

The New Examinations in Haematology

The new format examinations for Membership of the Royal College of Pathologists in Haematology commence in Spring 2007. The examinations are designed to assess the Haematology Training Curriculum.

The new **Part 1 Examination** comprises two three-hour papers that assess knowledge of laboratory haematology, general haematology, haematological oncology, haemostasis and thrombosis and blood transfusion. One paper comprises 4 compulsory essay questions and the other contains 125 multiple choice questions. Essay questions explore a trainee's abilities to communicate effectively in writing in a structured and clear manner, to critically evaluate investigational or therapeutic strategies and to demonstrate an ability to combine knowledge and experience derived from different sources. The MCQ paper evaluates a trainee's knowledge across a broad spectrum of the Haematology Training Curriculum. Candidates must achieve a pass mark in both papers at a single sitting to pass the Part 1 Examination. Feedback on areas where a candidate failed to achieve an adequate standard is sent to all candidates who fail the examination.

Trainees are eligible to sit the Part 1 Examination after at least 18 months in a recognised training post. Trainees who have completed at least 30 months recognised training, are eligible to sit the Part 2 Examination a minimum of 12 months after successfully completing the Part 1 examination.

The new **Part 2 Examination** assesses the core skills required of a Consultant Haematologist. This examination takes the same structure as the old format Part 1 Practical Examination and comprises 2 morphology papers assessing general haematology and haematological oncology, a blood transfusion data interpretation paper and a haemostasis & thrombosis data interpretation paper. The standard required to pass this examination is the standard that would be expected of an unsupervised Consultant Haematologist. In addition an oral examination assesses the trainee's clinical judgement and problem-solving skills in laboratory haematology, general haematology and haematological oncology and a second oral examination assesses blood transfusion and haemostasis & thrombosis. The oral examinations are structured and standardised between centres.

The Part 2 Examination including the oral examination is conducted simultaneously at several UK centres. All written papers in the Part 2 Examination are marked at the College by the Examination Board which comprises examiners who have prepared the examination papers and conducted oral examinations at each centre. The final marks awarded at the Examination Board must be approved by the College Examination Committee before a final pass/fail decision is made. Candidates must achieve a pass mark in all three papers and demonstrate competence in the oral examination at a single sitting to pass the Part 2 Examination. Feedback on areas where a candidate failed to demonstrate an adequate standard is sent to candidates who fail the examination.

The New Part 1 Examination

Paper 1: Essay Examination

This essay examination comprises four questions. All candidates must answer all four questions. There is no longer a choice from five options.

Questions will address an important area of laboratory or clinical practice in each of the following four areas:

1. blood transfusion
2. general haematology (including laboratory management)
3. haematological oncology
4. haemostasis & thrombosis.

Each question is set and marked by a pair of examiners using detailed marking descriptors. Borderline papers undergo moderation.

The aim of this essay examination is to determine a trainee's ability to demonstrate the following skills:

1. present a clear and cogent written answer to the question set
2. select, organise and communicate relevant information or knowledge
3. structure an essay that communicates relevant facts clearly without irrelevant information
4. display an appropriate knowledge of disease patho-physiology, diagnostic investigation, established therapies and new developments and relate this to clinical and laboratory practice
5. select an appropriate course of action and in so doing to display good clinical judgement
6. critically evaluate investigational strategies, treatment options or recent advances.

In addition to evaluating topics from the four main areas of the specialty, questions within each paper may include the following areas to provide a balance between basic knowledge, questions focused on laboratory practice and questions that explore clinical knowledge, judgement and skills.

- Focused tasks, e.g. preparation of a letter to a GP/referring consultant, a business case for new drug/equipment/test, an information sheet for patients, a standard operating procedure.
- Focused problems, e.g. describing the management or investigation of a particular clinical or laboratory problem of a common or important nature.
- Basic knowledge of disease pathophysiology in the context of its application to clinical or laboratory practice.
- Critical evaluation of investigational or clinical strategies with a

requirement to demonstrate clinical judgement through selection of an appropriate approach to a specific case.

Following the introduction of the MCQ paper to evaluate a broad knowledge base, 'short notes' questions used in the old format essay examination are no longer required.

