## Appendix A

## Syllabus for ICPT and Histopathology Higher Specialty Training

This syllabus document is an adjunct to the curriculum and is to guide aspects of learning expected to be covered during Integrated Cellular Pathology Training (ICPT) and histopathology higher specialty training. The syllabus is not designed to be prescriptive or exhaustive as indicative content may quickly become out of date. The document is a guide for trainees and trainers. Whilst trainees are expected to encounter common specimen types in most hospital settings, it is recognised that due to centralisation of some services, not all centres will be able to provide experience in all the organ systems mentioned in the syllabus. However it is expected that the trainees will have access to most of the specimen types during some part of their five-year training programme. Trainees are expected to refer to and follow the most up-to-date Cancer Datasets and Tissue Pathways documents, which are available on the RCPath website. Learning is an incremental process and as such the trainees will gradually undertake more complex specimen types and techniques as they progress through their training, particularly in years 3–5.

Broad topic areas included in the syllabus are as follows:

- Deeper understanding of undergraduate medical pathology, the pathological basis of disease and anatomy
- Macroscopic and microscopic appearance of disease processes in organs, samples of tissues and cellular specimens, across all organ systems
- The autopsy process
- The role of the history and associated clinical information in interpreting pathological findings
- Evolving ways of working: digital pathology, molecular pathology and digital autopsy
- Report production: quality aspects, writing, recording and working with IT systems
- Laboratory organisation, accreditation and management
- Generic skills relating to health and safety, legal and ethical frameworks, education and supporting research
- General principles of working in the cellular pathology smaller specialties

Syllabus overview for histopathology higher specialty training:

- Working with systems-specific members of the multidisciplinary team
- Pathology relating to all the adult organ system excluding the nervous system

### I. Integrated Cellular Pathology Training Syllabus

This is a competency-based curriculum and as such there are no absolute minimum numbers. However, it is anticipated that most trainees will achieve the competencies required with the indicative minimum practical experience detailed below (per Whole Time Equivalent (WTE) training year):

**Year 1**
Surgical histopathology – 500 cases
Cytopathology – 150 cervical and 150 non-cervical cytology cases, which may either be new cases or be seen in the context of teaching sets with appropriate structured feedback from an experienced trainer.

**Year 2**
Surgical histopathology – 750 cases

Cytopathology – 200 cervical and 200 non-cervical cytology cases, which may either be new cases or be seen in the context of teaching sets with appropriate structured feedback from an experienced trainer.

The table below is a non-exhaustive list of further syllabus information. It is recognised that indicative content may quickly become out of date.

| **Areas of learning** | **Knowledge** | **Skills** |
|---|---|---|
| Basic knowledge (CiPs: 1, 2, 3, 4, 5, 9, 11) | Demonstrates sufficient general clinical knowledge including major changes in trends of diagnosis and treatment<br><br>Possesses sufficient knowledge of normal anatomy, physiology and pathophysiology | Develops the ability to solve complex clinical and research problems by applying sound knowledge of basic principles without the requirement always to rely on 'pattern matching' |
| Surgical cut-up (CiPs: 9, 11) | Understands principles of specimen dissection, macroscopic description and block selection in neoplastic and non-neoplastic disease | Possesses sufficient manual dexterity to perform dissection safely and accurately, without damage to tissues |
| Laboratory processes (CiPs: 1, 2, 3, 4, 7, 8, 9, 11) | Understands the principles of laboratory processing within surgical pathology and cytopathology | Gains experience of laboratory processing including section cutting at the start of training |
| Surgical reporting (CiPs: 7, 9, 11) | Understands the principles of microscopy<br><br>Demonstrates knowledge of the microscopic features of the range of normality within tissues as well as the major common pathological processes and patterns of disease | Demonstrates ability to set up a microscope with ergonomic safety and operate it effectively<br><br>Demonstrates ability to recognise the microscopic features of tissue structure in normality and disease |
| Special techniques (CiPs: 7, 9, 11) | Understands principles of 'special' histochemical and immunohistochemical methods | Understands when to resort to special techniques<br><br>Demonstrates ability to recognise histological features of histochemical and immunohistochemical stains in normal and diseased tissues |
| Fundamentals of molecular biology (CiPs: 1, 2, 7, 9, 11) | Understands principles of common molecular pathology techniques.<br><br>Understand principles of electron microscopy | Demonstrates ability to understand origins of, and justifications for, molecular tests<br><br>Demonstrates ability to retrieve relevant data from public sources |

