The Royal College of Pathologists

Pathology: the science behind the cure

Pathology undergraduate curriculum

Second edition, September 2019

Contents

The Royal College of Pathologists

6 Alie Street
London E1 8QT
T: 020 7451 6700
F: 020 7451 6701
www.rcpath.org

Introduction

This is an exciting time to pursue pathology as a career, with its many subspecialty options and ever-increasing role in delivering patient care. Pathology – as one of the key diagnostic disciplines – underpins current medical practice, spanning all fields including acute care, cancer care and long-term conditions. All cancer diagnoses and current cancer classification systems are based on pathology. The widespread use of pathology makes it imperative that all doctors qualifying in the UK have a basic working knowledge of the field, so they are able to suitably request and accurately interpret pathology tests to ensure the best patient care.

Pathology practice is undergoing major changes. The first is the national commissioning of genomic testing that is centred on molecular pathology and increasingly being used to deliver personalised medical therapies and care. The second has been in the uptake of digital pathology, which may enable machine-based learning solutions to automate part of the diagnostic process. These changes make it necessary for aspiring doctors to have an understanding of basic pathophysiology and its practical applications to achieve excellence in patient care delivery.

As the professional body responsible for designing training curricula, the College has a role in setting the direction for pathology education. As a professional group, we need to ensure that undergraduate medical curricula reflect the current state of practice.

The aim of this curriculum is to align the current pathology service delivery landscape and body of evidence-based practice with the current General Medical Council (GMC) guidance to define key learning outcomes that will be a meaningful addition to the graduates of tomorrow and are practical to deliver at the medical school level.

With these broad aspirations and in consultation with practitioners in various pathology subspecialties, we have revised the curriculum to incorporate the current operational landscape and technological advances. We have also carried out an extensive review of existing literature and curricula (both for medical schools and undergraduate curricula published by other royal medical colleges). The new curriculum reflects revised GMC guidance (*Outcomes for Graduates (2018)*, and *Excellence by design (2017)*).

Any curriculum has to be realistic in terms of ease of delivery and assessment. The College recognises the unprecedented pressures on the healthcare workforce in the NHS and is developing learning resources and suggested assessments that will be linked to the revised curriculum. The curriculum is not meant to be prescriptive or specific about the means of delivery or assessment. We intend for it to assist in delivery of the curriculum by all medical schools, independent of local variation in undergraduate curricula and their delivery.

The next planned revision for the curriculum is three years from the date of publication. We are grateful to everyone who contributed to the review of this curriculum.

Dr Hasan Rizvi
On behalf of the RCPath Undergraduate and Foundation Working Group

Overview

The revised *Outcomes for Graduates (2018)* , incorporates the domains of the *Generic Capabilities Framework (2017)*, where suitable, and has undergone significant changes from the previous version of *Tomorrows Doctors* (2009).

For convenience, the changes are mapped to both the previous version of *Tomorrows Doctors* and the Generic Capabilities Framework. This is available as a downloadable Excel file on the GMC's website.

For consistency, the revised undergraduate pathology curriculum follows the *Outcomes for Graduates* document:

- Outcomes and capabilities 1 – Professional values and behaviour
- Outcomes and capabilities 2 – Professional skills
- Outcomes and capabilities 3 – Professional knowledge.

Outcomes and capabilities 1 and 2, which cover values, behaviours and skills, are more generic and may well be covered in other areas of the undergraduate curricula. Nonetheless, they are included in the revised curriculum with some pathology-specific outcomes.

Outcomes and capabilities 3, which deals with professional knowledge, has been covered under broad headings with specialty-specific outcomes where applicable.

Doctors work in clinical (diagnostic – in pathology), research or teaching roles and may undertake leadership or management roles in any of these domains. Doctors are also inventors, innovators and entrepreneurs. In these latter roles, guidance can be drawn from *Outcomes for Graduates* (especially from outcomes and capabilities 1 and 2, which are generic) but there is also more specific guidance e.g. the Academy of Medical Royal College's *Guidance for Undergraduate Medical Education (2010)* and the Faculty of Medical Leadership's *Indicative Undergraduate Curriculum (2018)*.

Key documents have been included as hyperlinks for ease when viewing digitally.

A list of acronyms can be found in Appendix 1.

Outcomes and capabilities 1: professional values and behaviours

Domain	OG18	Competencies	Delivery and assessment
Professional values and behaviours across subspecialties	**1**	• Understands and recognises patient-centred care and the importance of including 'the patient voice' in decision making in all aspects of care delivery. • Recognises the importance of the laboratory in patient diagnosis and management. • Recognises that it is the requesting doctor's responsibility to look up and understand the implications of the test results. • Recognises the rationale of requesting a pathology test only if it contributes to patient care – the right test at the right time (see Choosing Wisely guidance). • Understands the ethical considerations in testing (including molecular testing) and implications for the patient and their family. • Understands value-based pathology (as part of value-based healthcare). • Describes and explains how clinical information guides pathologists' activities and recognises the need for adequate clinical information on a request form.	• Lecture, online module, e-learning (video, clinical vignette, case studies). • Practical experience, SSC. • OSCE. • OSPE. • SBA – in line with the MSCAA – and SAQs. • Reflective note, self-directed learning.

Domain	OG18	Competencies	Delivery and assessment
		• Asks for help if a pathology result does not fit with the clinical scenario. • Recognises who and when to ask for help. • Recognises the need to read a whole pathology report, including comments, when ascertaining the significance of the result. • Recognises which subspecialty underpins a particular test (e.g. Troponin/biochemistry, tissue biopsy/histopathology) and how samples may be sent at the same time for different subspecialty testing (tissue for microbiology and histopathology). Is able to describe the differences between a sample sent for histology/cytology and microbiology. • Describes and explains when toxicological analysis can be useful, which tests to request, and on which samples. • Recognises the consequences of labelling a sample as urgent – for other samples in the laboratory. • Recognises and respects the contribution of non-medical teams towards patient care.	

Domain	OG18	Competencies	Delivery and assessment
	1, 2a–d, 9b–d,	• Demonstrates awareness of consent (in diagnostics and clinical care) and mental capacity. • Demonstrates awareness of data protection and confidentiality. • Demonstrates understanding of legal and practical framework in handling human tissue and embryos. • Demonstrates understanding of Coroners Rules and referral to Coroner/PF (as per national structure). • Demonstrates understanding of medical examiner system. • Describes the difference between a Coroner's/PF's autopsy and consented/hospital post-mortem. • Lists the benefits of performing a post mortem to the patients' family, the medical profession and society.	• Consider use of a local consent form for demonstration. • May be tied in with/covered in other modules in the overall undergraduate curriculum. • E-learning module. • Assessed using MCQ.
	6d, 7a, 7b, 9, 10a–c,	• Demonstrates awareness of MDT meetings and the role of the pathologist in directing treatment and delivery of care. • Attends MDT meetings and undertakes case presentation, understands the impact of the	• Consider use of mock MDT for years 1 and 2. • Attendance in years 3–5.

