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FOR SCIENTISTS, BY SCIENTISTS

Delivery of Training and Education within a Haematology Laboratory

- quick wins for the trainee & trainer

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TOPICS

Who is a trainee?

Qualifications available

Training burden and quick wins

Identifying common themes

Creating cross-discipline/ qualification training programmes

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TRAINING AUDIT

Periodic review of

- Departmental training strategy & training needs
- Budget
- Training accreditation status e.g. HSST & IBMS
- Trainers
- Trainees – training plans

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QUALIFICATIONS/TRAINING

Biomedical Scientists

Initial Competency Requirements

IBMS Specialist Portfolio (V004)

IBMS Specialist Portfolio (V005)

IBMS Higher Specialist Diploma in Haematology

IBMS Diploma of Expert Practice in Routine Haematology

MSc in Biomedical Science

MSc in Haematology and Blood Transfusion

Clinical Scientists

STP - Haematology and Transfusion Science

HSST – Haemato-Oncology

HSST – Haemostasis and Thrombosis

HSST – Blood Transfusion

STP - Biochemistry

Specialty Trainees & Consultants

Haematology ST3 onwards

• Haematology curriculum

Refresher for clinicians returning from absence/career break

Competency requirements

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IBMS Specialist Diploma (Portfolio)

Version 004

- 7.6a Haematological Malignancy
- 7.6b Polycythaemia

Version 005

- Classification of Haematological Malignancies
- Investigation and Diagnosis of Haematological Malignancies

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IBMS HAEMATOLOGICAL MALIGNANCIES MODULES

Learning outcomes	1. Describe normal haemopoietic cell pathways and discuss the consequences of abnormalities and subsequent development of haematological disorders. Provide specific examples for each pathway. 2. Describe the classification of myeloid and lymphoid haematological malignancies including WHO classification/ICC classification and discuss their role in patient diagnosis and management. 3. Describe the classical immunophenotype profiles associated with APL, AML, ALL, CLL. 4. Discuss the significance of cytogenetic testing in the diagnosis and management of haematological disorders using specific examples e.g. t(15;17)(q22;q12), hyperdiploidy, chromosome loss. 5. Discuss the significance of molecular testing in the diagnosis and management of haematological disorders for example *BCR::ABL1* , JAK2, *PML::RARA* , TP53. 6. Discuss the sample requirements for the investigation of haematological malignancies and the principle of the SHIMDS pathway. 7. Discuss the treatment pathways and options employed for the following malignancies and how this impacts interpretive assessment: • AML • ALL • CLL • PV • CML • MDS • Myeloma 8. Discuss the role of genomic medicine and personalised treatment plans in the treatment and management of patients with haematological malignancies e.g. gene therapy, targeted therapy, NGS panels.

Learning outcomes	1.Demonstrate understanding of the changes in full blood count results associated with the diagnosis and on-going treatment of haematological disorders including: erythrocytosis/anaemia, leucocytosis/leucopoenia, thrombocytosis/thrombocytopenia. 2. Demonstrate the urgency and prioritisation of suspected haematological disorders, ensure the clinical impact and outcome is described. 3. Discuss the investigation, diagnosis, treatment and management of polycythaemia. 4. Discuss the principles and applications of bone marrow aspirate/trephine investigations in the investigation and treatment of myeloid and lymphoid haematological malignancies. 5. Describe the principle of immunophenotyping and discuss the different investigative pathways that may be followed in the investigation of chronic lymphocytosis and suspected acute leukaemia. 6.Describe the principles of cytogenetic analysis and discuss chromosomal abnormalities that could assist diagnosis and prognosis of haematological disorders, providing specific examples seen in haematological disorders. 7. Discuss the principles of molecular testing methodologies used in haematological disorders such as PCR, FISH. 8. Describe measurable residual disease (MRD) methodologies in the context of haematological disorders. 9. Demonstrate, with an example from practice, the investigation and management of a haematological disorder ensuring the multi-disciplinary laboratory investigations and interactions are described. Include details of treatment and clinical outcome for the example selected.

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STP SPECIALIST HAEMATOLOGY MODULE

Module: S-HT-S2 - Training activity: 11

Details

Select, perform and interpret for the investigation of a haematological malignancy to include investigation by:

- Morphology
- Immunophenotyping
- Molecular
- Karyotyping/cytogenetics

Module: S-HT-S2 - Training activity: 11

Relevant learning outcomes

Outcome

3 Perform a **range of laboratory and molecular testing techniques** to diagnose and monitor treatment of **haematological malignancy** in the correct clinical context, including the interpretation and reporting of results.

