Diagnostic and Clinical Pathology Training Experiences

2019
MINOR REVISION - OCTOBER 2023
VERSION 1.1

These training requirements apply to those who begin training on or after July 1, 2019.

The following training experiences are required or recommended, as indicated.

TRANSITION TO DISCIPLINE (TTD)

The focus of this initial stage is the orientation of new trainees to the program and institution policies, protocols, resources, and facilities, including laboratory safety and issues of privacy and confidentiality. During this stage residents will participate in basic specimen handling and microscopy and demonstrate an understanding of clinicopathologic correlation.

Required training experiences (TTD stage):

1. Clinical training experiences
    1.1. Observation and select participation in
        1.1.1. Gross specimen dissection
        1.1.2. Autopsy
        1.1.3. Intraoperative consultation
        1.1.4. Laboratory bench work
        1.1.5. Laboratory workflow for individual specimens, from accessioning to reporting of results in all diagnostic and clinical pathology* domains

    1.2. Basic operation of a microscope
        1.2.1. Köhler illumination
        1.2.2. Peripheral blood smear morphology

    1.3. Basic operation of digital imaging software

2. Other training experiences
    2.1. Orientation to pathology services
        2.1.1. Clinical areas, including diagnostic and molecular pathology, biochemistry, hematological pathology, and microbiology
        2.1.2. Multi-headed microscope and conference room
        2.1.3. Laboratory safety, including Workplace Hazardous Materials Information System (WHMIS) and personal protective equipment (PPE)
        2.1.4. Laboratory information system (LIS)

* Formerly recognized by the Royal College as General Pathology. The discipline name change was officially approved in November 2022.

2.1.5. Privacy and confidentiality requirements

2.2. Orientation to the program, hospital, and university
- 2.2.1. Orientation to Competence by Design, and initiation of electronic portfolio
- 2.2.2. Orientation to postgraduate medical education (PGME) office policies, procedures, and resources
- 2.2.3. Orientation to program expectations, including after-hours responsibilities, scheduling, and formal instructional sessions
- 2.2.4. Orientation to hospital policies and the institutional code of conduct

2.3. Formal instruction in
- 2.3.1. Consent for autopsy
- 2.3.2. Normal anatomy and histology
- 2.3.3. Specimen collection and handling
- 2.3.4. Workflow of a specimen from collection to reporting
- 2.3.5. Phases of testing
- 2.3.6. Normal laboratory values
- 2.3.7. Critical values

Recommended training experiences (TTD stage):

3. Other training experiences
   - 3.1. Orientation to the provincial resident professional organization, including contractual rights and obligations
   - 3.2. Orientation to provincial and territorial college registration and practice requirements

Optional training experiences (TTD stage):

4. Clinical training experiences
   - 4.1. Multidisciplinary oncology rounds

5. Other training experiences
   - 5.1. Formal instruction in
     - 5.1.1. Introduction to research ethics and methodology
   - 5.2. Journal club or other formal teaching in critical appraisal
   - 5.3. Career planning sessions to develop learning plans

FOUNDATIONS OF DISCIPLINE (F)

The focus of this stage is the development of the knowledge and skills required to integrate clinical and laboratory information in the evaluation of disease processes. This includes assessing patients, performing select clinical diagnostic procedures, performing gross dissection of simple specimens, selecting specimens for ancillary tests, and generating pathology reports for simple cases. During this stage residents will demonstrate their understanding of hospital autopsy protocol and perform basic technical tasks in autopsies.

Required training experiences (Foundations stage):

