MINISTRY OF HEALTH MALAYSIA

Academy of Medicine of Malaysia

Malaysian Society of Haematology

LOGBOOK

FOR

CLINICAL HAEMATOLOGY TRAINING

2025

OVERVIEW OF CURRICULUM FOR CLINICAL HAEMATOLOGY TRAINING

A. Anaemias
B. Bone marrow failures
C. Leukaemias/myelodysplastic syndrome
D. Chronic Myeloid Leukemia (CML)
E. Myeloproliferative neoplasms (excluding CML)
F. Chronic lymphocytic leukaemias
G. Plasma cell disorders and paraproteinaemias
H. Lymphomas
I. Infections in neutropenic/immuno-compromised patients
J. Bleeding disorders- Inherited & acquired
K. Thromboembolism
L. Haematopoietic stem cell transplantation
M. Laboratory Haematology
N. Transfusion Medicine

The details of the curriculum are in the training handbook. Please refer to it for further clarification. The curriculum identifies the areas of understanding and competence that the trainees should have acquired during the educational period: -

Assessment throughout will be by:

a) Observation by supervisor
b) Regular formative assessments
c) Summative assessments

This logbook is for documentation of evidence of the training in clinical haematology according to the curriculum. This record serves not only as evidence of training but also as a tool for reflective learning and continuous professional development.

ANAEMIA

Submit **10 cases** including at least **3 new cases**. For each case, please provide the patients' initial, registration number, diagnosis, treatment, and outcome. The cases should cover conditions such as nutritional deficiencies, haemoglobinopathies, haemolytic anaemias, etc. Attach additional sheets if more space is needed.

No	Date	Initial	RN	Diagnosis	Treatment	Outcome
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Signature :
Supervisor Name :
Date :

BONE MARROW FAILURES

Submit **8 cases** including at least **2 new cases**. The cases should cover both **acquired and inherited** forms of bone marrow failure.

For each case, please provide the patients' initial, registration number, diagnosis, treatment, and outcome. Attach additional sheets if more space is needed.

No	Date	Initial	RN	Diagnosis	Treatment	Outcome
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Signature :
Supervisor Name :
Date :

LEUKAEMIAS

Acute Myeloid Leukaemia (AML)

Submit **10 cases** including a minimum of **3 new cases** and at least **one case** of APML. For each case, provide patients' initials, date of attendance, registration number, diagnosis, treatment, and outcome. Attach additional sheets if more space is required.

No	Date	Initial	RN	Diagnosis	Treatment	Outcome
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Signature :
Supervisor Name :
Date :

Acute Lymphoblastic Leukaemia (ALL)

Submit **10 cases** including a minimum of **3 new cases and covering both B-ALL and T-ALL**. For each case, provide patients' initials, date of attendance, registration number, diagnosis, treatment, and outcome. Attach additional sheets if more space is required.

No	Date	Initial	RN	Diagnosis	Treatment	Outcome
1						
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Signature :
Supervisor Name :
Date :

MYELODYSPLASTIC SYNDROME (MDS)

Submit **10 cases**, including a minimum of **3 new cases, covering various subtypes of MDS.** For each case, please provide patients' initials, date of attendance, registration number, diagnosis, treatment, and outcome. Attach additional sheets if more space is required.

No	Date	Initial	RN	Diagnosis	Treatment	Outcome
1						
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Signature :
Supervisor Name :
Date :

CHRONIC MYELOGENOUS LEUKAEMIA (CML)

Submit **10 cases** including at least **3 new cases**. For each case, please provide patients' initials, date of attendance, registration number, diagnosis, treatment, and outcome. Attach additional sheets if more space is required.

No	Date	Initial	RN	Diagnosis	Treatment	Outcome
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Signature :
Supervisor Name :
Date :

MYELOPROLIFERATIVE NEOPLASMS (MPD)

Submit **10 cases**, including minimum of **3 new cases, and at least 2 cases each of ET, PRV, and MF**.

For each case, provide patients' initials, date of attendance, registration number, diagnosis, treatment, and outcome. Attach additional sheets if more space is required.