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| | Demonstrates understanding of the origins and consequences of germ-line variation and somatic mutations, including DNA methylation and gene expression changes<br><br>Demonstrates knowledge of basic molecular databases<br><br>Demonstrates knowledge of how histological samples are taken, prepared and of how nucleic acids are extracted from them<br><br>Understands the principles of the most up-to-date molecular methods<br><br>Demonstrates knowledge of molecular tests currently performed on histological samples, including the limitations of these tests and of tests that are anticipated in the near future | Demonstrates ability to undertake the appropriate sample collection, retrieval and preparation for the common molecular tests, whether performed on extracted nucleic acid or in situ<br><br>Demonstrates knowledge of sequencing, PCR, microarrays (DNA and RNA), in situ hybridisation and mutation detection<br><br>Demonstrates ability to assess the demand for molecular tests and the modes of supply |

| **Areas of learning** | **Knowledge** | **Skills** |
|---|---|---|
| General pathology (CiPs: 7, 9, 11) | Correctly identifies patient details relevant to each specimen<br><br>Demonstrates understanding of normal anatomy and histology<br><br>Demonstrates understanding of the pathological basis of disease<br><br>Demonstrates understanding of common pathological abnormalities<br><br>Demonstrates understanding of lymph node anatomy and dissection in cancer specimens | Sets up a microscope correctly<br><br>Recognises normal histology and normal variations of common tissue types<br><br>Selects/identifies appropriate histochemical stains for glycogen, fat, mucins, amyloid, etc<br><br>Demonstrates familiarity with basic immunohistochemical markers for major tissue and tumour types and interpretation of a basic panel of immunohistochemical markers on an undifferentiated tumour<br><br>Correctly orientates specimens<br><br>Opens fresh specimens<br><br>Correctly obtains fresh tissue |

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| | | for touch preparation, freezing, electron microscopy, genomic studies, etc |

| **Areas of learning** | **Knowledge** | **Skills** |
|---|---|---|
| Breast pathology (CiPs: 1, 2, 4, 7, 9, 11) | Demonstrates understanding of the NHS Breast Screening Programme's (NHSBSP) guidelines for pathology reporting in breast cancer screening and The Royal College of Pathologists' dataset for breast cancer<br><br>Demonstrates understanding of commonly encountered neoplastic and non-neoplastic disease processes. For example:<br>• ductal carcinoma in situ<br>• invasive carcinoma of no special type (NST)<br>• invasive lobular carcinoma<br>• fibrocystic change<br>• fibroadenoma<br>• other common benign breast lesions | Demonstrates ability to apply the appropriate NHSBSP categories (B1–B5) on needle core biopsy<br><br>Describes, dissects and reports mastectomy or wide local excision specimens<br><br>Demonstrates the ability to assess wide local excision for macroscopic tumour and sample appropriately<br><br>Demonstrates the ability to assess and sample axillary lymph node dissection appropriately<br><br>Demonstrates the ability to screen the specimen for microcalcification |

| **Areas of learning** | **Knowledge** | **Skills** |
|---|---|---|
| Upper gastrointestinal tract (CiPs: 7, 9, 11) | Demonstrates understanding of various specimens obtained for example via:<br>• oesophagectomy<br>• gastrectomy<br>• antrectomy<br>• polypectomy<br>• EMR<br><br>Demonstrates understanding of commonly encountered neoplastic and non-neoplastic disease processes. For example:<br>• Helicobacter-associated gastritis<br>• reactive gastritis<br>• Barrett's oesophagus<br>• oesophageal carcinoma<br>• gastric carcinoma | Able to interpret and report endoscopic biopsies<br><br>Recognises common diseases; e.g. Helicobacter-associated gastritis, oesophageal and gastric malignancy, etc<br><br>Describes, dissects and reports oesophageal and gastric resection specimens |

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| | • coeliac disease<br>• duodenitis<br>• GIST<br>• neuroendocrine tumours | |

| **Areas of Learning** | **Knowledge** | **Skills** |
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| Lower gastrointestinal tract<br>(CiPs: 1, 2, 4, 7, 9, 11) | Demonstrates understanding of the NHS Bowel Cancer Screening Programme's (NHSBCSP) guidelines for pathology reporting in bowel cancer screening and The Royal College of Pathologists' dataset for colorectal cancer<br><br>Demonstrates understanding of specimens obtained for example via:<br>• colectomy/proctectomy for cancer or inflammatory bowel disease<br>• appendicectomy<br>• polypectomy<br>• EMR<br><br>Demonstrates understanding of commonly encountered neoplastic and non-neoplastic disease processes. For example:<br>• appendicitis<br>• inflammatory bowel disease.<br>• Not otherwise specified (NOS)<br>• hyperplastic polyp<br>• sessile serrated lesion<br>• adenomatous polyp<br>• high-grade dysplasia<br>• colorectal carcinoma<br>• neuroendocrine tumours | Able to interpret and report endoscopic biopsies<br><br>Recognise and report colorectal carcinoma on biopsy<br><br>Identify presence of inflammatory bowel disease and attempt to classify type on biopsy<br><br>Distinguish serrated from adenomatous polyps<br><br>Recognise low- and high-grade dysplasia<br><br>Describe, dissect and report colorectal carcinoma and non-neoplastic resection specimens |

| **Areas of learning** | **Knowledge** | **Skills** |
|---|---|---|
| Respiratory pathology<br>(CiPs: 7, 9, 11) | Demonstrates understanding of specimens obtained for example via:<br>• bronchial biopsies<br>• open biopsy of lung<br>• pneumonectomy or | Describes, dissects and reports resection specimens such as segmental resection, lobectomy and pneumonectomy<br><br>Recognises the presence of the |