1. Clinical training experiences
    1.1. Pathology
        1.1.1. Observation of specimen accessioning and collection
        1.1.2. Surgical pathology
            1.1.2.1. Intraoperative consultation suite
            1.1.2.2. Gross dissection room
            1.1.2.3. Histology/cytopathology laboratory
            1.1.2.4. Autopsy suite
        1.1.3. Biochemistry laboratory
        1.1.4. Microbiology laboratory
        1.1.5. Hematological pathology laboratory, including morphological hematology and transfusion medicine
        1.1.6. Molecular/cytogenetics laboratory
        1.1.7. Digital imaging/photography
    1.2. Patient care areas
        1.2.1. Hematology clinics, including performance of bone marrow aspirate and biopsy
        1.2.2. Endocrinology clinic or other internal medicine service relevant to biochemistry
        1.2.3. Oncology clinics
        1.2.4. Infectious disease consultation service
        1.2.5. Multidisciplinary case conferences or rounds discussing clinical cases, in each of the patient care areas referred to above
    1.3. Medical imaging, across a range of body sites and diagnostic and interventional studies, including attendance at multidisciplinary case conferences
2. Other training experiences
    2.1. Formal instruction in
        2.1.1. Principles of special stains, immunomarkers, and ancillary studies
        2.1.2. Normal histology
        2.1.3. Basic plate morphology
        2.1.4. Normal morphology of the peripheral blood smear
        2.1.5. Bone marrow histology

- 2.1.6. Coagulation pathway and abnormalities
- 2.1.7. Transfusion reactions
- 2.1.8. Principles of instrumentation
- 2.1.9. Evaluation of laboratory methods
- 2.1.10. Determination of reference ranges
- 2.1.11. Dealing with critical values
- 2.1.12. Basic laboratory safety
- 2.1.13. Laboratory management
- 2.1.14. Quality control, including resolving pre-analytical, analytical, and post-analytical issues in laboratory medicine
- 2.1.15. Legal requirements and the ethics and principles of informed consent for autopsy
- 2.1.16. Principles of research
  - 2.1.16.1. Ethics
  - 2.1.16.2. Statistics
  - 2.1.16.3. Methodology

- 2.2. Participation in a scholarly project
- 2.3. Facilitated review and reflection on multisource feedback on performance in residency by program director or other supervisor

Recommended training experiences (Foundations stage):

3. Clinical training experiences
   - 3.1. Performance of fine needle aspiration (FNA)
   - 3.2. Observation of endobronchial ultrasound (EBUS)
   - 3.3. Observation of the activities at a Canadian Blood Services (CBS) centre, including donation, blood handling, and distribution
   - 3.4. Patient care areas
     - 3.4.1. Dermatology clinics
     - 3.4.2. Gastrointestinal endoscopy
     - 3.4.3. Gynecology clinics and colposcopy

4. Other training experiences
   - 4.1. Formal instruction in
     - 4.1.1. Teaching skills
     - 4.1.2. Critical appraisal
     - 4.1.3. Breaking bad news
     - 4.1.4. Confidentiality and privacy

   - 4.2. Formal training or courses in research methodology, ethics, and biostatistics

Optional training experiences (Foundations stage):

5. Clinical training experiences
    5.1. Orientation to slide scanners and digital pathology
    5.2. Training in collection and handling of specimens for molecular testing

CORE OF DISCIPLINE (C)

In this stage, residents build on the skills and knowledge of the previous stages to provide routine laboratory clinical consultations and manage diagnostic and ancillary testing for cases relevant to diagnostic and molecular pathology, medical biochemistry, medical microbiology relevant to a community setting, and hematological pathology and transfusion medicine, including generating complete and diagnostically accurate reports. Trainees at this stage will take on additional responsibility for laboratory management, including participating in activities related to resource management, instrumentation validation, and quality improvement and assurance. In addition trainees will engage in teaching and scholarly activities relevant to Diagnostic and Clinical Pathology.

Required training experiences (Core stage):

1. Clinical training experiences
    1.1. Laboratory management across the breadth of the discipline
        1.1.1. Method selection
        1.1.2. Instrument selection
        1.1.3. Validation
        1.1.4. Quality improvement, including quality control and quality assurance

    1.2. Diagnostic and molecular pathology
        1.2.1. Intraoperative consultation suite
        1.2.2. Gross dissection room
        1.2.3. Accessioning station
        1.2.4. Histology laboratory
        1.2.5. Cytopathology laboratory
            1.2.5.1. Gynecologic cytopathology
            1.2.5.2. Non-gynecologic cytopathology

        1.2.6. Immunohistochemistry/special stain laboratory
        1.2.7. Autopsy suite
            1.2.7.1. Hospital autopsy
            1.2.7.2. Forensic autopsy