An example of Paper 1 is provided:

Paper 1

1. Discuss the pathogenesis, investigation and management of TRALI and critically evaluate strategies available for the prevention of this condition.
2. Discuss the investigation and management of a pregnant woman at 36 weeks with a platelet count of $70 \times 10^9/l$ and critically evaluate the available therapeutic options. Indicate your recommended management and the reasons for your choice.
3. Critically evaluate the therapeutic options for a 30 year old man with relapsed acute promyelocytic leukaemia and indicate your recommended management plan and reasons for your choice.
4. Discuss the pathogenesis and investigation of an acquired inhibitor to Factor VIIIc. Evaluate the management options for a 55 year old woman with an acquired inhibitor to Factor VIIIc. Write a letter to her GP outlining your management plan.

Paper 2 MCQ Examination

This contains 125 multiple choice questions examining a trainee's knowledge of the patho-physiology, investigation and management of haematological disease and laboratory and clinical practice. Seventy-five questions are 'extended matching' format. Fifty questions are 'best from five' format. No marks are deducted for an incorrect answer.

Blood transfusion, general haematology (including laboratory management), haematological oncology and haemostasis & thrombosis each comprise approximately 25% of this examination. A small number of questions may evaluate trainee knowledge of management topics, research methodology or statistics.

Most questions are structured around clinical or laboratory vignettes and are designed to assess a trainee's clinical judgement rather than simple recall or recognition of facts. The questions map to the Haematology Training Curriculum and the 'blue print' from which questions have been developed is detailed below. Each question examines a focus within a theme. Examples listed under each theme are not exclusive.

The pass mark for Paper 2 is determined by a validated method (Angoff procedure) undertaken by members of the Panel of Examiners in Haematology and the Haematology Specialty Advisory Committee.

General & Laboratory Haematology Themes

- Bone marrow failure syndromes
- Iron metabolism abnormalities
- Underproduction anaemias
- Haemolytic anaemias
- Obstetric haematology
- Paediatric haematology
- Infective problems in haematology
- Laboratory haematology
- Laboratory management

Haematological Oncology Themes

- Myeloproliferative disorders
- Myelodysplastic syndromes
- Acute leukaemias
- Lymphoproliferative disorders
- Plasma cell dyscrasias
- Lymphomas

Haemostasis & Thrombosis Themes

- Platelet disorders
- Inherited haemorrhagic disorders
- Acquired haemorrhagic disorders
- Inherited thrombotic disorders
- Acquired thrombotic disorders

Transfusion Medicine Themes

- Indications for blood & blood product transfusion
- Complications of blood & blood product transfusion
- Donor selection
- Blood product production
- Blood product selection
- Blood bank techniques

Therapeutics Themes

- Chemotherapeutic agents
- Haemopoietic growth factors
- Stem cell transplantation
- Anti-thrombotic agents
- Anti-platelet agents
- Thromboprophylaxis
- Pro-thrombotic agents

Questions examine a single focus within a theme. For example, within the theme of lymphoma a question may address any of the following areas of focus. Many, but not all, areas of focus listed apply to the themes listed above.

- aetiology & pathogenesis
- epidemiology
- clinical features at presentation
- clinical investigations
- 'routine' laboratory investigation
- morphological features of blood or marrow
- special techniques for diagnosis
- cytogenetics
- molecular diagnostics
- differential diagnosis
- prognostic factors
- staging
- complications
- natural history
- indications for therapy
- therapeutic options
- therapy-related complications
- transfusion issues
- issues related to diagnosis in pregnancy
- issues related to a paediatric patient

Examples of Questions from Paper 2

Best from five questions require a candidate to select the most appropriate or most likely answer from five alternatives offered. Sometimes a question will have a single 'true' answer and four 'false' alternatives but there will often be a single 'correct' answer and four 'less good' alternatives. Each question addresses a single focus within a theme. Fifty questions take a 'best from five' format.

Extended matching questions are set in groups of five questions that share a focus on a

single theme. A candidate is required to match the most appropriate or most likely answer from a list of ten to twenty alternatives. Seventy-five questions (fifteen groups of five) take an 'extended matching' format. Examples of questions from this paper are provided below.

'Best from five' Questions

Question 1

Theme: acute leukaemia

Focus: investigations - special techniques for diagnosis

A bone marrow examination is performed on a 48 year old woman who presents with pancytopenia and has circulating blasts in her peripheral blood film. The following immunophenotypic results are obtained by flow cytometry of the bone marrow:

TDT +ve
HLA-DR +ve
CD10 +ve
CD19 +ve
Cyt Ig +ve
SmIg -ve
CD33 weak +ve
CD34 +

Which type of leukaemia does this represent?