Domain	OG18	Competencies	Delivery and assessment
	12, 14	relevant pathology results as part of the MDT decision-making process and the impact on patient care.	• May overlap with other modules in the undergraduate curriculum. • Reflective note.
	2n, 5a, 5c, 10a–c	• Understands the importance of sample labelling and how incorrect labelling may contribute to diagnostic errors. • Understands the importance of incident reporting and the concept of root cause analysis. • Demonstrates ability to learn from mistakes. • Demonstrates understanding of patient safety and duty of candour. • Understands the concept of a proactive approach to patient safety and is aware of the national recommendations for this (e.g. AoMRC's Patient Safety Curriculum).	• OSPE. • E-module. • May be tied in with/covered in other modules in the overall undergraduate curriculum. • MCQ, reflective note.
	5e, 5g	• Demonstrates awareness of principles of and applications of audit and quality improvement.	• E-module. • May be tied in with/covered in other modules in the overall undergraduate curriculum. • MCQ, short project.

Domain	OG18	Competencies	Delivery and assessment
	10a–c, 11	• Demonstrates understanding of infection control and application in clinical practice, including measures available for preventing the transmission of infection (hand hygiene, 'bare below elbows', aseptic techniques, use of personal protective equipment). • Recognises which patients require isolation and the different forms of isolation available. • Demonstrates understanding of the theory and practical implications of blood-borne infections; knows what immediate action to take in the event of a needlestick injury and how and from whom to seek further advice; recognises the benefits of early post-exposure treatment following potential exposure to HIV, HBV and HCV. • Demonstrates understanding of the principles of good antimicrobial prescribing and stewardship, as further outlined in section 3c (below). • Demonstrates awareness of patient-centred care with focus on personalised medicine and the role of pathology in delivering precision medicine.	• OSPE with clinical vignette-module. • May be tied in with/covered in other modules in the overall undergraduate curriculum. • MCQ, short project.
	14	• Demonstrates awareness of diagnostic uncertainty and how this may be conveyed in a report. • Recognises personal/professional limitations, bias and how this may affect decision making, and	• E-module.

Domain	OG18	Competencies	Delivery and assessment
		when to ask for help when necessary to maintain patient safety.	• May be tied in with/covered in other modules in the overall undergraduate curriculum. • MCQ, short project.

Outcomes and capabilities 2: professional skills

Domain	OG18	Competencies	Delivery and assessment
Communication and interpersonal skills	**10, 11**	• Understands the multidisciplinary service delivery landscape and clinical practice and the necessity of good communication for delivery excellence in patient care. • Demonstrates awareness of appropriate verbal and non-verbal communication with patients and their carers, colleagues and members of the public in formal and informal settings. • Explains the sequence of events leading to a death.	• The overall domain is expected to be covered throughout the course. • Consider a practical skills course as part of communication skills training. • E-module with video demonstration. • Reflective note. • Short essay or project report.
Diagnosis and medical management	**12–14 a–n, 15–17 a–d**	• Completes a request form accurately. • Completes the first part of a death certificate accurately. • Completes the first part of a cremation form accurately. • Takes and understands a result over the telephone and acts upon it appropriately. • Describes the range of diagnostic procedures and investigations available, their rational and efficient	• Subspecialty-specific e-module with a few clinical vignettes to demonstrate appropriate use of investigations. • Practical demonstration of procedures. • Patient feedback to understand implications of a test.

Domain	OG18	Competencies	Delivery and assessment
		use, and interpretation for patient-centred management. • Understands reference ranges in pathology testing. • Understands the concepts of quality control and quality assurance. • Describes a patient in their care to an MDT to facilitate appropriate multidisciplinary discussion. • Demonstrates awareness of need for integrating different diagnostic modalities for arriving at a final diagnosis and use of MDT meeting. • Describes why a particular patient presents with a particular set of symptoms and signs.	• May be tied in with/covered in other modules in the overall undergraduate curriculum. • MCQ, attendance at MDT, OSCE.
Prescribing medications safely	**18**	• Demonstrates awareness of drug-related pathology. • Understands and identifies principles of prescribing blood and blood products safely. • Understands acute transfusion reactions, particularly pulmonary complications (transfusion-associated circulatory overload and acute lung injury).	• Subspecialty-specific e-module with appropriate clinical vignettes to demonstrate drug-related tissue reactions, drug resistance, use of biomarkers in targeted therapy. • Lecture. • Summative or formative assessments.

Domain	OG18	Competencies	Delivery and assessment
		• Counsels patients who request antibiotics when there is low suspicion of a bacterial infection. • Manages a switch from intravenous to oral antibiotics. • Demonstrates awareness of mechanism of drug resistance and implications of indiscriminate prescribing. • Explain the principles of vaccination to a patient. • Demonstrates awareness of use of monoclonal antibodies in diagnosis and therapy and their complications.	
Using information effectively and safely	**19 a–e**	• Apply best practice in data protection and information governance. • Understands implications of a data breach. • Demonstrates awareness of accuracy in record keeping. • Demonstrates awareness of proper use of information systems, big data and informatics. • Demonstrates awareness of acceptable social media use in line with current guidance.	• Practical skills course as part of communication skills training. • E-module with video demonstration. • MCQ, reflective note.

Domain	OG18	Competencies	Delivery and assessment
Microbiological knowledge and skills		• Identifies the range of diagnostic tests used in microbiology and when to request the different types in common situations. • Explains the concepts of test sensitivity and specificity, and the impact of the patient group/population tested on predictive values of tests. • Recognises when a patient has an infection. • Describes what infections are notifiable, how to notify and whom to notify. • Demonstrates an understanding of the role of public health authorities. • Identifies when a patient needs referral to surgery for debridement. • Employs appropriate infection control measures, depending on the agent involved. • Recognises and acts upon the need to use local antibiotic guidance and protocols. • Takes consent from a patient for HIV testing and describes the implications and benefits of testing.	

