Bone Marrow Aspirate and Trephine Procedure

1. Purpose

This procedure has been developed to guide health practitioners caring for patients having bone marrow aspirate and trephine (BMAT) procedures in WA Country Health Service (WACHS) hospitals.

2. Procedure

This procedure is only to be:

- conducted at WACHS sites that have appropriate facilities and processes to safely handle / store and transport specimens to PathWest
- performed by a medical officer or nurse practitioner trained in bone marrow aspirate and biopsy procedure and in preparation of the collected samples
- conducted in a designated clinical area where appropriately trained health care professionals, medical equipment and monitoring devices are available.

Visiting haematologists are to hold appropriate credentialling to provide a haematology service within a WACHS facility.

ATTENTION

The sternum anatomical site should **not** be used for bone marrow aspirate and / or trephine at any WACHS hospital.

2.1 Prior to Procedure

Explicit roles and responsibilities prior to the procedure are outlined in Section 3: Roles and Responsibilities.

Booking a BMAT Procedure

The booking process may vary by site. Check local processes.

Consent

Informed consent is to be obtained prior to proceeding with this procedure, and documented using the MR30A WACHS Consent to Treatment or Investigation form. Offer the opportunity for an interpreter and / or Aboriginal Liaison Officer where appropriate to the patient's language or communication requirements (refer to the WA Health Language Services Policy -MP 0051/17). Offer the presence of a chaperone (refer to WACHS Chaperone Policy).

Patient Information

Ensure patient has been given the WACHS Bone Marrow Biopsy Patient Information Sheet.

Anticoagulant and Antiplatelet Medicine Management Pre-procedure

It is the medical doctor / nurse practitioner responsibility to communicate to the patient the management plan for any medications including anticoagulant and antiplatelet Medicine management prior to this procedure.

Procedural Analgesia and Sedation
This policy is to be used in conjunction with The Australian New Zealand College of Anaesthetists PG09(G) Guideline on procedural sedation 2023.

Penthrox® is the preferred procedural pain management for patients having BMAT in WACHS regional and rural sites. For information on administration of this medicine refer to the Australian Medicines Handbook and Penthrox - AusDI (health.wa.gov.au).

Paracetamol may be given if required for pain control post-procedure.

2.2 Equipment

Specific equipment for the procedure includes:
- BMAT specimen request form(s)
- clean dressing trolley X2
- rubbish bin
- large sharps container
- sterile dressing pack
- bone marrow biopsy needles – 8G / 4IN (item code: DBMNJ0804TL)
- bone marrow biopsy needles – 8G / 11IN (item code: BMNJ0806TL)
- chlorhexidine 2% in ethanol 70% tinted red or povidone-iodine 10%
- sterile gloves
- disposable plastic apron
- sterile gown
- sterile drape
- sterile scalpel
- protective sheets (bluey) X 2
- sterile gauze packs
- syringe 10 mLs X 4
- syringe 20 mLs X 1
- needles-drawing 18G Blunt X 1
- needles-hypodermic 25G X 1
- needles- spinocan 22G (black) X 3 (item code: 3299F)
- lidocaine 2% x 5 (obtain from pharmacy)
- methoxyflurane (Penthrox®) (S4 – order and obtain from pharmacy if required)
- tegaderm + pad dressings.

Additional Equipment

Pathology items include:
- glass slides
- slide tray
- EDTA tubes (see Appendix A – Section 3)
- Biopsy bar containing 10% buffered neutral formalin
- RPMI sodium heparin (yellow top / green label / black stripe and yellow top / white label) tubes x 2 – (see Appendix A – Section 1 and Section 2) – one for flow cytometry and one for cytogenetics
- RPMI with **no** anticoagulant (yellow top and full of pink solution) (see Appendix A – Section 4)
- specimen bags
- tubes tray
- pencils.

3. Roles and Responsibilities

The **Medical officer / nurse practitioner** is to:
- assess patient as clinically suitable to have this procedure at a WACHS site vs a Tertiary site
- arrange booking for procedure (according to local administrative processes) by completing the MR20 WACHS Request for Admission / Waitlist Inclusion Form
- arrange with pathology department for collection of specimens
- check anticoagulant / antiplatelet medications have been withheld for the appropriate amount of time
- check coagulation profile and full blood count results: should have been done within last 2 days, if not take sample and send for urgent processing prior to procedure
- complete discharge documentation for GP and Patient. The following additional routine instructions should be included in the discharge documentation
    - advise patient when to recommence anticoagulant +/- antiplatelet medication.

The **Clerk** is to**:**
- admit the patient in webPAS to the designated clinical unit (as per local procedure) under the following procedure code: **30084-00** - Percutaneous biopsy of bone marrow – bone marrow aspirate and trephine.
- discharge the patient in webPAS on them leaving the unit/ward following their procedure.