4 Interpret and comply with national and **international guidelines on the diagnosis and management of haematological cancer.**

7 Perform quality assurance and control tasks across the range of investigations.

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HSST HAEMATO-ONCOLOGY

- HLS024 Acute Leukaemia
- HLS025 Chronic Leukaemia
- HLS026 Myeloma
- HLS031 Bone Marrow Failure Syndromes 1
- HLS033 Myeloproliferative Disorders
- HLS036 Lymphoma 1
- HLS152 Bone Marrow Failure Syndromes 2
- HLS163 General laboratory investigation of malignant haematological disease
- HLS164 Myeloid Malignancy
- HLS165 Lymphoid Leukaemia
- HLS166 Myeloma and Plasma Cell Disorders
- HLS174 Lymphoma 2
- HLS176 Molecular diagnostics – Haemato-oncology

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QUICK WINS – TRAINING TEAM

Consider overall departmental training burden and who is going to

- Develop overall training strategy for department
- Link between laboratory and clinical haematology
- Supervise trainees/candidates – different grades can be overseen by different staff groups
- Oversee MSc projects
- Mentor
- Deliver training

Consider training team

- One training officer – need to prevent duplication of work for each programme to reduce workload
- Multiple training officers for different programmes – divide and conquer (the workload)
- Consider strengths of individuals and adaptability

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TRAINING TEAM

Identify common themes in each of the programmes

- Haematopoiesis
- Diagnostic investigations
- Myeloid
- Lymphoid...

Build training resources that address curriculum requirements

Familiarise/stay up to date with any developments in qualification requirements e.g. portfolios

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TRAINEE

- Familiarise yourself with your programme and curriculum
- Prepare for practical placements or moves to different laboratory sections
- Does YOUR in-house training programme cover the topics in YOUR curriculum sufficiently
- Feedback - what works & what doesn't
- Seek advice from mentor and previous candidates
- Engage with trainers, other team members

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TRAINING DOCUMENTS LIBRARY

Q-Pulse record	Document Title
HMTD009	Basic White Cell Morphology (PPT)
HMTD012	WBC (non-malignant) Training Slides
HMTD025	Infectious Mononucleosis
HMTD016	Diagnosing Acute Leukaemia (PPT)
HMTD026	Morphological Comparison of Lymphoblasts
HMTD073	Monocytes and their precursors
HMTD027	Lymphoproliferative Disorders (PPT)
HMTD028	Myeloproliferative Neoplasms (PPT)
HMTD029	Acute Promyelocytic Leukaemia (PPT)
HMTD066	Myelodysplastic Neoplasms/syndrome (PPT)
HMTD071	Eosinophilia (PPT)
HMTD020	Acute Myeloid Leukaemia Training Slides
HMTD021	Acute Lymphoblastic Leukaemia Training Slides
HMTD022	MDS/MPN Training Slides
HMTD023	Lymphoproliferative Disorders Training Slides
HMTD085	Introduction to Classification of Haematological Malignancy

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ADAPT TRAINING DOCUMENTS

Target Audience

- This training PowerPoint is used for the following groups
  - Biomedical Scientists completing their morphology competency
  - Biomedical Scientists completing the Specialist Portfolio
  - Biomedical Scientists completing the Higher Specialist Diploma or Diploma of Expert Practice as advanced qualifications
  - Haematology Specialty Trainees on rotation
  - HSST Haemato-Oncology
  - Trainee Clinical Biochemist (STP)

- The depth of knowledge required for each group may differ
- To ease identification of required material the title of each slide will be colour coded
  - Competency requirement or Trainee Clinical Biochemist
  - Specialist Portfolio plus the above competency requirement slides (refresher)
  - HSD, DEP, Haematology ST3 onwards, HSST or further reading – all slides

Learning Objectives

- Be aware of the clinical presentation of MPNs
- Be able to identify the morphological features seen in the peripheral blood (PB)
- Understand the different classification of the 'core four' MPNs

- Be aware of, and understand the main 'core four' Myeloproliferative Neoplasms (MPN) and their diagnostic criteria
- Understand the cytogenetic abnormalities associated with each of the 'core four' MPN covered

- Be aware of the morphological features seen in the bone marrow (BM) and be able to interpret bone marrow findings

Note: some of the cytogenetics are associated with more than 1 MPN therefore the cytogenetic abnormality will be reviewed at the end – use the hyperlinks to 'jump' to the appropriate slide