Domain	OG18	Competencies	Delivery and assessment
Haematological knowledge and skills		• Demonstrates how to order blood components for transfusion. • Understands and can demonstrate the checks that are put in place to ensure that the correct blood product is transfused to the correct patient. • Describes the difference between group and screen and cross matching. • Recognises alternatives to blood transfusion and the need to conserve blood supply. • Recognises the additional precautions (discussion with a haematologist) that are in place for patients who have a bleeding disorder. • Recognises that anti-/pro-coagulation decisions are a balance of risk, usually requiring discussion with a haematologist. • Understands the process of cross matching of blood. • Describes and explains that patients with red cell antibodies (normally due to previous transfusion or pregnancy) may require further samples to be sent and more time to plan transfusion. • Recognises and commences initial management for suspected acute transfusion reactions.	

Domain	OG18	Competencies	Delivery and assessment
		• Recognises the benefits and risks associated with pooled immunoglobulin treatment. • Describes the benefits and risks of VTE thromboprophylaxis to patients. • Demonstrates awareness of limitations and willingness to consult a haematologist as appropriate.	
Histopathological knowledge and skills		• Understands the range of histopathology (and cytology) samples, the tissue pathway through a laboratory and the integration of immunohistochemical and molecular testing with histopathology samples. • Understands the role of histopathology in classification of tumours, grading and staging of tumours and the minimum datasets of the Royal College of Pathologists in standardising reporting. • Understands the role of histopathology in informing cancer registries and epidemiological data.	
Immunological knowledge and skills		• Understands the basic principles of immunoassays, flow cytometry and their clinical application to routine diagnostics (i.e. immunoglobulins and their association with haematological malignancies, immunodeficiency,	

Domain	OG18	Competencies	Delivery and assessment
		immune dysregulation, peripheral blood lymphocyte immunophenotyping and CD nomenclature, ELISA testing for autoantibodies), and the use of the immunology laboratory for the diagnosis and assessment of allergy, autoimmunity, immunodeficiency and lymphoid malignancy, and monoclonal antibody production.	

Outcomes and capabilities 3: professional knowledge

1. Knowledge relating to the organisation of pathology services

Domain	OG18	Competencies	Delivery and assessment
Healthcare service organisation as relevant to pathology	**20**	• Demonstrates awareness of the organisation of pathology service delivery and commissioning in primary, secondary and tertiary healthcare settings and the concept of pathology networks. • Understands the rationale behind and organisation of national population screening programmes and the role of pathology in these. • Understands the role of pathology in cancer diagnosis, classification and that pathologists are core members of the MDT. • Demonstrates awareness of subspecialist areas of practice and organisations (e.g. National Blood Transfusion Service, Public Health England laboratories) and their role in public health-level interventions. • Demonstrates awareness of subspecialist areas (e.g. paediatric pathology) and national commissioning for these services. • Demonstrates awareness of career opportunities in pathology.	• Lecture, e-module or video. • Formative or summative assessment. • Career fairs, summer schools, workshops.

2. Knowledge relating to the scientific principles and practice of pathology including recent advances

Domain	OG18	Competencies	Delivery and assessment
Knowledge and understanding of pathology and the role it plays in diagnosis and therapy	**22**	• Demonstrates understanding of pathology as 'the science behind the cure' – an understanding of how pathology not only underpins and informs diagnostic, prognostic, therapeutic and public health decision making but also is a vital part of research and furthering our understanding of the pathophysiology of common disorders. • Demonstrates understanding of the definition and practice of pathology with a wide range of subspecialty areas of practice and career pathways available. • Demonstrates awareness of the subspecialties and their clinical relevance. • Understands the principles of aetiopathogenesis and the role it plays in understanding the diagnostic process and directing therapy in a large proportion of patient encounters. • Demonstrates understanding of the role of pathology in public health e.g. identification of infections in epidemics, diagnostic coding using appropriate nomenclature systems (SNOMED, ICD10) for public health/epidemiological data (e.g. cancer registry).	• Lecture, e-module or video. • Formative or summative assessment.

Domain	OG18	Competencies	Delivery and assessment
		• Demonstrates understanding of post-mortem examinations (adult and paediatric/perinatal) in understanding pathogenesis of disease, as an audit mechanism for clinical practice, identification of possible signs and symptoms of abuse or neglect (safeguarding role) or injuries/other signs suggestive of physical abuse.	
Molecular pathology	**22**	• Understands and can define genomics and molecular pathology. • Describes the molecular organisation (e.g. central dogma – DNA to RNA to protein – including structure, function and variations). • Describes cell replication, its control and types of Mendelian and non-Mendelian inheritance (e.g. mitochondrial and epigenetic; basic knowledge only). • Describes DNA variation, causes and molecular implications. • Demonstrates understanding of diagnostic methodologies (e.g. FISH, PCR, sequencing) and platforms available (basic knowledge only). • Demonstrates understanding of types of DNA abnormalities and appropriate tests.	• SSC. • Lecture, e-module or video. • Formative or summative assessment.

Domain	OG18	Competencies	Delivery and assessment
		• Demonstrates understanding of genes associated with specific cancer types (e.g. BRCA2 and breast cancer), inherited cancer syndromes (e.g. Li Fraumeni syndrome) and the relevance of pathology in their detection, guiding therapy and genetic counselling. • Demonstrates understanding of bioinformatics and its role in understanding molecular variations detected on sequencing (basic knowledge only). • Demonstrates awareness of national genomic commissioning, the genomic test directory and service organisation (basic knowledge only). • Understands how genomics is increasingly being used across all pathology (and clinical) disciplines for diagnostic and therapeutic decision making.	
Digital pathology	**22**	• Demonstrates understanding of digital pathology and its implications for clinical practice within the wider digital health context. • Understands virtual microscopy – ideally has experienced virtual pathology slides (this may depend on local facilities). • Demonstrates awareness of health information systems as used in pathology and their utility in public health-level intervention, as well as the use	• SSC. • Lecture, e-module or video. • Formative or summative assessment.

Domain	OG18	Competencies	Delivery and assessment
		of big data and informatics in enabling better healthcare delivery.	

3. Knowledge relating to the biomedical scientific principles as applied to general pathology

a) Inflammation

Domain	OG18	Competencies	Delivery and assessment
Pathophysiological knowledge sufficient to reach a diagnosis and begin treatment	**22**	• Describes the basic biology of inflammation to include the function of different white cells and inflammatory mediators, including the complement system, to a level sufficient to understand and predict clinical practice. • Describes the cardinal signs of inflammation and their basic pathophysiology. • Describes the nature and causes of acute and chronic inflammation, fibrosis scar tissue formation and its complications, granulomatous inflammation and abscess formation. • Describes the concept of hypersensitivity and different hypersensitivity reactions and how this can determine treatment. • Recognises why some patients develop autoimmune diseases and the tests available currently. • Identifies important chronic inflammatory diseases and the interface with autoimmunity.	• Lecture, e-module or video. • Formative or summative assessment.