Nurses are to**:**
- complete admission nursing assessment using MR111 WACHS Nursing Admission, Screening and Assessment Tool - Adult (or equivalent) for patient including assessment of the following:
    - review blood results including coagulation profile and full blood picture
    - medication history including are they on anticoagulants or antiplatelet medications
    - date of last dose of anticoagulant / antiplatelet medication
    - distress level and need for pain management during procedure
- complete vital signs prior to procedure on MR140A WACHS Adult Observation and Response Chart (A-ORC)
- administer pre-medication or analgesia as prescribed

- monitor patient during procedure as per WACHS Clinical Observations and Assessments Clinical Practice Standard (physiological (vital signs), neurovascular, neurological and fluid balance) and WACHS Recognising and Responding to Acute Deterioration (RRAD) Policy
- for patients having Methoxyflurane (Penthrox®)
  - the patient is not to be left unattended during methoxyflurane use
  - the following observations should be conducted prior to administration and for 30 minutes after cessation of methoxyflurane:
    - vital signs
    - sedation score (0-3)
    - pain score (0-10)
    - patients are to also be observed for signs of drowsiness, pallor and muscle relaxation.
- provide post-procedure care to patient including post-procedure observations, local compression (lie flat for 30 mins) review of wound at regular intervals. (An icepack may be applied if needed).
- perform post procedure vital signs and biopsy site assessment.
- patient can be discharged when:
  - vital signs are stable
  - haemostasis has occurred at site of biopsy
  - pain is controlled
  - they are no longer drowsy from Methoxyflurane (Penthrox®) if used.
- inspect biopsy site / dressing for signs of significant bleeding, bruising or pain prior to discharge
- arrange discharge of patient to home post procedure on clearance for discharge by medical officer / nurse practitioner
- ensure patient has BMAT patient information sheet.
- educate patient regarding:
  - simple analgesia.
  - wound care.
  - when to re-commence anticoagulant / antiplatelet medications (as per medical officers' instructions **or** see general practitioner to coordinate recommencement of these medications).
  - blood tests required post procedure (e.g., INR).
- provide patient with follow-up appointment with haematologist.
- provide patient with contact details of who to call for bleeding, uncontrolled pain, fever (greater than 37.5ºC), redness, or drainage from the procedure site.
- complete nursing documentation in patient's healthcare record.

All staff are required to work within policies and guidelines to make sure that WACHS is a safe, equitable and positive place to be.

4. Monitoring and Evaluation

4.1 Monitoring

Monitoring of compliance with this document is to be carried out by WACHS Cancer Services annually using the following means or tools:

- number of procedures (via webPAS data)
- region, site, department (via webPAS data)

- Datix CIMs for adverse events related to this procedure.

4.2 Evaluation

Evaluation of this procedure is to involve assessment of parameters in Section: 4.1 Monitoring and review by the Regional Cancer Clinical Governance Groups and the WACHS Haematology Advisory Group. Any issues or concerns are to be escalated to the WACHS Cancer Clinical Governance Group.

5. Compliance

This procedure is in alignment with the *Health Practitioner Regulation National Law (WA) Act 2010 & Medicines and Poisons Act 2014*

Failure to comply with this procedure may constitute a breach of the WA Health Code of Conduct (Code). The Code is part of the Integrity Policy Framework issued pursuant to Section 26 of the *Health Services Act 2016* and is binding on all WACHS staff which for this purpose includes trainees, students, volunteers, researchers, contractors for service (including all visiting health professionals and agency staff) and persons delivering training or education within WACHS.

WACHS staff are reminded that compliance with all policies and procedures is mandatory.

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7. Definitions

Term	Definition
Bone marrow aspirate	Removal of a small amount of liquid bone marrow through a needle. The needle is placed through the top layer of the bone and a liquid sample containing bone marrow cells is removed through the needle by aspirating into a syringe.
Bone marrow trephine	Removal of a cylindrically shaped core of the bone marrow which includes a small piece of bone with the marrow inside for tests and bone studies.

8. Document Summary

Coverage	WACHS-wide
Audience	Medical officers, registered nurses and clerical staff working where bone marrow aspirate and trephine procedure may take place.
Records Management	Health Record Management Policy
Related Legislation	• *Health Practitioner Regulation National Law (WA) Act 2010* • *Medicines and Poisons Act 2014* (WA) • Work Health and Safety Regulations 2022 (WA)
Related Mandatory Policies / Frameworks	• Consent to Treatment Policy - MP 0174/22 • Consent to Treatment Procedure.- MP 0175/22 • Language Services Policy -MP 0051/17
Related WACHS Policy Documents	• Aseptic Technique Policy • Chaperone Policy • Clinical Observations and Assessments Clinical Practice Standard (physiological (vital signs), neurovascular, neurological and fluid balance) • Documentation Clinical Practice Standard • Hand Hygiene Policy • Infection Prevention and Control Policy • Patient Identification Policy • Specimen Collection Procedure • Recognising and Responding to Acute Deterioration (RRAD) Policy
Other Related Documents	• WACHS Bone Marrow Biopsy Patient Information Sheet
Related Forms	• MR20 WACHS Request for Admission / Waitlist Inclusion Form • MR30A WACHS Patient Consent to Treatment or Investigation – Adult or Minor • MR111 WACHS Nursing Admission, Screening and Assessment Tool - Adult • MR140A WACHS Adult Observation and Response Chart (A-ORC) • MR170.1 WACHS Medication History and Management Plan • MR170A WA Hospital Medication Chart – Short Stay
Related Training Packages	Nil
Aboriginal Health Impact Statement Declaration (ISD)	ISD Record ID: 2676
National Safety and Quality Health Service (NSQHS) Standards	2.0-5, 3.5, 3.9, 4.15, 5.11, 5.13, 6.4, 6.11, 8.4
Aged Care Quality Standards	Nil