No	Date	Initial	RN	Diagnosis	Treatment	Outcome
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Signature :
Supervisor Name :
Date :

CHRONIC LYMPHOCYTIC LEUKAEMIA (CLL)

Submit **5 cases**, including at least **2 new cases and one case treated with targeted therapy.**
For each case, please provide patients' initials, date of attendance, registration number, diagnosis, treatment, and outcome. Attach additional sheets if more space is required.

No	Date	Initial	RN	Diagnosis	Treatment	Outcome
1						
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4						
5						

Signature :
Supervisor Name :
Date :

PLASMA CELL DISORDERS AND PARAPROTEINEMIAS

Submit **10 cases**, including **at least 3 new cases** of multiple myeloma and at least **one case treated with novel monoclonal antibodies**. It should also include at least **one case, each of Waldenstrom macroglobulinemia, and amyloidosis.** For each case, please provide patients' initials, date of attendance, registration number, diagnosis, treatment, and outcome. Attach additional sheets if more space is required.

No	Date	Initial	RN	Diagnosis	Treatment	Outcome
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Signature :
Supervisor Name :
Date :

HODGKIN LYMPHOMA (HL)

Submit 5 cases, including at least **2 new cases** and **one case treated with targeted therapy**. For each case, please provide patients' initials, date of attendance, registration number, diagnosis, treatment, and outcome. Attach additional sheets if more space is required.

No	Date	Initial	RN	Diagnosis	Treatment	Outcome
1						
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Signature :
Supervisor Name :
Date :

NON-HODGKIN LYMPHOMA (NHL)

Submit **10 cases**, including at least **3 new cases**, covering **a variety of NHL types and grades**, with at least **one case treated using novel targeted immunotherapies**. For each case, please provide patients' initials, date of attendance, registration number, diagnosis, treatment, and outcome. Attach additional sheets if more space is required.

No	Date	Initial	RN	Diagnosis	Treatment	Outcome
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Signature :
Supervisor Name :
Date :

FEBRILE NEUTROPENIA

Submit **10 cases**, including at least **3 new cases** and at least **one case each of invasive fungal infection and viral infection.** For each case, please provide patients' initials, date of attendance, registration number, diagnosis, treatment, and outcome. Attach additional sheets if more space is required.

No	Date	Initial	RN	Diagnosis	Treatment	Outcome
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Signature :
Supervisor Name :
Date :

BLEEDING DISORDERS

Inherited Bleeding Disorders

Submit 6 cases, including at least 2 new cases. For each case, please provide patients' initials, date of attendance, registration number, diagnosis, treatment, and outcome. Attach additional sheets if more space is required.

No	Date	Initial	RN	Diagnosis	Treatment	Outcome
1						
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Signature :
Supervisor Name :
Date :

Acquired Bleeding Disorders

Submit 6 cases, including at least 2 new cases. For each case, please provide patients' initials, date of attendance, registration number, diagnosis, treatment, and outcome. Attach additional sheets if more space is required.

No	Date	Initial	RN	Diagnosis	Treatment	Outcome
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Signature :
Supervisor Name :
Date :

THROMBOEMBOLISM

Submit **10 cases**, including at least **3 new cases, covering a mix of venous and arterial thromboembolism.** For each case, please provide patients' initials, date of attendance, registration number, diagnosis, treatment, and outcome. Attach additional sheets if more space is required.

No	Date	Initial	RN	Diagnosis	Treatment	Outcome
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Signature :
Supervisor Name :
Date :

CONSULTATIVE HAEMATOLOGY

Interdisciplinary Clinical Haematology: Trainees should engage in collaborative management across specialties—participating in joint consultations, multidisciplinary rounds, and shared decision-making with teams from oncology, ICU, surgery, pathology, transfusion medicine, and others—contributing hematologic expertise in diagnosis, transfusion, anticoagulation, and therapeutic planning to optimize patient outcomes.

Haematology relating to other medical specialities (Consultative Haematology)

Submit **10 cases**, including at **least 3 new cases**, covering a mix of interdisciplinary consultative haematology cases. For each case, please provide patients' initials, date of attendance, registration number, diagnosis, treatment, and outcome. Attach additional sheets if more space is required.