Domain	OG18	Competencies	Delivery and assessment
Microbiological knowledge and skills		• Describes laboratory measures of acute inflammation in clinical practice and what they mean.	
Haematological knowledge and skills		• Understands and is able to describe the FBC including WCC/WBC and differential counts (giving the breakdown of different white cell types) including platelets and haemoglobin levels in health and disease.	
Biochemical knowledge and skills		• Demonstrates understanding of biochemical markers of inflammation(e.g. CRP, ESR) and clinical settings in which they may be of use.	
Histopathological knowledge and skills		• Understands the role of tissue biopsies in inflammatory disorders (e.g. dermatological disorders).	
Immunological knowledge and skills		• Understands the role of immunological control in inflammatory processes and the role immune dysfunction plays in disordered inflammation. • Understands the significance of raised immunoglobulins, and how these may relate to inflammatory and neoplastic conditions.	

b) Immunological disorders

Domain	OG18	Competencies	Delivery and assessment
General organisation of immune system		• Describes the basic components and organisation of the immune system including innate and adaptive immunity and their physiological contribution to infections and inflammation (i.e. TOL like receptors, complement, T and B cells, macrophages, neutrophils). • Describes the basic principles of transplantation and understands MHC class I and class II. • Describes the basic principles and types of hypersensitivity reactions and how they lead to clinical disease (types 1–4) basics for allergic conditions, and their types (asthma, eczema, allergic rhinoconjunctivitis, etc.). • Understands and describes the concept of immune dysregulation and the basic pathogenic mechanisms leading to autoimmune disease (organ specific and connective tissue diseases such as autoimmune thyroid disease, diabetes, pernicious anaemia, RA, systemic vasculitis, etc.).	
Immunodeficiency		• Understands the basic principles of immunodeficiency affecting innate and adaptive immunity and how they link with clinical disease. • Understands classification of immunodeficiency, laboratory diagnosis of immunodeficiency,	

Domain	OG18	Competencies	Delivery and assessment
		principles of treatment of immunodeficiency, principles of inheritance of immunodeficiency (antibody deficiency, T cell defects, secondary immunodeficiency, hereditary angioedema).	
Allergy		• Diagnosis and treatment of asthma, eczema, food allergy and hay fever, the use of desensitisation and biologic therapies.	
Autoimmune disease		• Diagnosis and management of CTD and autoinflammatory diseases, mechanisms of action of basic immunosuppressive and biologic therapies.	
Basic knowledge of current vaccines for prevention of infection, cancer treatment		• Understands the principles of development of vaccines, the different vaccine types and the rationale behind vaccination programmes.	
Basic principles of immunotherapy for cancer		• Describes the basic principles of immunisation and their application to currently available vaccines for prevention of infections and cancer immunotherapy.	

c) Infection and its treatment

Domain	OG18	Competencies	Delivery and assessment
Pathophysiological knowledge sufficient to reach a diagnosis and begin treatment	**22**	• Describes the fundamental differences between bacterial and viral infection. • Describes the mechanisms that lead to sepsis and how these relate to its clinical presentation and management.	• Lecture, e-module or video. • Formative or summative assessment.
Microbiological knowledge and skills		• Applies standard microbiological terms appropriately, including bacteria, virus, infection and contagious, commensal and pathogen. • Recognises the differences between colonisation, contamination and infection. • Describes the difference between Gram stain and microscopy and culture, and the implications of the Gram stain result in terms of preliminary identification of the pathogen and empirical antibiotic therapy. • Defines the terms incubation period, infectious period and transmissibility. • Describes the different routes by which infections can be transmitted and how this relates to the control of infection.	

Domain	OG18	Competencies	Delivery and assessment
		• Describes the differences between cleaning, disinfection and sterilisation and when each is needed. • Describes common bacterial, viral, fungal and parasitic pathogens, the types of infection they cause and their management. • Can appraise/ investigate the important points in history and examination of patients with FUO. **Management of infection and antibiotic stewardship** • Describes the considerations when selecting an antibiotic. • Identifies appropriate empirical antibiotic regimens for common types of infection. • Describes how antimicrobial resistance arises. • Names and recognises the importance of common multi-resistant pathogens in clinical practice. • Describes the principles and importance of antibiotic stewardship, including when to prescribe, when to review/stop antibiotics, step down from intravenous to oral therapy and the proper use of antibiotics for surgical and other prophylaxis.	

Domain	OG18	Competencies	Delivery and assessment
		• Lists which antibiotics require measurement of levels, for therapeutic and toxicity reasons. • Recognises the importance of allergy and its implications in the context of antibiotic prescribing. • Recognises the implications of *Clostridium difficile* infection and how it is avoided and managed. • Identifies that adjustments are needed for some antibiotics for patients with renal and liver impairment.	
Haematological knowledge and skills		• Describes a basic knowledge of MHC and immunology in transplantation and transfusion.	
Biochemical knowledge and skills			
Histopathological knowledge and skills		• Describes and understands the role of tissue diagnosis of common infectious disorders.	
Immunological knowledge and skills		• Understands the organisation of the immune system and its contribution in the body's response to infection.	

d) Neoplasia and cancer

Domain	OG18	Competencies	Delivery and assessment
Pathophysiological knowledge sufficient to reach a diagnosis and begin treatment	**22**	• Describes the definition and concepts of dysplasia, oncogenes, intraepithelial neoplasia, neoplasia and the differences between benign and malignant neoplasia. • Recognises mechanisms underlying cell death, including apoptosis and necrosis. • Recognises clinical complications of tumours (e.g. haemorrhage, obstruction, etc.). • Describes the basic principles of staging and grading. • Describes the principles of tumour classification (e.g. adenocarcinoma, squamous carcinoma, melanoma). • Describes the basic biology behind tumour invasion and metastasis. • Describes the adenoma-carcinoma sequence in the colorectum. • Describes the role that certain viruses play in oncogenesis.	• Lecture, e-module or video. • Formative or summative assessment.