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| | lobectomy<br>• pleural biopsy<br><br>Demonstrates understanding of commonly encountered neoplastic and non-neoplastic disease processes, for example:<br>• squamous cell carcinoma<br>• small cell carcinoma<br>• adenocarcinoma<br>• metastatic carcinoma<br>• vasculitis<br>• interstitial pneumonia<br>• mesothelioma | common subtypes of primary lung cancer in biopsies and resection specimens<br><br>Recognises the presence of metastatic cancer in the lung<br><br>Recognises common patterns of interstitial lung disease |

| **Areas of learning** | **Knowledge** | **Skills** |
|---|---|---|
| Skin<br>(CiPs: 7, 9, 11) | Demonstrates understanding of commonly encountered neoplastic and non-neoplastic disease processes, for example:<br>• basal cell carcinoma<br>• squamous cell carcinoma<br>• melanoma<br>• melanocytic naevi<br>• haemangioma<br>• seborrhoeic keratosis<br>• actinic keratosis<br>• chronic dermatitis NOS<br>• epidermal inclusion cysts<br>• dermatofibroma,<br>• acantholytic diseases<br>• vesiculobullous disorders,<br>• cutaneous infections | Able to diagnose basic skin cancer types including squamous cell carcinoma, basal cell carcinoma and typical cases of melanoma<br><br>Recognises common naevi and presence of atypical features in naevi<br><br>Demonstrates adequate morphological description of features seen in common inflammatory skin lesions<br><br>Demonstrates accurate gross description of skin lesions<br><br>Demonstrates appropriate handling of orientated or complex skin specimens |

| **Areas of learning** | **Knowledge** | **Skills** |
|---|---|---|
| Lymphoreticular pathology<br>(CiPs: 7, 9, 11) | Demonstrates understanding of:<br>• reactive lymphadenitis including follicular hyperplasia, sinus histiocytosis, dermatopathic change, etc<br>• high-grade lymphoma<br>• common types of low-grade lymphoma | Able to describe, dissect and report lymph node, splenectomy specimens<br><br>Able to screen lymph node dissections for metastatic tumour<br><br>Able to screen lymph node for neoplastic and non-neoplastic |

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| | • Hodgkin's lymphoma<br>• granulomatous diseases<br>• metastatic carcinoma, etc | disease<br><br>Recognises common reactive node patterns including follicular hyperplasia and sinus histiocytosis<br><br>Able to diagnose high-grade lymphoma, common types of low-grade lymphoma and Hodgkin's lymphoma in lymph node specimens and bone marrow biopsies<br><br>Gains experience of examining bone marrow trephine biopsies, where locally available<br><br>Demonstrates the ability to sample tissue for supplementary techniques (e.g. flow cytometry and molecular studies) |

| **Areas of learning** | **Knowledge** | **Skills** |
|---|---|---|
| **Head and neck pathology**<br>(CiPs: 7, 9, 11) | Demonstrates understanding of specimens obtained for example via:<br>• mucosal biopsy<br>• tonsillectomy<br>• nasal polypectomy<br>• salivary gland tumour resections<br>• radical neck dissection<br><br>Demonstrates understanding of commonly encountered neoplastic and non-neoplastic disease processes, for example:<br>• simple nasal polyps<br>• reactive, benign and malignant conditions of the tonsils<br>• salivary gland tumours such as pleomorphic adenoma, adenocarcinoma, Warthin's tumour<br>• tumours of the nasopharynx and larynx | Able to describe, dissect and report tonsillectomy, polypectomy, salivary gland biopsies and resections, lymph node excisions, neck dissections, biopsies from the pharynx, larynx and upper respiratory tract<br><br>Recognises reactive changes in tonsils and distinguishes from high-grade lymphoma |

| Areas of learning | Knowledge | Skills |
|---|---|---|
| Gynaecological pathology<br>(CiPs: 7, 9, 11) | Demonstrates understanding of specimens obtained for example via:<br>• hysterectomy and/or salpingo-oophorectomy for malignant or benign disease<br>• cervical loop/cone biopsy<br><br>Demonstrates understanding of commonly encountered neoplastic and non-neoplastic disease processes, for example:<br>• common uterine conditions such as leiomyoma, secretory and proliferative endometrium, endometrial atrophy and endometrial carcinoma<br>• common cervical conditions such as cervical carcinoma and chronic cervicitis<br>• common ovarian conditions such as ovarian cystic follicles/theca cysts, ovarian cystadenoma and ovarian cystadenocarcinoma | Recognises leiomyomata, secretory and proliferative endometrium, and endometrial and cervical carcinoma<br><br>Describes, dissects and reports hysterectomy and/or salpingo-oophorectomy specimens, etc |

| Areas of learning | Knowledge | Skills |
|---|---|---|
| Liver and pancreatobiliary pathology<br>(CiPs: 7, 9, 11) | Demonstrates understanding of specimens obtained via:<br>• liver biopsy<br>• resections for metastatic tumour<br>• cholecystectomy<br><br>Demonstrates understanding of commonly encountered neoplastic and non-neoplastic disease processes, for example:<br>• chronic cholecystitis<br>• cholesterolosis<br>• steatosis<br>• cirrhosis NOS | Demonstrates appropriate handling and reporting of liver biopsies<br><br>Able to describe, dissect and report cholecystectomies, liver resections and in later years complex pancreatobiliary resections specimens<br><br>Recognises normal liver on needle biopsy<br><br>Appropriate use of special stains and immunohistochemistry |