No	Date	Initial	RN	Diagnosis	Treatment	Outcome
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Signature :
Supervisor Name :
Date :

HAEMATOPOIETIC STEM CELL TRANSPLANT HSCT

Submit **10 cases**—**5 allogeneic** HSCT and **5 autologous** HSCT—including at least **one case each involving graft-versus-host disease (GVHD), cytomegalovirus (CMV) infection.** The transplant cases should involve **diverse disease indications** such as aplastic anemia, leukemia, lymphoma, and myeloma.

For each case, please provide patients' initials, date of attendance, registration number, diagnosis, treatment, and outcome. Attach additional sheets if more space is required.

No	Date	Initial	RN	Diagnosis	Treatment	Outcome
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Signature :
Supervisor Name :
Date :

LABORATORY POSTING

SECTION 1: LABORATORY HAEMATOLOGY

A. FULL BLOOD COUNT

ACTIVITIES:

1. To Understand the principle of automated haematology analysers
2. To understand the importance and evaluate the QC & QAP on Haematology analysers

B. FULL BLOOD PICTURE, BONE MARROW MORPHOLOGY AND HISTOPATHOLOGY

ACTIVITIES:

1. To perform the PERIPHERAL BLOOD AND BMA SMEARS
2. To perform ROMANOWSKY STAINS
3. To interpret the CYTOCHEMISTRY STAINS
    a. SUPRAVITAL STAIN & RETICULOCYTES COUNT
    b. PEROXIDASE
    c. PAS
    d. ACID PHOSPHATASE & TRAP
    e. DUAL ESTERASE (Optional)
4. REPORT FBP/BMA morphology/BMT HPE
    a. This can commence after 6 months into training-including during clinical posting.
    b. Please list down patients' initials, registration number and underlying diagnosis. Attached extra sheets if needed.

C. HAEMOGLOBIN ANALYSIS/ HAEMOLYSIS WORK UP

ACTIVITIES:

1. To observe the following tests being performed and understand the principle of the tests:
    1. Hb Analysis
    2. G6PD Screening
    3. Osmotic Fragility Test - optional
    4. Sickling Test - optional
    5. Unstable Haemoglobin – optional
2. Report on Hb Analysis and Osmotic Fragility Test
    a. Please attached evidence (Initial, RN, diagnosis) in a separate sheet.

Full Blood Picture Report (at least 20 cases)

No	Date	Initial	RN	Result	Interpretation	Supervisor Comments
1						
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19						
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Signature :
Supervisor Name :
Date :

Bone Marrow Aspiration Morphology Report (at least 20 cases)

No	Date	Initial	RN	Result	Interpretation	Supervisor Comments
1						
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17						
18						
19						
20						

Signature :
Supervisor Name :
Date :

Bone Marrow Trephine HPE Report (minimum 10 cases)

No	Date	Initial	RN	Result	Interpretation	Supervisor Comments
1						
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9						
10						

Signature :
Supervisor Name :
Date :

Cytochemistry Stain (Optional)
(MGG/Peroxidase/PAS Or Esterases)

No	Date	Initial	RN	Result	Interpretation	Supervisor Comments
1						
2						
3						
4						
5						
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7						
8						
9						
10						

Signature :
Supervisor Name :
Date :

Haemoglobin analysis (20 Cases)

No	Date	Initial	RN	Result	Interpretation	Supervisor Comments
1						
2						
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19						
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Signature :
Supervisor Name :
Date :

G6PD Screening (10 cases)

No	Date	Initial	RN	Result	Interpretation	Supervisor Comments
1						
2						
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7						
8						
9						
10						

Signature :
Supervisor Name :
Date :

Osmotic Fragility Test (optional)

No	Date	Initial	RN	Result	Interpretation	Supervisor Comments
1						
2						

Sickling Test (optional)

No	Date	Initial	RN	Result	Interpretation	Supervisor Comments
1						
2						

Unstable Haemoglobin (optional)

No	Date	Initial	RN	Result	Interpretation	Supervisor Comments
1						
2						

Signature :
Supervisor Name :
Date :