- A. Pre-pre-B ALL
- B. Common ALL
- C. Pre-B ALL
- D. B ALL
- E. Pro-B ALL

Question 2

Theme: abnormalities of iron metabolism

Focus: clinical investigations

A 39 year old Caucasian man is referred with a serum ferritin of 1945 ng/ml and is found to be heterozygous for HFE C282Y and H63D. Liver function tests are normal. He is commenced on a venesection programme.

Optimal venesection is best assessed by which of the following?

- A. Normalisation of magnetic resonance of liver
- B. Normalisation of percentage transferrin saturation
- C. Normalisation of serum ferritin
- D. Normalisation of serum ferritin and percentage transferrin saturation
- E. Normalisation of serum ferritin and serum iron

Question 3

Theme: acquired haemorrhagic diseases

Focus: special techniques

A 24 year old woman has a 2 litre primary post partum haemorrhage. Coagulation studies show a normal platelet count, PT 13 secs (control 12 secs), APTT ratio 2.9 and fibrinogen 3.5 g/l.

Which test will distinguish between acquired haemophilia A and lupus anticoagulant (antiphospholipid antibody)?

- A. Bleeding time
- B. DRVVT with platelet neutralisation procedure
- C. Factor VIII assay
- D. Platelet function tests
- E. Von Willebrand factor activity

Extended Matching Questions

Theme: Transfusion Medicine

Focus: Blood product selection

In each of the following situations, a patient requires blood component support.

For each situation, select the most suitable product from the list of options.

Each option may be used once, more than once, or not at all.

Question 4

A 77 year old man presents with an intracerebral haemorrhage. He has been on Warfarin since his aortic valve replacement three years earlier and his INR on admission is 3.5.

Question 5

A 76 year old woman with chronic lymphocytic leukaemia presents after chemotherapy with epistaxis and a platelet count of $5 \times 10^9/L$. The treatment regimen has recently been changed after an earlier course of Fludarabine.

Question 6

A 22 year old woman with type 3 von Willebrand disease presents in labour and requires emergency Caesarean section. Her Factor VIIIc, von Willebrand antigen and Ristocetin co-factor are all less than 10%.

Question 7

A 35 year old woman develops microangiopathic haemolytic anaemia at 40 weeks and the platelet count continues to fall 24 hours after delivery. Her coagulation screen is normal. Spherocytes and red cell fragments are present in the peripheral blood film.

Question 8

A 28 year old man with hypo/dysfibrinogenaemia requires an elective mastoidectomy.

Options

- A. Solvent detergent virally-inactivated fresh frozen plasma
- B. Methylene blue treated virally-inactivated fresh frozen plasma
- C. Leucocyte depleted platelet concentrate
- D. Leucocyte depleted, irradiated platelet concentrate
- E. Leucocyte depleted, cytomegalovirus negative platelet concentrate
- F. Leucocyte depleted, irradiated, cytomegalovirus negative platelet concentrate
- G. Cryoprecipitate
- H. Fibrinogen concentrate
- I. Prothrombin complex concentrate (containing factors II, VII, IX & X)
- J. Intermediate purity factor VIII concentrate (containing von Willebrand factor)

Assessment of Clinical Skills

It is advisable that trainees in Haematology acquire skills in general internal medicine prior to entering specialist training. The best current assessment of a trainee's clinical skills in acute medicine is the MRCP (UK) PACES examination and, at the time of

writing, possession of MRCP(UK) a requirement for UK trainees entering higher specialist training in Haematology. There is no additional clinical examination for Haematology trainees entering the new format examinations.

Trainees who have sat old format examinations

Trainees who have successfully passed the entire old format Part 1 written and practical examinations must complete the old format Part 2 oral examination when eligible. The College will continue to run the old format Part 2 oral examination until all trainees have either passed this examination or completed the maximum number of attempts.

Trainees who have successfully passed only the old format Part 1 written examination but either have not attempted or have not passed the old format Part 1 practical examination, must sit the new format Part 2 examination when eligible.

Trainees who have attempted but not passed the old format Part 1 written examination must sit the new format Part 1 examination.

Candidates undertaking examinations in the old format under the previous regulations who do not possess MRCP(UK) or a recognised equivalent must sit a Part 2 Clinical Examination in addition to the Part 2 Oral Examination. This examination will be run until all these trainees have passed or completed the maximum number of attempts.

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