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| | • chronic hepatitis NOS<br>• metastatic carcinoma<br>• chronic pancreatitis and pancreatic neoplasia | Identifies presence of cirrhosis, hepatitis or metastatic tumour in needle biopsy |

| **Areas of learning** | **Knowledge** | **Skills** |
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| Cardiovascular pathology<br>(CiPs: 7, 9, 11) | Demonstrates knowledge of blood vessels, including temporal artery biopsy<br><br>Demonstrates knowledge of temporal arteritis and atheroma | Recognises inflammation in temporal artery specimens |

| **Areas of learning** | **Knowledge** | **Skills** |
|---|---|---|
| Renal and urological pathology<br>(CiPs: 7, 9, 11) | Demonstrates understanding of specimens obtained for example via:<br>• renal biopsies<br>• bladder biopsies<br>• nephrectomy specimens<br>• cystectomy specimens<br><br>Demonstrates understanding of commonly encountered neoplastic and non-neoplastic disease processes, for example:<br>• bladder carcinoma<br>• renal cell carcinoma<br>• pyelonephritis<br><br>Understands the value of immunohistochemistry and electron microscopy in the diagnosis of glomerulonephritis | Assesses deviation from normal histology<br><br>Recognises the presence of dysplasia and cancer in bladder biopsies<br><br>Recognises glomerular changes that might indicate glomerulonephritis; e.g. hypercellularity, crescent formation<br><br>Describes, dissects and reports nephrectomy and bladder resection specimens |

| **Areas of learning** | **Knowledge** | **Skills** |
|---|---|---|
| Male genital tract<br>(CiPs: 7, 9, 11) | Demonstrates understanding of specimens obtained via:<br>• prostate biopsies and chippings<br>• orchidectomy and if available prostatectomy specimens<br><br>Demonstrates understanding of commonly encountered neoplastic and non-neoplastic disease processes, for example: | Reports normal vas deferens<br><br>Recognises presence of PIN and cancer in prostatic needle biopsies<br><br>Describes, dissects and reports orchidectomy specimens<br><br>Recognises seminoma, embryonal carcinoma and other testicular tumours |

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| | • prostatic adenocarcinoma<br>• benign prostatic hyperplasia<br>• testicular tumours such as germ cell tumours | |

| **Areas of learning** | **Knowledge** | **Skills** |
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| Endocrine pathology<br>(CiPs: 7, 9, 11) | Demonstrates understanding of specimens obtained for example via:<br>• thyroidectomy<br>• parathyroidectomy<br>• adrenalectomy<br><br>Demonstrates understanding of commonly encountered neoplastic and non-neoplastic disease processes including:<br>• benign and malignant conditions of the thyroid, parathyroid and adrenal glands<br>• paragangliomas | Recognises normal thyroid, parathyroid and adrenal tissue<br><br>Recognises goitre<br><br>Describes, dissects and reports biopsy and excision specimens from the thyroid, parathyroid, and – in later years – adrenals and paragangliomas |

| **Areas of learning** | **Knowledge** | **Skills** |
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| Soft tissue pathology<br>(CiPs: 7, 9, 11) | Demonstrates understanding of the correlation of pathologic soft tissue lesions with their clinical and radiological appearances<br><br>Demonstrates understanding of commonly encountered neoplastic and non-neoplastic disease processes, for example:<br>• lipoma<br>• angiolipoma<br>• neurofibroma<br>• dermatofibroma<br>• inflammatory pathology<br>• other benign, hamartomatous, indeterminate and malignant soft tissue lesions<br><br>Demonstrates knowledge of immunohistochemical techniques to apply | Recognises morphological features suggestive of main subtypes of tumours (i.e. lipomatous, fibromatous, myomatous, neural, vascular characteristics)<br><br>Recognises inflammatory lesions and mimics<br><br>Recognises high-grade sarcoma |