SECTION 2: COAGULATION LAB

ACTIVITIES:

1. Principal coagulation analysers
2. Basic coagulation test
    a. PT
    b. aPTT
    c. TT
    d. Fibrinogen
    e. D-Dimer
3. Report DIVC
4. Quality control and quality assurance in coagulation factor analysers
5. Factor assays
6. Inhibitor screening
7. Thrombophilia assays

COAGULATION TEST

PT/aPTT/Mixing Studies (10 cases)

(Please attached another sheet if insufficient space)

No	Date	Initial	RN	Clinical History & Indication	Result	Interpretation	Diagnosis
1							
2							
3							
4							
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7							
8							
9							
10							

Signature :
Supervisor Name :
Date :

DIC Screen (minimum 10 cases)

No	Date	Initial	RN	Clinical History & Indication	PT	aPTT	Fibrinogen	D-Dimer	Platelet	Diagnosis
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

Signature :
Supervisor Name :
Date :

Factor Assays (VIII, IX) and VWF (minimum 5 cases)

No	Date	Initial	RN	Clinical History & Indication	Result	Interpretation	Diagnosis
1							
2							
3							
4							
5							

Inhibitor Assay (minimum 2 cases)

No	Date	Initial	RN	Clinical History & Indication	Result	Interpretation	Diagnosis
1							
2							

Signature :
Supervisor Name :
Date :

Lupus Anticoagulant Screen (minimum 3 cases)

No	Date	Initial	RN	Clinical History & Indication	Type of test	Interpretation	Supervisor Comment
1							
2							

Signature :
Supervisor Name :
Date :

Thrombophilia Assay (Protein C, Protein S, Antithrombin, Factor V Leiden)
(minimum 2 cases)

No	Date	Initial	RN	Clinical History & Indication	Interpretation	Diagnosis	Supervisor Comment
1							
2							

Signature :
Supervisor Name :
Date :

SECTION 3: IMMUNOPHENOTYPING LAB

ACTIVITIES:

1. Leukemia / Lymphoma Immunophenotyping
    a. Total 10 cases
    b. Observe at least 5 cases
2. Donor Lymphocyte CD3 Quantitation - Optional

No	Date	Initial	RN	Procedure observed	Results & Interpretation	Diagnosis	Supervisor Comment
1							
2							
3							
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6							
7							
8							

No	Date	Initial	RN	Procedure observed	Results & Interpretation	Diagnosis	Supervisor Comment
9							
10							

Signature :
Supervisor Name :
Date :

SECTION 4: CYTOGENETIC LAB

A total of 5 cases required: including at least one case of CML and one case of APML, with observation of the procedure in at least 2 cases.

No	Date	Initial	RN	Procedure observed	Results & Interpretation	Diagnosis	Supervisor Comment
1							
2							
3							
4							
5							

Signature :
Supervisor Name :
Date :

SECTION 5: MOLECULAR LAB

A total of 5 cases required: including at least one case of CML and one case of APML, with observation of the procedure in at least 2 cases.

No	Date	Initial	RN	Procedure observed	Results & Interpretation	Diagnosis	Supervisor Comment
1							
2							
3							
4							
5							

Signature :
Supervisor Name :
Date :

SECTION 6: HUMAN LEUCOCYTE ANTIGEN (HLA) LAB

Human Lymphocyte Antigen Laboratory Typing
HLA Lab – Class 1 and Class 2

Patient (Minimum 2 cases)

No	Date	Initial	RN	Procedure observed	Results & Interpretation	Supervisor Comment
1						
2						

Signature :
Supervisor Name :
Date :

SECTION 7: CLINICAL CHEMISTRY LAB

Please state the abnormal findings in the SPEP, immunofixation, and serum free light chain tests and make a diagnosis for each case in the table below:

To submit at least 10 cases covering a variety of plasma cell disorders.

No	Date	Initial	RN	Procedure	Results & Interpretation	Supervisor Comment
1						
2						
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Signature :
Supervisor Name :
Date :

SECTION 8: PRINCIPLE OF QUALITY ASSURANCE IN HAEMATOLOGY AND MANAGEMENT OF LABORATORY

Signature by Supervisor or Senior Lab Supervisor must be obtained.