National Standards for Mental Health Services	Nil

9. Document Control

Version	Published date	Current from	Summary of changes
1.00	16 February 2024	16 February 2024	New procedure

10. Approval

Policy Owner	Executive Director Nursing and Midwifery Services
Co-approver	Executive Director Clinical Excellence
Contact	WACHS Cancer Services Nurse Practitioner
Business Unit	WACHS Nursing and Midwifery Services
EDRMS #	ED-CO-23-442292

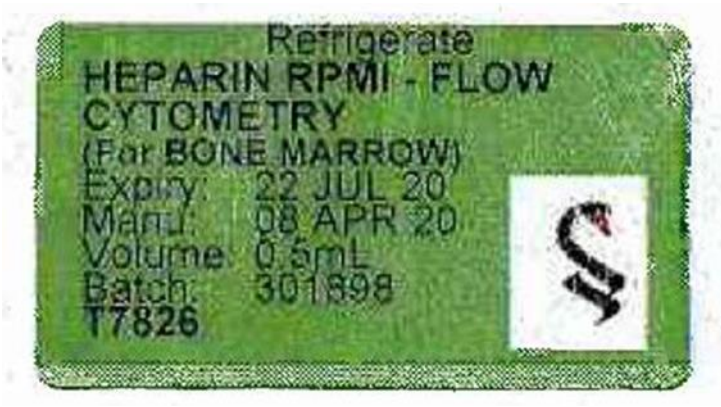
This document can be made available in alternative formats on request.

Appendix A: Bone Marrow Aspirate and Trephine Collecting Tubes

Bone marrow aspirate collection tubes- haematology
Please contact the following laboratories for tubes:
Flow Cytometry Unit: 6152 8160
Cytogenetics: 6152 8170
Molecular Haematology: 6152 8118

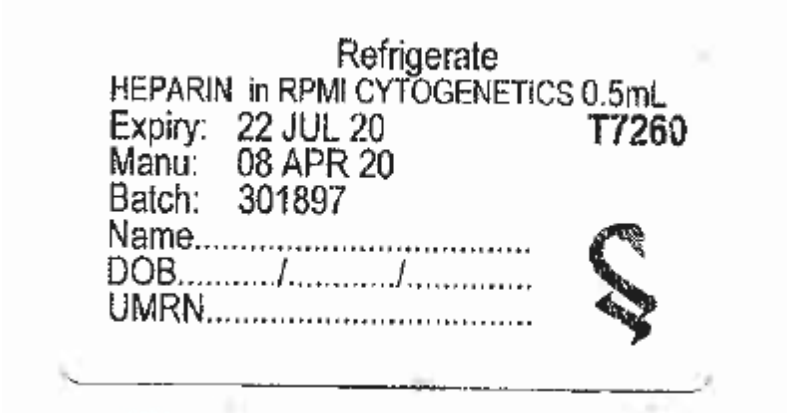
1. Flow Cytometry - Bone Marrow Tubes

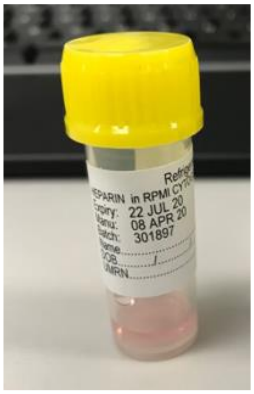
Yellow top / Green label / Black stripe on lid
these tubes contain a **small** volume of anticoagulant (heparin) to prevent clotting and a small amount of RPMI to provide sustenance to the BM cells
they should not be overfilled (<2 mL)
Use for aspirates and fresh BM trephine if unable to collect a BM aspirate due to dry tap/blood tap (Flow Cytometry can-not be performed on trephine exposed to formalin).



2. Cytogenetics - Bone Marrow Tubes

Yellow top/White label
these tubes contain a **small** volume of anticoagulant (heparin) to prevent clotting and a small amount of RPMI to provide sustenance to the BM cells
they should not be overfilled (<2 mL).





3. Molecular Haematology - Bone Marrow Tubes

2.0 mL EDTA tube with Green MOLECULAR BM label

4. Flow Cytometry Tissue Biopsy Tubes

ATTENTION

Flow cytometry tissue biopsy tubes look very similar to the **BM tubes**, but they are not to be used for bone marrow aspirates and trephines or they will clot.

Yellow top / White label / full of pink fluid.

- these tubes contain 4 mL of RPMI only and **no anticoagulant**.
- they are for tissue biopsies and fine needle aspirates only. They are not to be used for bone marrow collections.