Domain	OG18	Competencies	Delivery and assessment
Microbiological knowledge and skills		• Understands the role of infectious agents in tumorigenesis.	
Haematological knowledge and skills		• Describes the natural history, clinical presentation and diagnosis of acute leukaemia and lymphoma. • Describes the basic haematological, biochemical, immunological and clinical features of multiple myeloma.	
Biochemical knowledge and skills		• Understands the use of tumour markers in cancer diagnosis and their role in monitoring disease. • Understands the role of serum and urine electrophoresis in diagnosis and monitoring of neoplasia.	
Histopathological knowledge and skills		• Understands that all cancer diagnoses and classification are based on histopathology.	
Immunological knowledge and skills		• Understands the role of immunodiagnosis and immunotherapy.	

e) Circulation

Domain	OG18	Competencies	Delivery and assessment
Pathophysiological knowledge sufficient to reach a diagnosis and begin treatment	**22**	• Recognises and describes: – atherosclerosis and its sequelae across the entire circulatory system – circulatory shock – infarction, ischaemia and hypoxia – the difference between a thrombus and an embolus. • Understands the differences between arterial and venous thromboembolism. • Understands the risk of systemic arterial embolism (and complications, e.g. cerebral infarction) from an unstable coronary artery atheromatous plaque with thrombus. • Understands the circulatory consequences of diabetes mellitus on a patient.	• Lecture, e-module or video. • Formative or summative assessment.
Microbiological knowledge and skills		• Describes and identifies sepsis and understands underlying pathophysiology and principles of management.	

Domain	OG18	Competencies	Delivery and assessment
Haematological knowledge and skills		• Demonstrates working knowledge of ABO and Rh blood grouping. • Describes the use and limitations of unmatched group O blood. • Describes reasons for transfusion with: red cells, platelets, FFP, cryoprecipitate and prothrombin complex concentrate, and consent patients appropriately. • Discusses the complications of transfusion, their diagnosis and management, particularly transfusion-associated fluid overload and allergic/anaphylactic reactions. • Describes the coagulopathy associated with liver disease, renal disease, massive blood loss and disseminated intravascular coagulation, and explain the basic principles of management of these conditions. • Describes the emergency treatment of massive haemorrhage. • Describes the permanent and transient risk factors for arterial and venous thromboembolism and can counsel patients appropriately.	

Domain	OG18	Competencies	Delivery and assessment
Biochemical knowledge and skills		• Describes the basic assessment of fluid and electrolyte measurement. • Describes osmolality and abnormalities thereof. • Interprets a blood gas analysis in terms of metabolic and respiratory alkalosis and acidosis.	
Histopathological knowledge and skills		• Understands the importance of tissue biopsies in vascular pathology, in particular vasculitides, the pathology of atheroma and ischaemic heart disease.	
Immunological knowledge and skills		• Understands the immunological basis of transfusion-related reactions.	

f) Intrauterine and childhood development

Domain	OG18	Competencies	Delivery and assessment
Pathophysiological knowledge sufficient to reach a diagnosis and begin treatment	**22**	• Describes the causes and consequences of prematurity. • Describes the histopathological features and consequences of childhood infections. • Describes the important causes and features of neonatal jaundice.	• Lecture, e-module or video. • Formative or summative assessment.
Microbiological knowledge and skills		• Describes the risks of infection in a foetus whose mother is infected with the blood-borne viruses HBV, HCV and HIV and how the risk of transmission can be minimised. • Describes the epidemiology and clinical features of infections with measles, mumps and rubella viruses and how they can be prevented. • Describes the presentation, diagnosis, management, infection control of VZV. • Be familiar with routine childhood vaccination schedules and contraindications.	• Lecture, e-module or video. • Formative or summative assessment.
Haematological knowledge and skills		• Describes and understands haemolytic disease of the fetus and newborn.	

Domain	OG18	Competencies	Delivery and assessment
		• Describes the inherited blood disorders (e.g. sickle cell disease and thalassemia). • Understands presentation of inherited bleeding disorders (in childhood and adults).	
Biochemical knowledge and skills		• Describes the utility of FP in Down's screening, and associated ethical implications.	
Histopathological knowledge and skills		• Understands the reasons for a paediatric post mortem and the role it plays in understanding perinatal deaths.	
Immunological knowledge and skills		• Understands the immunopathogenesis in perinatal disorders (e.g. haemolytic disease of newborn).	

g) Occupational and environmental diseases and global health

Domain	OG18	Competencies	Delivery and assessment
Pathophysiological knowledge sufficient to reach a diagnosis and begin treatment	22	• Describes the risk to health and structural consequences of: – smoking – alcohol (including but not limited to cardiac and liver disease) – lifestyle and diet – drugs: prescribed and recreational – radiation: therapeutic and environmental.	• Lecture, e-module or video. • Formative or summative assessment.
Microbiological knowledge and skills		• Assesses fever in a returning traveller appropriately. • Knows how to risk assess for VHF and MERS. • Can select appropriate initial diagnostic tests including foria.	• Lecture, e-module or video. • Formative or summative assessment.
Haematological knowledge and skills		• Understands red cell, iron and vitamin (specifically B12 and folate) metabolism and their role in diagnosis and treatment of anaemia and haematological disorders.	

Domain	OG18	Competencies	Delivery and assessment
Biochemical knowledge and skills		• Understands the role of biochemical tests in detecting and monitoring nutritional deficiencies and environmental toxins (e.g. lead exposure).	
Histopathological knowledge and skills		• Is aware of occupational and environmental diseases (e.g. asbestosis) and the legal framework that offers protection and compensation.	
Immunological knowledge and skills			

4. Knowledge relating to systems of the body

a) The cardiovascular system

Domain	OG18	Competencies	Delivery and assessment
Pathophysiological knowledge sufficient to reach a diagnosis and begin treatment	22	• Describes and explains the pathological changes (aetiopathogenesis), macroscopic and microscopic findings and relevant pathology tests (e.g. Troponin testing in myocardial infarction) for: – ischaemic heart disease – hypertensive heart disease – valvular heart disease – left- and right-sided cardiac failure and its consequences on other organs – peripheral vascular disease – aneurysms – endocarditis – vasculitides – pericarditis.	• Lecture, e-module or video. • Formative or summative assessment.
Microbiological knowledge and skills		• Describes how to recognise and diagnose endocarditis. • Describes the principles of treatment of endocarditis and identifies sources of guidance.	• Lecture, e-module or video. • Formative or summative assessment.

