the major project report. The trainee must be the senior or sole author. The published paper is intended to offer an alternative format for the presentation of the major

project. All other criteria are the same as for the major project. The following sections of the **major project proposal form** must be completed: name, ID, stage of training, project title, declaration by candidate, declaration by supervisor.

A **completed and accepted thesis for a higher degree** for which the work must be commenced during accredited training may be considered as an alternative to the major project. The thesis must be on laboratory-based research work related to the pathogenesis, antimicrobial therapy or diagnosis of infectious diseases. The trainee must personally have done at least 80% of the bench work during accredited training, and the work done should demonstrate the trainee's ability to plan, perform and present the results of a scientific investigation in medical microbiology. A solely clinical project is not appropriate. The trainee should also submit a written explanation of why the thesis is a suitable alternative to the major project.

Timeline and guidelines for submission:

The project **proposal** may be submitted after at least one year of accredited training in microbiology. Please email to the RCPA bea@rcpa.edu.au with **MB Major Project Proposal** in the subject line.

The project may **commence** after being approved by the Microbiology Major Project Review Panel.

The **report** of the completed project may not be submitted until after the Part I examination.

Anonymising the report: Ensure that the only place that your name appears is on the cover sheet. Identify yourself only by your RCPA ID elsewhere in the report, including headers and footers. Redact your own name and any information that identifies patients from the report.

Submission: Insert the completed cover sheet and a title page at the front of the report and submit one (1) copy (Adobe pdf) to the College for examination.

Email to the RCPA. bea@rcpa.edu.au with Microbiology Major Project in the subject line.

Submission date: Please refer to the *RCPA Trainee Handbook – Administrative Requirements* (on the RCPA website) for the due date (before the Part II examinations).

If, in the opinion of the examiners, the project work is inadequate, you will be asked to revise and resubmit the work. A pass in the Part II assessment will be delayed until the project has been graded as satisfactory.

 <b style="font-size: 2em; margin: 0;">RCPA The Royal College of Pathologists of Australasia	<b style="font-size: 1.2em;">Microbiology <b style="font-size: 1.2em;">Major project proposal form	
How to use this form This form is to be sent to the College for review and approval by the MB Major Project Review panel. Please do not proceed with the project until you have received the decision of the panel. Please email to the RCPA bea@rcpa.edu.au with MB Major Project Proposal in the subject line.		
DUE DATE: Submit the proposal after at least one year of accredited training but no later than 6 months after having completed the Part I examinations.		
Trainee name	Trainee ID	Stage of training Y1 Y2 Y3 Y4 Y5 if > Y5 please specify
Project title		
Preliminary literature review – please attach separate pages. <i>This should be brief – just enough to summarise and evaluate current knowledge in the field and show why the project is worth doing.</i>		
Methodology - please attach separate pages. <i>Outline and justify the method/s you propose to use. If you intend to collect data, specify the type of data, list the variables of interest and the method/s of analysis, including statistical methods. Include a detailed list of equipment and any other resources you will need.</i>		
Ethics approval <i>If ethics approval is needed, state the committee from which it will be obtained. Indicate how long this will take.</i>		
Schedule - please attach separate pages. <i>Include a schedule with target dates and a Gantt chart for each phase.</i>		
Will the trainee do the work during accredited microbiology training? ☐ No ☐ Yes Will the trainee carry out at least 80% of the bench work ☐ No ☐ Yes Will patient samples be used in this project? ☐ No ☐ Yes If yes: Will the trainee collect the samples? ☐ No ☐ Yes ☐ n/a Will the trainee test the samples (generate the data)? ☐ No ☐ Yes ☐ n/a Will the trainee enter the data? ☐ No ☐ Yes ☐ n/a Will the trainee analyse the data? ☐ No ☐ Yes ☐ n/a		
Declaration by candidate I hereby declare that the proposed laboratory work is original; it is different from work previously submitted to the RACP and I personally will do at least 80% of the bench work.		
Candidate name	Signature	Date
Declaration by laboratory supervisor I hereby give approval for trainee to undertake the project specified in this proposal.		
Supervisor name Supervisor signature and date		
Declaration by project supervisor (if different to the laboratory supervisor) I hereby agree to supervise trainee while undertaking the project specified in this proposal.		
Supervisor name Supervisor signature and date		



Microbiology Part II MAJOR PROJECT cover page

Please attach this cover page to the major project when submitting for examination.

Name of Trainee.....

Name of Supervisor.....

Laboratory.....Date submitted.....

Title of major project.....

Who conceived of this project? If not you alone, please describe your involvement.

Was ethical approval required for the project? ☐ No ☐ Yes Give details

Did you (the trainee) do at least 80% of the bench work ☐ No ☐ Yes

Were patient samples used in this project? ☐ No ☐ Yes

If yes, who collected the samples?

Who stored the samples?

Who tested the samples (generated the data)?

Who entered the data?

Who analysed the data?

How was the project funded? (e.g., laboratory budget, research grant, commercial grant, other?)

Please state any potential or actual conflict of interest associated with the project.

Has the work been, or will it be, submitted for publication? ☐ No ☐ Yes

Who assisted you with the project? (Name, position)

Trainee's declaration: "I certify that I undertook this project during my accredited training in microbiology and performed at least 80% of the benchwork. The project is original, it has not been used by any other trainee in this laboratory nor submitted to fulfil the project requirements of the RACP. I have read and understand RCPA Policy 10/2002 on Plagiarism and Cheating in Examinations.

Trainee signature.....date.....