        1.2.8. Pediatric pathology, including placental examination and fetal autopsy
        1.2.9. Multidisciplinary case conferences for clinicopathologic correlation, including tumour board

- 1.3. Medical biochemistry
  - 1.3.1. Bench experiences in
    - 1.3.1.1. General biochemistry
    - 1.3.1.2. Immunology
    - 1.3.1.3. Serology
    - 1.3.1.4. Serum and urine protein electrophoresis
    - 1.3.1.5. Toxicology
    - 1.3.1.6. Urine, body fluid, and cerebrospinal fluid microscopy; joint crystals
  - 1.3.2. Point-of-care testing
- 1.4. Medical microbiology
  - 1.4.1. Bench work in
    - 1.4.1.1. Bacteriology
    - 1.4.1.2. Mycology
    - 1.4.1.3. Parasitology
    - 1.4.1.4. Virology, including molecular virology
  - 1.4.2. Plate rounds
  - 1.4.3. Participation in infection control activities
- 1.5. Hematological pathology
  - 1.5.1. Morphological hematology: preparation and reporting of
    - 1.5.1.1. Peripheral blood smears
    - 1.5.1.2. Lymph node specimens
    - 1.5.1.3. Bone marrow specimens
  - 1.5.2. Flow cytometry
  - 1.5.3. Transfusion medicine bench work, including performance of blood typing and screening
  - 1.5.4. Preparation and reporting of
    - 1.5.4.1. Coagulation studies
    - 1.5.4.2. Hemoglobinopathy, enzymopathy, and membranopathy investigations
- 1.6. Participation in death scene investigation and/or review of death scene investigative information
- 1.7. Diagnostic and Clinical Pathology in a community-based or non-tertiary hospital

2. Other training experiences
   - 2.1. Formal instruction in
     - 2.1.1. Laboratory automation
     - 2.1.2. Principles of informatics
     - 2.1.3. Principles and programs of quality control
     - 2.1.4. Requirements for reportable diseases

2.1.5. Handling of biological hazards
2.1.6. Cytopathology
2.1.7. Cytohistological correlation
2.1.8. Forensic pathology
2.1.8.1. Autopsy reporting
2.1.8.2. Principles of death scene investigation
2.1.8.3. Relevant legislation and regulation

2.1.9. Molecular pathology
2.1.10. Biochemistry
2.1.10.1. Methodology
2.1.10.2. Instrumentation
2.1.10.3. Serology
2.1.10.4. Electrophoresis
2.1.10.5. Toxicology

2.1.11. Microbiology, including
2.1.11.1. Automation and quality improvement
2.1.11.2. Bacteriology, including containment level 3 laboratory and special precautions
2.1.11.3. Mycology
2.1.11.4. Virology, including containment level 4 laboratory and special precautions
2.1.11.5. Parasitology
2.1.11.6. Prions

2.1.12. Medical imaging relevant to Diagnostic and Clinical Pathology
2.1.13. The application and limitations of routine genetic tests and their results

2.2. Teaching
2.2.1. Laboratory staff, other junior colleagues and health professionals
2.2.2. Formal presentations at division-wide rounds or multidisciplinary meetings

2.3. Presentation of research project at departmental research day
2.4. Facilitated review of multisource feedback on performance in residency by program director or other supervisor

Recommended training experiences (Core stage):

3. Clinical training experiences
3.1. Neuropathology gross dissection
3.2. FNA clinic
3.3. Forensic toxicology laboratory
3.4. Infectious disease case conferences
3.5. Public health testing

3.6. Bone marrow clinic
3.7. Thrombosis clinic
3.8. Tissue typing laboratory
3.9. Transfusion medicine laboratory for performance of antibody screening
3.10. Observation of CBS collection and production activities
3.11. Morbidity and mortality rounds

4. Other training experiences
   4.1. Participation in laboratory inspection and/or provincial, territorial, or national laboratory accreditation
   4.2. Simulation exercises in disaster and pandemic planning
   4.3. Attendance at national and/or international meetings and conferences relevant to Diagnostic and Clinical Pathology

Optional training experiences (Core stage):