Domain	OG18	Competencies	Delivery and assessment
Haematological knowledge and skills		• Describes the presentation, differential diagnosis and initial management of SVC obstruction.	
Biochemical knowledge and skills		• Recognises the need to repeat troponin measurement at three hours and recognise that a significant change is indicative of an acute cardiac syndrome. • Identifies the ECG changes of hyperkalaemia. • Describes the significance of LDL and HDL cholesterol and the influence of hyperlipidaemia on cardiac risk. • Describes the significance of BNP testing in heart failure.	
Histopathological knowledge and skills		• Understands the importance of tissue biopsies in vascular pathology in particular vasculitides, the pathology of atheroma and ischaemic heart disease and the role of the post mortem in assessment of cardiovascular pathology.	
Immunological knowledge and skills		• Understands the immunological basis of vascular pathology.	

b) The respiratory system

Domain	OG18	Competencies	Delivery and assessment
Pathophysiological knowledge sufficient to reach a diagnosis and begin treatment	**22**	• Describes and explains: – COPD – asthma – chronic bronchitis – respiratory failure – carcinoma of the larynx – lung cancer – mesothelioma – pneumonia – tuberculosis – upper respiratory infection – bronchiectasis – cystic fibrosis.	• Lecture, e-module or video. • Formative or summative assessment.
Microbiological knowledge and skills		• Identifies and suggests suitable treatment for: – upper respiratory tract infection – otitis media – pneumonia (typical and atypical forms).	• Lecture, e-module or video. • Formative or summative assessment.

Domain	OG18	Competencies	Delivery and assessment
		• Describes the presentation, diagnosis, management and prevention of influenza • Understands principles of notifiable diseases (e.g. tuberculosis) and the reasons for this (e.g. transmission routes, diagnosis and therapy and implications of drug-resistant strains for the patient and for public health).	
Haematological knowledge and skills			
Biochemical knowledge and skills		• Understands and can interpret arterial blood gases and is able to recognise respiratory acidosis and alkalosis.	
Histopathological knowledge and skills		• Understands the need for tissue biopsy in diagnosis and management of respiratory disorders (e.g. obstructive or restrictive lung disease, infections, neoplastic proliferations, etc.).	
Immunological knowledge and skills			

c) The gastrointestinal system

Domain	OG18	Competencies	Delivery and assessment
Pathophysiological knowledge sufficient to reach a diagnosis and begin treatment	**22**	• Describes and explains the following conditions: – jaundice and biliary obstruction – cirrhosis – acute and chronic hepatitis (including HBV and HCV) – portal hypertension – gallstones – appendicitis and cholecystitis – pancreatitis – pancreatic cancer – cancer of the oral cavity – Barrett's oesophagus – oesophageal cancer – gastro-oesophageal reflux disease – helicobacter-associated gastritis – peptic ulceration – gastric cancer – inflammatory Bowel disease	• Lecture, e-module or video. • Formative or summative assessment.

Domain	OG18	Competencies	Delivery and assessment
		– coeliac disease – infective colitis – colorectal cancer.	
Microbiological knowledge and skills		• Identifies and suggests suitable management for: – biliary tract infection – abdominal sepsis – gastroenteritis. • Recognises the diversity of pathogens that can cause gastroenteritis. • Describes the principles in managing a hospital outbreak diarrhoea and vomiting. • Describes the epidemiology, clinical course, diagnosis, management and prevention of HBV and HCV infections.	• Lecture, e-module or video. • Formative or summative assessment.
Haematological knowledge and skills		• Understands the role of: – GI function (and dysfunction) in metabolism of nutrients necessary for normal haematopoiesis (e.g. Folate and B12 deficiency secondary to malabsorption)	

Domain	OG18	Competencies	Delivery and assessment
		– dietary supplements that may be required in different age groups (e.g. Iron in toddlers).	
Biochemical knowledge and skills		• Describes the normal constituents and limitations of a liver function test. • Describes and explains common causes of acute and chronic intrahepatic and post-hepatic liver dysfunction (including paracetamol overdose). • Demonstrates how to use ALT and ALP to distinguish between intrahepatic and post-hepatic causes of liver dysfunction. • Understands the role of amylases and/or lipases in diagnosis and monitoring of pancreatitis. • Describes how prothrombin time and albumin are measures of liver function. • Differentiates between conjugated and unconjugated bilirubin and relates this to different causes of jaundice. • Is aware of use of faecal testing in bowel screening programmes.	
Histopathological knowledge and skills		• Understands the basic histopathological features of viral hepatitides and the role of histopathology	

Domain	OG18	Competencies	Delivery and assessment
		in monitoring progression and response to therapy. • Understands the role of histopathology in bowel cancer screening.	
Immunological knowledge and skills			

d) The endocrine system

Domain	OG18	Competencies	Delivery and assessment
Pathophysiological knowledge sufficient to reach a diagnosis and begin treatment	**22**	• Describes and explains the following conditions: – diabetes mellitus – types 1 and 2 – hyperthyroidism – hypothyroidism – Cushing's syndrome – Addison's disease – pituitary adenoma.	• Lecture, e-module or video. • Formative or summative assessment.
Microbiological knowledge and skills			
Haematological knowledge and skills			
Biochemical knowledge and skills		• Describes and explains the basic principles of managing DKA and HHS, including the role of biochemical tests to help correct associated metabolic disturbances (fluid balance, potassium, acidosis and glucose). • Appreciates the use of fasting glucose and the glucose tolerance test in diagnosing diabetes.	

Domain	OG18	Competencies	Delivery and assessment
		• Describes the role of HbA1c in the diagnosis of type 2 diabetes and monitoring of type 1 and type 2 diabetes and its complications. • Identifies the clinical manifestations of hypo- and hyperthyroidism. • Describes the role and significance of thyroid function tests, and their limitations in a severely unwell patient. • Recognises that adrenal insufficiency may present as a life-threatening emergency. • Recognises the clinical symptoms/signs of primary adrenal insufficiency and that there may be clues to this diagnosis in other routine biochemical tests. • Describes and explains the basic principles of the negative feedback loop between endocrine organs and the pituitary and implications for diagnosis and treatment of endocrine disorders (e.g. thyroid function tests).	

e) The central nervous system

Domain	OG18	Competencies	Delivery and assessment
Pathophysiological knowledge sufficient to reach a diagnosis and begin treatment	**22**	• Describes the presentation, differential diagnosis and initial management of spinal cord compression. • Describes and explains: – cerebral infarction – intracerebral haemorrhage – CNS tumours – acute confusion – raised intracranial pressure – multiple sclerosis – neurodegenerative disorders (including but not limited to those affecting cognition – i.e. dementias) – main conditions of the eye.	• Lecture, e-module or video. • Formative or summative assessment.
Microbiological knowledge and skills		• Describes the clinical features, diagnosis and correct management of: – meningitis (including recognition of septic shock) – encephalitis.	