TOPICS	Understanding	Supervisor Comment
1. General principal of quality control in laboratory a. Internal b. External		
2. Principal of laboratory management		
3. Principal of laboratory accreditation		

Signature :
Supervisor Name :
Date :

SECTION 9: LEUKAPHERESIS AND THERAPEUTIC APHERESIS

The trainee should be able to:

1. Understand the principles of plasma exchange and its indications
    a. Calculate the plasma volume to be exchanged and be familiar with the selection of replacement fluids
    b. Monitor and manage complications of the procedure
2. Understand the principles of leukapheresis / peripheral blood stem cell collection
    a. Understand the criteria for leukapheresis
    b. Monitor and manage the adverse effects / complication of the procedure

ACTIVITIES:

Plasma exchange (observe 3 procedures)
Leukapheresis/ peripheral blood stem cell collection (observe 3 procedures)
Red cell exchange (optional)

No	Date	Initial	RN	Procedure	Indication	Supervisor Comment
1						
2						
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7						

Signature :
Supervisor Name :
Date :

SECTION 10: TRANSFUSION MEDICINE

Objective – to acquire sufficient knowledge of blood transfusion practice to provide consultation to other clinical colleagues in a general hospital

At the end of the transfusion medicine postings, the trainees should be able to:

1. apply the theoretical and practical knowledge on both laboratory and clinical aspects of transfusion medicine in patients' management.
2. provide clinical consultation on common transfusion related problems.

The following aspects of blood transfusion must be covered within the training period of the candidate;

Learning outcomes

At the end of his/her training, the trainees should have obtained the following knowledge and apply to patient care:

1. **Donor recruitment and care**

    a. Explain the process of donor recruitment and selection and why proper donor selection is important. Differentiate the categories of blood donors i.e. voluntary, autologous, directed donors and understand the rationale for a voluntary donor base blood donation.
    b. List the donor selection and deferral criteria and explain their rationale behind them.

2. **Donor testing**

    a. List the important testing for the blood donors / donor units before the release of the blood unit for use.
        i. ABO and Rh D grouping
        ii. Discuss the importance of checking the Rh D grouping in donors and patients.
        iii. Mandatory virology & serology testing for the blood donors
            - Retroviral testings
            - Hepatitis B & C testing
            - Syphilis etc

3. **Blood component production and storage**

    a. Describe the different types of blood bag configurations for component productions and their use.
    b. Prepare various blood components (Red Cell Concentrates, Packed Cell, Fresh Frozen Plasma, Cryoprecipitate, Cryosupernatant) from a unit of whole blood.
    c. Define specifications of various blood components and their clinical indications and dosage.
    d. Explain the rationale for the various storage conditions of different blood components.

e. Explain the process and techniques of leucodepletion and their indications
f. Describe the process and techniques of blood irradiation and their indications
g. Plasma fractionation and transfusion alternatives
    i. Describe the process of Cohn fractionation
    ii. Describe alternative pharmacological agents to transfusion and recent development on blood substitutes

4. **Pre-transfusion testing**

a. Interpret ABO and RhD tests and resolve discrepancies of both forward and reverse grouping.
b. Explain and differentiate the concepts of weak D and D variants.
c. Perform, evaluate and interpret immunohaematology tests using various techniques.
    i. Antibody screen (indirect Coombs test)
    ii. Antibody identification
    iii. Cross-matching

5. **Immunohaematology techniques and clinical transfusion**

a. Describe the principles of Indirect Antiglobulin Testing and Direct Antiglobulin Testing and the appropriate selection of reagents for performing the test.
b. Perform antibody identification using various techniques
c. Perform red cell phenotyping test.
d. Describe elution and adsorption procedures
e. Understanding the red cell genotyping test.
f. Interpret the above tests.
g. Investigation of haemolytic disease of the fetal and newborn
h. Investigations of transfusion reaction
i. Manage mothers with alloantibody especially with anti-D.