Supervisor's declaration: I certify Dr. undertook this project during training in microbiology. The work is original and has not been used by any other trainee in this laboratory. I have reviewed this project report and read the project requirements and believe it is suitable for submission to the RCPA examiners

Supervisor name (print) Signature.....

Date.....

Appendix 8

Minor project guidelines

The minor project report should demonstrate the Trainee's understanding of laboratory practice. Whichever option chosen, it must emphasise microbiological pathogenesis and/or microbiological diagnostics in at least 75% of the report. The report should be 1000 – 3000 words, plus references. It must be the work of the candidate alone and must not have been submitted for assessment previously, e.g., to satisfy the infectious diseases project requirements of joint training program candidates.

Suitable projects may include, but are not restricted to:

- Case based report focusing on the laboratory issues of diagnosis and testing;
- Literature review of a relevant topic;
- Audit of a specific test, with recommendations for change if appropriate, including cost, turnaround times, sensitivity, specificity and measurement of uncertainty.

Timeline: The project may be commenced after at least six months of accredited training in microbiology. Please refer to the *RCPA Trainee Handbook – Administrative Requirements* (on the RCPA website) for the due date.

Anonymising the report: Ensure that the only place that your name appears is on the cover sheet. Identify yourself only by your RCPA ID elsewhere in the report, including headers and footers. Redact your own name and any information that identifies patients from the report.

Submission: Insert the completed cover sheet and a title page at the front of the report and submit one (1) copy to the College for examination.

Email the report (Adobe pdf) to the RCPA. bea@rcpa.edu.au with Microbiology Minor Project in the subject line.

The examiners will assess the project as satisfactory or not using the following criteria:

- • Literature review & references
- • Appropriate approach to topic
- • Clarity of discussion
- • Presentation (logical, with correct grammar and spelling)

If, in the opinion of the examiners, the project work is inadequate, you will be asked to revise and resubmit the work. A pass in the Part II assessment will be delayed until the project has been graded as satisfactory.



Microbiology Part II MINOR PROJECT cover page

Please attach this cover page to the minor project when submitting for examination.

Name of Trainee.....

Name of Supervisor.....

Laboratory.....Date submitted.....

Title of minor project.....

Type of project

- ☐ Case report – focusing on diagnosis and testing
- ☐ Audit of a laboratory test
- ☐ Literature review
- ☐ Other (please specify)

Trainee's declaration: "I certify that I undertook this project during my accredited training in microbiology. The project is original and has not been used by any other trainee in this laboratory. I have read and understand RCPA Policy 10/2002 on Plagiarism and Cheating in Examinations.

Trainee signature.....date.....

Supervisor's declaration: I certify Dr. undertook this project during training in microbiology. The work is original and has not been used by any other trainee in this laboratory. I have reviewed this project report and read the project requirements and believe it is suitable for submission to the RCPA examiners.

Supervisor name (print)

.....signature.....date.....

Appendix 9

Assessment matrix

	Outcomes to be assessed Outcomes are organised according to the RCPA common curriculum framework	Assessment method (see key below)									
		Part I			Part II				Portfolio		
		A	B	C	D	E	F	G	H	I	J
1.1	Foundation knowledge and skills	X	X	X							
1.2	Public health and preventive medicine	X		X			X			X	X
1.3	Use of antimicrobial agents	X		X			X			X	X
1.4	Infection control	X		X			X			X	X
1.5	Pre-analytic: select, collect, transport specimens	X		X			X		X	X	X
1.6	Pre-analytic: selection of tests	X	X	X			X		X	X	X
1.7	Analytic: microscopy	X	X	X			X		X	X	X
1.8	Analytic: culture	X	X	X			X		X	X	X
1.9	Analytic: identify microorganisms to species level	X	X	X			X		X	X	X
1.10	Analytic: non-culture detection – not microscopy	X	X	X			X		X	X	X
1.11	Analytic phase: susceptibility testing	X	X	X			X		X	X	X
1.12	Analytic: manage specimens, equipment, data	X	X	X			X		X	X	X
1.13	Post-analytic phase: report generation		X				X		X	X	X
2.1	Quality management: assurance & control		X	X	X	X	X	X	X	X	X
2.2	Laboratory safety		X	X	X	X	X	X	X	X	X
2.3	Compliance with local legislation		X	X	X	X	X	X	X	X	X
2.4	Manage people						X			X	X
2.5	Manage resources						X			X	X
2.6	Information fundamentals		X		X	X		X	X		X
3.1	Research and critical appraisal				X	X	X	X		X	X
3.2	Undertake self-education and CPD				X	X		X		X	X
3.3	Educate colleagues staff, patients/families						X				X
3.4	Provide data for planning and evaluation				X	X					X
4.1	Ethics and confidentiality				X	X	X	X		X	X
4.2.1	Communication - oral		X	X			X			X	X
4.2.2	Communication – report writing	X	X			X					X
4.2.3	Communication – academic writing				X	X		X			X
4.3	Collaboration and teamwork		X		X	X	X				X
4.4	Cultural competence			X			X			X	X

Assessment methods	
A Part I written exams A and B	J Portfolio evidence in the following categories:
B Part I wet practical exam in own laboratory	Safety
C Part I structured oral exam	Incident reports
D Part II major project: scientific investigation	Presentations at clinical meetings
E Part II minor project: on laboratory practice	Research and scholarship activities
F Part II structured oral exam	Quality
G Part II research thesis, e.g. PhD	Management
H DOPS: directly observed practical skills	Ethics
I CbD: case-based discussion	Cultural competence

Appendix 10

Examination progression flow chart

This table is intended as an overview. Please refer to Appendixes 2 and 3 and the [Allocation of Grades Procedure](#) for essential details about these examinations.