Domain	OG18	Competencies	Delivery and assessment
		• Demonstrates an awareness of the implications of risk factors for prion diseases in terms of infection control and risk in surgical procedures.	
Haematological knowledge and skills		• Understands contribution of iron and vitamin B12 in neuropsychological development.	
Biochemical knowledge and skills		• Understands significance of bilirubin testing for xanthochromia for diagnosing subarachnoid haemorrhage.	
Histopathological knowledge and skills		• Understands the role of neuropathological examination in the understanding of neurological disorders (e.g. dementia, 'Mad Cow' disease).	

f) The renal and genitourinary systems

Domain	OG18	Competencies	Delivery and assessment
Pathophysiological knowledge sufficient to reach a diagnosis and begin treatment	**22**	• Describes and explains: – acute kidney injury – acute glomerulonephritis – chronic kidney disease – pyelonephritis – renal stones – renal cell cancer – transitional cell cancer of ureters and bladder.	• Lecture, e-module or video. • Formative or summative assessment.
Microbiological knowledge and skills		• Describes and explains the concept and issues surrounding asymptomatic bacteriuria. • Recognises and suggests appropriate investigations and treatment for simple and complicated urinary tract infections.	
Haematological knowledge and skills		• Understands the difference between haematuria and haemoglobinuria.	
Biochemical knowledge and skills		• Describes the common causes of AKI and how common this is in hospitalised patients.	

Domain	OG18	Competencies	Delivery and assessment
		• Describes biochemical tests to distinguish between acute kidney injury and chronic kidney disease. • Explains the use of biochemical tests to monitor chronic kidney disease. • Describes the common aetiologies of CKD in the UK. • Describes the tests possible through urinalysis with a dipstick.	

g) The reproductive systems

Domain	OG18	Competencies	Delivery and assessment
Pathophysiological knowledge sufficient to reach a diagnosis and begin treatment	**22**	• Describes and explains: – benign breast disease, DCIS and invasive carcinoma – HPV infection of the cervix, cervical dysplasia and cancer – pelvic Inflammatory disease – endometrial cancer – ovarian cancer – menopause – ectopic pregnancy – prostate cancer and benign prostatic hyperplasia – testicular cancers.	• Lecture, e-module or video. • Formative or summative assessment.
Microbiological knowledge and skills		• Describes the clinical features, spread, and detection strategies for common STIs, and the principles of management.	
Haematological knowledge and skills		• Understands changes in iron level due to physiological (menstruation, pregnancy) or	

Domain	OG18	Competencies	Delivery and assessment
		pathological (menorrhagia) states and its effect on red cell maturation. • Understands gynaecological manifestations of bleeding disorders (e.g. bleeding disorder manifesting as menorrhagia).	
Biochemical knowledge and skills		• Describes and explains: – the uses and applications of tumour markers for germ cell tumours – the uses and application of serum and urinary hCG – hormonal changes in the menstrual cycle, pregnancy and menopause.	

h) The skin

Domain	OG18	Competencies	Delivery and assessment
Pathophysiological knowledge sufficient to reach a diagnosis and begin treatment	**22**	• Describes and explains: – common primary skin tumours (malignant melanoma, SCC and BCC), the genetic basis of inherited skin tumours (e.g. Muir Torre syndrome and theoretical basis of diagnostic testing) – metastatic deposits (Paget's disease and carcinoma) – common skin emergencies (e.g. Steven Johnson syndrome, arteritis, calciphylaxis) – skin changes in systemic disease (e.g. lupus erythematosus, diabetes) – skin changes related to drugs, allergies and insect bite reactions.	• Lecture, e-module or video. • Formative or summative assessment.
Microbiological knowledge and skills		• Lists the viral infections commonly associated with rashes, together with their principle features and differential diagnoses. • Identifies and suggests suitable treatment for: – orbital cellulitis – wound infection – necrotising fasciitis	

Domain	OG18	Competencies	Delivery and assessment
		– cellulitis – impetigo.	
Haematological knowledge and skills		• Understands bruising and purpura are manifestations of haematological disorders. • Describes changes in skin post-transplantation, e.g. graft-versus-host disease (overlap with immunological disorders).	
Biochemical knowledge and skills			
Histopathological knowledge and skills		• Understands and is able to identify normal and pathological skin changes. • Is able to identify skin ulceration on tissue sections. • Is able to identify a neoplastic infiltrate/proliferation (e.g. metastatic versus primary, SCC, BCC and melanoma).	

i) The musculoskeletal system

Domain	OG18	Competencies	Delivery and assessment
Pathophysiological knowledge sufficient to reach a diagnosis and begin treatment	**22**	• Understands, is able to describe and explain: – inflammatory and reactive arthritides – primary muscle disorders (myopathies) – osteoporosis.	• Lecture, e-module or video. • Formative or summative assessment.
Microbiological knowledge and skills		• Describes the presentation and diagnosis of osteomyelitis and septic arthritis, and suggests suitable treatment. • Describes the general principles of diagnosis and management of prosthetic joint infection.	
Haematological knowledge and skills		• Understands that bleeding disorders (e.g. haemophilia) may present as acute joints and should be considered in the differential diagnosis of acute infections. • Understands the concept of avascular necrosis, the diagnosis and the pathological changes.	
Biochemical knowledge and skills		• Identifies a high calcium blood result, and describes the acute treatment options. • Explains the term ‘adjusted calcium’.	

Domain	OG18	Competencies	Delivery and assessment
		• Describes and explains calcium homeostasis and the role of parathyroid hormone, vitamin D.	
Histopathological knowledge and skills		• Understands the role of a tissue biopsy (and its frequent use) in the diagnosis of muscle disorders, synovial inflammation and bone and bone marrow pathology. • Describes common bone and muscle tumours.	

j) Blood and immunity systems

Domain	OG18	Competencies	Delivery and assessment
Pathophysiological knowledge sufficient to reach a diagnosis and begin treatment	**22**	• Identifies and is able to describe the functions of: – red blood cells and precursors – white blood cells and precursors – platelets – histiocytes and macrophages (and explains their role in disease). • Explains and describes the organisation of the immune system and effector mechanisms. • Explains and describes monoclonal antibody production and their diagnostic (monoclonal antibody, immunohistochemistry, flow cytometry) and therapeutic (immune therapy e.g. Rituximab, Campath) applications. • Explains and describes the immune basis of common pathological phenomenon (e.g. types 1–4 hypersensitivity reactions and association with disease – e.g. renal disease, granuloma formation).	• Lecture, e-module or video. • Formative or summative assessment.