5. Clinical training experiences
   5.1. Neuropathology
   5.2. Pediatric pathology
   5.3. Electron microscopy laboratory
   5.4. Attendance at court for observation of forensic pathology testimony
   5.5. Observation of embalming at a funeral home
   5.6. Environmental biochemistry and microbiology testing
   5.7. Newborn screening and medical genetics laboratory
   5.8. National Microbiology Laboratory in Winnipeg
   5.9. Observation of medical officer of health activities, including epidemiology outbreak investigation
   5.10. Apheresis clinic
   5.11. Cellular therapy clinic
   5.12. Platelet and/or bleeding disorder clinic

6. Other training experiences
   6.1. Formal courses or training in leadership skills, such as courses offered by the Physician Leadership Institute

TRANSITION TO PRACTICE (TTP)

The focus of this stage is the consolidation of skills required to lead daily operations of the laboratory and independently manage a full caseload across the breadth of pathology practice. Residents will also be responsible for creating a career development plan and advocating for and implementing quality assurance practices.

Required training experiences (TTP stage):

1. Clinical training experiences
    1.1. Diagnostic and Clinical Pathology across all laboratory areas, including
        1.1.1. Full caseload of reporting responsibilities
        1.1.2. Leadership of gross dissection rounds
        1.1.3. Leadership of multidisciplinary rounds
        1.1.4. After-hours coverage of the pathology service

2. Other training experiences
    2.1. Participation in operational meetings and/or committees
    2.2. Leadership in laboratory quality assurance
    2.3. Supervision and formal teaching for junior residents and other medical learners
    2.4. Career development activities, including establishing a relationship with a mentor
    2.5. Formal instruction in
        2.5.1. Negotiation skills regarding
            2.5.1.1. Contracts
            2.5.1.2. Workload
        2.5.2. Licensing requirements
        2.5.3. Medical liability and malpractice
    2.6. Planning for professional development
    2.7. Facilitated review of multisource feedback on performance in residency by program director or other supervisor

Recommended training experiences (TTP stage):

3. Clinical training experiences
    3.1. Area(s) of interest for preparation to practice and/or post-residency training

4. Other training experiences
    4.1. Formal courses or training in leadership skills, such as courses offered by the Physician Leadership Institute
    4.2. Mock interviews
    4.3. Formal instruction in practice management, including
        4.3.1. Personal and practice finances
        4.3.2. Incorporation
        4.3.3. Legal aspects of practice

CERTIFICATION REQUIREMENTS

Royal College certification in Diagnostic and Clinical Pathology requires all of the following:

1. Successful completion of the Royal College examination in Diagnostic and Clinical Pathology; and
2. Successful completion of the Royal College Diagnostic and Clinical Pathology Portfolio.

NOTES:

The Diagnostic and Clinical Pathology Portfolio refers to the list of entrustable professional activities across all four stages of the residency Competence Continuum, and associated national standards for assessment and achievement.

MODEL DURATION OF TRAINING

Progress in training occurs through demonstration of competence and advancement through the stages of the Competence Continuum. Diagnostic and Clinical Pathology is planned as a 5-year residency program. There is no mandated period of training in each stage. Individual duration of training may be influenced by many factors, which may include the student's singular progression through the stages, the availability of teaching and learning resources, and/or differences in program implementation. Duration of training in each stage is therefore at the discretion of the faculty of medicine, the competence committee, and the program director.

Guidance for programs

The Royal College Specialty Committee in Diagnostic and Clinical Pathology's suggested course of training, for the purposes of planning learning experiences and schedules, is as follows:

1-3 months in Transition to Discipline

10-12 months in Foundations of Discipline

36-42 months in Core of Discipline

6-9 months in Transition to Practice

Guidance for postgraduate medical education offices

The stages of the Competence Continuum in Diagnostic and Clinical Pathology are generally no longer than

3 months for Transition to Discipline

12 months for Foundations of Discipline

42 months for Core of Discipline

9 months for Transition to Practice

This document is to be reviewed by the Specialty Committee in Diagnostic and Clinical Pathology by December 31, 2026.

Drafted – Specialty Committee in General Pathology – October 2018
Approved – Specialty Standards Review Committee – November 2018
Drafted – Specialty Committee in Diagnostic and Clinical Pathology – October 2023
Approved – Office of Standards and Assessment – October 2023