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| | Understands the value of cytogenetics | |

| Areas of learning | Knowledge | Skills |
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| Neuropathology (CiPs: 3, 7, 9, 10, 11) | Demonstrates knowledge of basic neuroanatomy and histology and basic entities and disease processes affecting the nervous system:<br>• basic neuroanatomy and histology<br>• basic pathophysiology (e.g. cellular reactions to injury, cerebral oedema, raised intracranial pressure and herniation, and hydrocephalus)<br>• trauma<br>• cerebrovascular diseases<br>• infections<br>• human prion diseases (very basic knowledge with emphasis on health and safety considerations)<br>• demyelinating diseases<br>• degenerative diseases<br>• genetic, toxic and acquired metabolic diseases (basic knowledge)<br>• epilepsy and the concept of sudden and unexpected death in epilepsy (SUDEP)<br>• tumours (e.g. primary versus metastatic, paraneoplastic syndromes, and familial tumour syndromes) | Observes or performs a range of examinations, and documents activities with reflective notes, including:<br>• an indicative 10 fresh brain examinations with demonstration of basic neuroanatomy as part of general autopsy training<br>• an indicative 2 fixed brain examinations with demonstration of basic neuroanatomy and macroscopic abnormalities, as appropriate<br>• an indicative 2 post-mortem brain histology cases following neuropathological examination and representative sampling<br><br>Demonstrates observation of or participation in adult neuro-oncology multidisciplinary meetings, the clinical neuroscience Grand Round or equivalent clinical neuroscience encounter |

| Areas of learning | Knowledge | Skills |
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| Paediatric and perinatal pathology (CiPs: 3, 7, 9, 10, 11) | Demonstrates understanding of common paediatrics tumours:<br>• neuroblastoma<br>• nephroblastoma<br>• rhabdomyosarcoma<br>• acute lymphoblastic leukaemia/lymphoma<br>• Burkitt lymphoma | Recognises common inflammatory and neoplastic conditions occurring in childhood<br><br>Description and processing of biopsy specimens<br><br>Demonstrates examination, |

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| | • Hodgkin's lymphoma<br><br>Demonstrates awareness of special stains in paediatric pathology<br><br>Understands value of cytogenetics<br><br>Demonstrates awareness of perinatal pathology including:<br>• normal development of the placenta<br>• early pregnancy loss (1st and early 2nd trimesters)<br>• syndromes associated with common aneuploidies (T13, T18, T21, X0)<br>• common cardiac malformations (septal defects, truncus arteriosus, tetralogy of Fallot, coarctation of the aorta and transposition of the great arteries)<br>• observation/assistance in at least 2 perinatal post-mortem examinations with reflective notes | description and sampling of placentas<br><br>Demonstrates examination, description and sampling of other specimens only under direct consultant supervision |

**Autopsy Pathology**
It is envisaged that trainees will perform an indicative minimum of 20 autopsies during each year of training. ST1 trainees should begin to understand the level of certainty with which macroscopic features can be interpreted at autopsy and when histological examination of autopsy tissues is important. They should begin to recognise histological changes that occur due to a post-mortem artefact.

This section of the syllabus incorporates the basic autopsy practice competencies that all trainees will acquire. It will come from apprenticeship training, reading, formal tuition and the practical experience from the indicative minimum 20 adult autopsies per annum and 2 paediatric/perinatal autopsies that all trainees will undertake until satisfactory completion of ICP training.

| **Areas of learning** | **Knowledge** | **Skills** |
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| General<br>(CiPs: 1, 2, 3, 7, 9, 10, 11) | Demonstrates understanding of methods for identification of the patient<br><br>Describes the pathological basis of disease and the macroscopic/microscopic pathology of various types of death<br><br>Describes the anatomy, macroscopic features of major disease processes and common tissue dissection techniques relevant to autopsy practice<br><br>Recognises the training undertaken by anatomical pathology technologists (APTs) and the role that they can appropriately play within all aspects of the mortuary function (see www.aaptuk.org)<br><br>Identifies the use of clinical information and the health record in autopsy examination<br><br>Demonstrates knowledge of the main side effects of common treatments and the major complications of most surgical procedures<br><br>Demonstrates awareness of the principles and practice of digital autopsies | Applies basic standard of practice in the techniques used for identifying morphological abnormalities at autopsy examination<br><br>Demonstrates manual dexterity sufficient to perform autopsies safely and to demonstrate the major abnormalities<br><br>Operates with the APTs to maximise the autopsy learning opportunities<br><br>Able to demonstrate findings to clinicians and medical students, with clear clinicopathological correlation<br><br>Demonstrates the ability to interrogate the clinical and laboratory records and understand the utility and limitations associated with various types of investigation including imaging, microbiology, biochemistry and toxicology<br><br>Identifies issues to be addressed by the autopsy examination |
| **Areas of learning** | **Knowledge** | **Skills** |
| Autopsy technique | Demonstrates knowledge of, | Able to perform full evisceration |