Domain	OG18	Competencies	Delivery and assessment
		• Describes: – common autoimmune disorders (e.g. SLE) – the concept of immune reaction (HLA typing) and its role in organ donation and transplantation.	
Microbiological knowledge and skills		• Describes the principles and risks of immune suppression. • Describes the basic mechanisms involved in allergic reactions, and how these can be modified in clinical practice. • Explains the difference between an antigen and antibody test. Interprets antibody test results with respect to IgM and IgG. • Describes how the white cell count and differential are useful in detecting and monitoring infection.	
Haematological knowledge and skills		• Describes and explains haematopoiesis in order to understand an FBC. • Understands the role of iron, vitamin B12 and folate in erythropoiesis and in anaemia.	

Domain	OG18	Competencies	Delivery and assessment
		• Describes anaemia in terms of erythrocyte size and relates that to differential diagnosis and possible treatment. • Describes the common causes of thrombocytopenia. • Identifies thrombotic thrombocytopenic purpura and recognises the need for urgent treatment. • Describes common complications in patients with haemoglobinopathy and basic management strategies. • Understands the coagulation pathway and mechanisms of physiological and pathological clotting. • Describes and explains how to diagnose and manage patients with overdoses of anticoagulants, whether bleeding or not. • Explains the basic pharmacology of anticoagulant therapy and performs basic counselling on a patient initiated on commonly used anticoagulants. • Describes the mode of action, monitoring blood tests and complications of the currently used anticoagulant and anti-platelet drugs.	

Domain	OG18	Competencies	Delivery and assessment
Biochemical /Immunological knowledge and skills		• Understands the basic repertoire of common immunological tests available (e.g. serum antibodies, complement levels, etc.) and their role in monitoring health (e.g. immune response) and disease (active versus latent infection, autoimmune disorders, etc.).	

Equality and diversity statement

The Royal College of Pathologists is committed to the principle of diversity and equality in employment, membership, academic activities, examinations and training. As part of this commitment we are concerned to inspire and support all those who work with us directly and indirectly.

Integral to our approach is the emphasis we place on our belief that everyone should be treated in a fair, open and honest manner. Our approach is comprehensive and reflects all areas of diversity, recognising the value of each individual. We aim to ensure that no one is treated less favourably than another on the grounds of sex, race, age, sexual orientation, gender reassignment, disability, pregnancy and maternity, religion and belief or marriage and civil partnership. Our intention is to reflect not only the letter but also the spirit of equality legislation.

Our policy takes account of current equality legislation and good practice as outlined in the Equality Act 2010, which supersedes/includes all previous legislation.

Appendix 1: Acronyms and glossary

ABO	blood group system
AFP	Alpha-Fetoprotein
AKI	Acute Kidney Injury
ALP	Alkaline Phosphatase
ALT	Alanine Aminotransferase
AoMRC	Academy of Medical Royal Colleges
BCC	Basal cell carcinoma
BNP	Brain natriuretic peptide
CD	Cluster of differentiation
CKD	Chronic Kidney Disease
CNS	Central Nervous System
COPD	Chronic Obstructive Pulmonary Disease
CRP	C-reactive protein
CTD	Connective tissue disease
DCIS	Ductal Carcinoma In Situ
DKA	Diabetic ketoacidosis
DNA	Deoxyribonucleic acid
ECG	Electrocardiogram
ELISA	Enzyme-linked immunosorbent assay
EMQ	Extended Matching Question
ESR	Erythrocyte sedimentation rate
FBC	Full blood count
FFP	Fresh frozen plasma
FISH	Fluorescence in-situ hybridisation
FUO	Fever of unknown origin
HBV	Hepatitis B virus
hCG	Human chorionic gonadotropin
HCV	Hepatitis C virus
HDL	High-density lipoproteins
HHS	Hyperosmolar hyperglycaemic state
HIV	Human Immunodeficiency Virus
HLA	Human leukocyte antigen
HPV	Human Papilloma Virus
IgG	Immunoglobulin G

IgM	Immunoglobulin M
LDL	Low-density lipoprotein
MCQ	Multiple choice questions
MDT/MDM	Multidisciplinary team meeting – a meeting to discuss optimal patient care by all specialists involved in the care of a patient. These meetings broadly cover both cancer and non-cancer related care decisions. Typically, they include a clinical sub-specialist (Dermatologist, Haematologist etc.), clinical nurse specialists/practitioners or equivalent, nurses, a radiologist, a nuclear medicine specialist, pathologist, oncologists, a co-ordinator or administrator and research co-ordinators and/or database administrators.
MERS	Middle East respiratory syndrome
MHC	Major Histocompatibility complex
MSCAA	Medical Schools Council Assessment Alliance
OG18	Outcomes for Graduates 2018
OSCE	Objective Structured Clinical Examination
OSPE	Objective Structured Practical Examination
PCR	Polymerase chain reaction
PFs	Procurators Fiscal
RA	Rheumatoid arthritis
Rh	Rhesus factor
RNA	Ribonucleic acid
SAQ	Short Answer Questions
SBA	Single best answer (in line with the MSCAA and SAQs)
SCC	Squamous Cell Carcinoma
SLE	Systemic lupus erythematosus
SSC	Student selected component
STI	Sexually transmitted infection
SVC	Superior vena cava
VHF	Very high frequency
VTE	Venous thrombo-embolism
VZV	Varicella Zoster Virus
WCC	White cell count also known as WBC (white blood cell count)

Appendix 2: A note on assessments

While indicative assessments are mentioned in each section, they are not exhaustive and the College does not endorse any one particular assessment type over another. Assessment will depend on the teaching methodology used (e.g. lecture- or problem-based learning). The College recognises that there is a need for standardisation in the approach to assessment and evaluation but that this is outside the purview of this document and needs consideration at Medical Schools Council and local medical school level. The options that are already in use at medical school level and are recommended by the Medical Schools Council Assessment Alliance (MSCAA) e.g. single best answer (SBA) are not mentioned but it is presumed that these will be in use at local level. The use of other suitable alternatives e.g. Short Answer Questions (SAQs) and Extended Matching Questions (EMQs) will again be a local decision.