6. **Apheresis and stem cell services**

a. Describe apheresis instruments available in the market and their principles of operation.
b. Explain selection criteria for apheresis donors and their rationale.
c. Describe plateletpheresis procedures and manage complications that may arise during the procedure.
d. List indications for apheresis platelets and other apheresis components.
e. Describe the process of cryopreservation of stem cell.
f. Perform and interpret CD34+ cell enumeration by flow cytometry
g. Interpret Short Tandem Repeat and Variable Number Tandem Repeats reports for chimerism monitoring post-transplant
h. Manage the supply of blood components for blood group ABO mismatched transplants.

7. **Routine hospital services**

a. Evaluate guidelines for collection of samples for transfusion testing.

b. Evaluate guidelines for pretransfusion testing and issue of blood.
c. Perform ABO and RhD typing using various techniques.
d. Perform antibody screening using various techniques.
e. Perform a crossmatch using various techniques.

8. **Clinical transfusion practice**

a. Manage transfusion of patients in special circumstances – massive haemorrhage, paediatric transfusions, multiple antibodies.
b. Assess and manage complications that may arise from blood transfusion.
c. Describe the workflow for testing of samples from a patient suspected of having a transfusion reaction.
d. Diagnose and manage patients who become refractory to platelet transfusions.
e. Perform testing on samples received for suspected blood transfusion reaction.
f. Awareness of the Crossmatch-to-Transfusion ratio and shelf life of the blood products.

DONOR SERVICES AND COMPONENT PRODUCTION

DONOR SERVICES

No	ID/RN	Name	Date	Results & Remark	Signature
Register and interview in-house donor					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
Follow mobile blood sessions (list sessions attended)					
1					
2					
Post test counselling of blood donors					
1					
2					
3					

PREPARATION OF BLOOD COMPONENT

No	ID/RN	Name	Date	Results & Remark	Signature
Red Cell Concentrates					
1					
2					
Platelet Concentrates					
1					
2					
Fresh Frozen Plasma					
1					
2					
Cryoprecipitate					
1					
2					
Cryosupernatant					
1					
2					
Pooled platelet concentrates					
1					
2					
Leucodepleted red cell / platelet concentrates					
1					
2					
Irradiated red cell / platelets					
1					
2					

PRETRANSFUSION TESTING

No	ID/RN	Name	Date	Results & Remark	Signature
ABO and Rh grouping by tube / microtiter plate					
1					
2					
3					
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6					
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10					
ABO and Rh grouping by column agglutination technique (CAT)					
1					
2					
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9					
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No	ID/RN	Name	Date	Results & Remark	Signature
Rh genotyping by tube					
1					
2					
3					
Rh genotyping by CAT					
1					
2					
3					
Antibody screening by tube					
1					
2					
3					
4					
5					
6					
Antibody screening by CAT					
1					
2					
3					
4					
5					
6					

No	ID/RN	Name	Date	Results & Remark	Signature
Crossmatching by tube					
1					
2					
3					
4					
5					
6					
Crossmatching by CAT					
1					
2					
3					
4					
5					
6					

IMMUNOHAEMATOLOGICAL TESTS

No	ID/RN	Name	Date	Results & Remark	Signature
Direct antiglobulin test (polyspecific)					
1					
2					
3					
4					
5					
6					
Direct antiglobulin test (monospecific)					
1					
2					
3					
Antibody Identification					
1					
2					
3					
Transfusion Reaction Investigation					
1					
2					

STEM CELL SERVICES

No	ID/RN	Name	Date	Results & Remark	Signature
PBSC Cryopreservation					
1					
2					
CD34 Enumeration					
1					
2					
3					
CD3 Enumeration					
1					
STR/VNTR analysis					
1					
2					

CLINICAL TRANSFUSION

No	ID/RN	Name	Date	Results & Remark	Signature
Lab investigation of AIHA					
1					
2					
3					
4					
5					
Lab investigation of patient with multiple red cell antibodies					
1					
2					
3					
4					
5					
Lab investigation of patient / donors with variant D					
1					
Management of massive transfusions					
1					
2					
3					