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| (CiPs: 2, 7, 9, 10, 11) | and the ability to perform, autopsies in a variety of clinical situations, such as:<br>• cardiac disease of uncertain cause<br>• endocrine/metabolic death<br>• hepatic disease of unknown cause<br>• intra-abdominal disease of unknown cause<br>• neurological disease of unknown cause<br>• renal disease of unknown cause<br>• respiratory disease of unknown cause | and dissection of the internal organs<br><br>Describes the appearances accurately and succinctly<br><br>Interprets the findings in the light of the clinical information available<br><br>Summarises the findings to clinicians either immediately or later at a clinical meeting |
| **Areas of learning** | **Knowledge** | **Skills** |
| Deaths in the community (CiPs: 2, 7, 9, 10, 11) | Describes and explains the aims of the autopsy and investigations required where death occurs in the community and there are no suspicious circumstances | Demonstrates the ability to perform a full post-mortem examination and take relevant samples for histology if appropriate consent is in place |
| **Areas of learning** | **Knowledge** | **Skills** |
| Microbiology (CiPs: 3, 7, 9, 10, 11) | Identifies microbiological processes that are relevant to autopsy practice; e.g. sepsis, meningitis, pneumonia, endocarditis, tuberculosis and viral hepatitis | Demonstrates the ability to take appropriate samples |
| **Areas of learning** | **Knowledge** | **Skills** |
| Histology (CiPs: 3, 7, 9, 11) | Describes the post-mortem histological appearances of various common fatal conditions | Demonstrates the ability to select appropriate tissue blocks |
| **Areas of learning** | **Knowledge** | **Skills** |
| Other investigations (CiPs: 3, 7, 9, 11) | Describes those areas of haematology, biochemistry, medical genetics and other investigative modalities that are relevant to autopsy practice | Demonstrates the ability to select appropriate tissue/fluid samples |
| **Areas of learning** | **Knowledge** | **Skills** |
| Consent (CiPs: 1, 2, 3, 4, 7) | Is conversant with current policy in relation to consent for autopsies and for tissue or organ retention<br><br>Is conversant with current policy | Demonstrates understanding of the principles and process of obtaining consent for autopsies and for further investigation of tissue or whole organs |

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| | in relation to tissue or organ donation<br><br>Identifies the legal basis of consent to autopsy examination and the circumstances for which consent is not required | |
| **Areas of learning** | **Knowledge** | **Skills** |
| Health and safety (CiPs: 1, 2, 3, 4, 7) | Describes relevant protocols and documentation of departmental working practices and the practicalities of mortuary practice<br><br>Describes and explains regulatory aspects of health and safety issues<br><br>Summarises the following documents: *Safe Working and Prevention of Infection in the Mortuary* and *Autopsy Suite (Health Services Advisory Commission) Guidelines on Autopsy Practice* | Demonstrates the ability to work in the mortuary in a safe way |
| **Areas of learning** | **Knowledge** | **Skills** |
| Coroner's/Procurator Fiscal Service Regulations (CiPs: 1, 2, 3) | Demonstrates familiarity with the duty to report deaths to the appropriate legal authority within the four countries of the UK<br><br>Understand the preliminary enquiries that may take place via the coroner or procurator fiscal | Demonstrates a working knowledge of the law of the appropriate legal authority within the four countries of the UK relating to death, the investigation of death and disposal of the dead |
| **Areas of learning** | **Knowledge** | **Skills** |
| Autopsy report (CiPs: 1, 2, 3) | Demonstrates familiarity with the RCPath *Guidelines on Autopsy Practice and Best Practice Scenarios* | Able to write a final gross and microscopic report with suitable summaries, according to the RCPath *Guidelines on Autopsy Practice*<br><br>Includes the cause of death in the Office of National Statistics format |
| **Areas of learning** | **Knowledge** | **Skills** |
| Teaching (CiPs: 1, 2, 3, 6) | Explains the value of the autopsy as a teaching aid | Demonstrates appropriate teaching skills |

| Areas of learning | Knowledge | Skills |
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| Demonstration of autopsy findings (CiPs: 3, 7, 10) | Demonstrates awareness of the value of communicating relevant autopsy findings to clinicians | Demonstrates the communication skills required to inform clinical colleagues and other non-clinical professionals involved in inquiries into deaths and assist in multidisciplinary mortality review |

**Complex Post-mortem Examinations**
These autopsies and special techniques are part of the higher autopsy training curriculum. However, ICPT trainees may take the opportunity to observe or assist in these examinations should the opportunity arise.

- Assessment of traumatic injury, e.g. after road traffic accident
- Methods of sampling for toxicology, e.g. in suicide, drug overdose
- HIV-, HCV- and tuberculosis-infected persons
- Maternal deaths
- Removal of eyes and dissection of middle ear
- Removal of spinal cord
- Post-mortem examination in haematological malignancy, including sampling of bone marrow from iliac crests and femur
- Post-mortem examination of a decomposed body
- Post-mortem examination in a case of suspected drowning
- Post-mortems in patients dying after complex cardiothoracic surgery
- Assessment of the changes following complicated gastrointestinal surgery

**Cytopathology**
Cervical and non-cervical cytology will be part of the histopathology curriculum and assessment processes for ICPT training. Subsequently, cervical cytology will be available as an optional training package, equivalent to three months of training. Histopathology relating to cervical screening and non-cervical cytology will continue to be part of the higher histopathology training curriculum and assessment processes.

| **Cervical cytology** | | |
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| **Areas of learning** | **Knowledge** | **Skills** |
| General principles and cancer screening programme (CSP) (CiPs: 1, 2, 3, 7, 9, 11) | Applies rationale, methodology and organisation of the CSP<br><br>Demonstrates a basic understanding of the roles of component organisations, failsafe<br><br>Identifies features to determine the adequacy of a cervical sample | Demonstrates the ability to source information on the CSP<br><br>Demonstrates understanding of the difficulties in producing rigid criteria for adequacy<br><br>Ability to recognise inadequate specimens |
| **Areas of learning** | **Knowledge** | **Skills** |
| Technical aspects (CiPs: 1, 2, 3, 7, 9, 11) | Demonstrates basic knowledge of automated screening devices and HPV testing | Demonstrates awareness of sampling devices used and the fixation of specimens |

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| | Demonstrates awareness of the process involved in approving new technologies for use in cervical screening | Demonstrates a basic knowledge of the range of methods for converting a raw sample into a slide |
| **Areas of learning** | **Knowledge** | **Skills** |
| Normal and benign changes<br>(CiPs: 4, 7, 9, 11) | Identifies normal cellular components in cervical specimens<br><br>Identifies features of infections in cervical samples | Recognises typical morphological appearances of specific organisms commonly seen in cervical specimens; e.g. trichomonas, candida, herpes simplex, HPV, actinomyces |
| **Areas of learning** | **Knowledge** | **Skills** |
| Borderline nuclear changes (BNC)<br>(CiPs: 4, 7, 9, 11) | Demonstrates understanding of criteria for diagnosis of BNC | Recognises the morphological features of BNC |
| **Areas of learning** | **Knowledge** | **Skills** |
| Dyskaryosis<br>(CiPs: 4, 7, 9, 11) | Demonstrates understanding of criteria for diagnosis and grading of squamous and glandular dyskaryosis | Recognises typical examples of mild, moderate and severe squamous dyskaryosis and endocervical cellular abnormalities |
| **Areas of learning** | **Knowledge** | **Skills** |
| Quality assurance (QA)<br>(CiPs: 1, 2, 4, 8) | Demonstrates awareness of QA including internal quality control (IQC), external quality assurance (EQA) and audit | Recognises QA procedures involved in cervical screening, including internal quality control (IQC), external quality assurance (EQA) and audit<br><br>Recognises current national quality standards and indicators |

| **Non-cervical cytology** | | |
|---|---|---|
| **Areas of learning** | **Knowledge** | **Skills** |
| **Technical aspects**<br>(CiPs: 7, 9, 11) | Demonstrates knowledge of preparation and staining techniques for common specimen types<br><br>Demonstrates knowledge of use of special techniques; e.g. immunocytochemistry | Recognises faults and artefacts of preparation; e.g. air-drying<br><br>Describes panels of antibodies for particular diagnostic applications; e.g. mesothelioma |
| **Areas of learning** | **Knowledge** | **Skills** |
| **Morphology**<br>(CiPs: 7, 9, 11) | Demonstrates knowledge of cell components<br><br>Demonstrates knowledge of various stains used in air-dried | Recognises normal cell populations<br><br>Recognises the differences in cell morphology in air-dried and fixed |

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| | and fixed preparations<br><br>Identifies the nuclear features used to diagnose malignancy<br><br>Identifies features of malignancy in sites commonly investigated with cytopathology<br><br>Identifies features of specific non-malignant diagnoses; e.g. infection | preparations<br><br>Demonstrates the ability to diagnose malignancy with confidence in specimens from breast, gastrointestinal tract, respiratory tract, urinary tract, head and neck, lymphoreticular system, serous fluids and thyroid<br><br>Demonstrates the ability to integrate clinical information and histology or other investigations into diagnosis<br><br>Demonstrates the ability to recognise when definitive diagnosis is beyond capability |
| **Areas of learning** | **Knowledge** | **Skills** |
| Report writing<br>(CiPs: 1, 2, 3, 4, 10) | Identifies requirements for a report<br><br>Demonstrates ability to recall relevant datasets<br><br>Identifies nationally recognised coding systems<br><br>Demonstrates knowledge of the likely outcome in terms of further investigation or management of the patient | Demonstrates the ability to write an accurate report that gives clinicians the information they need |

**Molecular Pathology**

This section lists the required basic knowledge in molecular methods and their applications, both potential and actual, within histopathology. The section is focussed on DNA- and RNA-based techniques.

| **Areas of learning** | **Knowledge** | **Skills** |
|---|---|---|
| Fundamentals of molecular biology<br>(CiPs: 7, 9, 11) | Identifies the origins and consequences of germline variation and somatic mutations, including DNA methylation and gene expression changes | Demonstrates the origins of and justifications for molecular tests |
| **Areas of learning** | **Knowledge** | **Skills** |
| Fundamentals of genetics<br>(CiPs: 7, 9, 11) | Identifies the structure of genes including translation and transcription, factors affecting gene expression and inheritance patterns | Recognises the factors affecting transcription and translation |

| Areas of learning | Knowledge | Skills |
|---|---|---|
| Molecular techniques (CiPs: 7, 9, 11) | Identifies molecular techniques | Demonstrates awareness of principles, practical knowledge of sequencing, PCR, microarrays (DNA and RNA), in situ hybridisation and mutation detection |
| **Areas of learning** | **Knowledge** | **Skills** |
| Molecular tests (CiPs: 7, 9, 11) | Describes molecular tests currently performed on histological samples | Interprets the common molecular tests |

## II. Histopathology Higher Specialty Training Syllabus

Following completion of the ICP training, **trainees will continue to consolidate their knowledge and skills within the relevant areas of learning, mapped out in the syllabus for ICPT.** They will be expected to take increased responsibility for specimen types and techniques included in the ICPT syllabus including independent reporting of cases. In addition, they will get an opportunity to develop their skills in histopathology as below. This period of higher specialist training in histopathology will typically be in years 3–5 of training. This is a competency-based curriculum and as such there are no absolute minimum numbers. However, it is anticipated that most trainees will achieve the competencies required with the indicative minimum practical experience detailed below (per WTE training year):

**Year 3**
Surgical histopathology – 1000 cases
Cytopathology – 300 non-cervical cytology cases, which may either be new cases or be seen in the context of teaching sets with appropriate structured feedback from an experienced trainer.

**Year 4**
Surgical histopathology – 1000 cases
Cytopathology – 300 non-cervical cytology cases, the majority of (approximately 70%) should be new diagnostic cases.

**Year 5**
Surgical histopathology – 1500 cases (dependent on specialist interest), most of which in the latter half of the year should be independently reported.
Cytopathology – 300 non-cervical cytology cases, the majority of (approximately 80%) should be new diagnostic cases.

| Areas of learning | Knowledge | Skills |
|---|---|---|
| General (CiPs: 1, 2, 3, 4, 5, 7, 8, 9, 11) | Demonstrates sufficient general clinical knowledge including major changes in trends of diagnosis and treatment<br><br>Demonstrates sufficient knowledge of normal anatomy, physiology and pathophysiology | Demonstrates the ability to solve complex clinical (and research, when applicable) problems by applying sound knowledge of basic principles without the requirement always to rely on 'pattern matching' |

| | | |
|---|---|---|
| | Demonstrates the knowledge contained in and be able to operate within the tissue pathways and datasets documents produced by RCPath and any updates of these documents | |
| **Areas of learning** | **Knowledge** | **Skills** |
| Specimen dissection<br>(CiPs: 1, 7, 9, 11) | Explain the principles of specimen dissection, macroscopic description and block selection in neoplastic and non-neoplastic disease<br><br>Explain and describe the principles of dissection of all major cancer resection specimens and tissue sampling to enable completion of RCPath's Standards and Datasets for Reporting Cancers | Demonstrates sufficient manual dexterity to perform dissection safely, accurately and independently, without damage to tissues |
| **Areas of learning** | **Knowledge** | **Skills** |
| Special interests<br>(CiPs: 1, 5, 7, 9, 11) | Develops a special interest in one or more diseases or organ systems | Uses RCPath's Standards and Datasets for Reporting Cancers and Tissue Pathways for reporting most cases |

**Molecular Pathology**

This section describes the required practical knowledge and application of molecular biology. While many of these competences could be achieved by spending time attached to a specialist molecular biology laboratory, it is not essential that trainees do so. It is anticipated that for most trainees much of their experience in molecular pathology will be integrated with relevant specialist histopathology training.

| **Areas of learning** | **Knowledge** | **Skills** |
|---|---|---|
| General<br>(CiPs: 7, 9, 11) | Describes the origins and consequences of germline variation and somatic mutations, including DNA methylation and gene expression changes | Demonstrates the origins of and justifications for molecular tests |
| **Areas of learning** | **Knowledge** | **Skills** |
| Fundamentals of databases and bioinformatics<br>(CiPs: 7, 9, 11) | Demonstrates ability to recall the basic molecular databases | Summarises the use of data and identify relevant data from public sources |
| **Areas of learning** | **Knowledge** | **Skills** |
| Use of histology samples | Describes how histological samples are taken and | Demonstrates practical understanding of undertaking the |

| | | |
|---|---|---|
| (CiPs: 7, 9, 11) | prepared, and how nucleic acids are extracted from them | appropriate sample collection, retrieval and preparation for the common molecular tests, whether performed on extracted nucleic acid or in situ |
| **Areas of learning** | **Knowledge** | **Skills** |
| Technology<br>(CiPs: 7, 9, 11) | Outlines the principles and limitations of the most up-to-date molecular methods | Demonstrates practical knowledge of sequencing, PCR, microarrays (DNA and RNA), in situ hybridisation, mutation detection |
| **Areas of learning** | **Knowledge** | **Skills** |
| Molecular tests<br>(CiPs: 7, 9, 11) | Describes molecular tests currently performed on histological samples, including the limitations of these tests and of tests that are anticipated in the near future | Demonstrates the demand for molecular tests and the modes of supply<br><br>Describes and explains common molecular tests including some of the common pitfalls and how to avoid them<br><br>Illustrates the significance of common molecular tests |