

POLICY AND PROCEDURE FOR THE NURSE PERFORMANCE OF BONE MARROW ASPIRATE AND TREPINE BIOPSY

This guidance does not override the individual responsibility of health professionals to make appropriate decision according to the circumstances of the individual patient in consultation with the patient and /or carer. Health care professionals must be prepared to justify any deviation from this guidance.

INTRODUCTION

This document is intended to support appropriately trained registered nurses in performing bone marrow procedures on haematology patients.

THIS GUIDELINE IS FOR USE BY THE FOLLOWING STAFF GROUP:

This procedure may be carried out by a Band 6 (or above) registered nurse who has at least 6 months' experience of working within the speciality of haematology.

The registered nurse must undertake educational training and clinical supervision provided by a haematology registrar (or above) or a practitioner already competent in the procedure.

The nurse must perform this procedure regularly with the minimum requirement of one procedure per month.

Lead Clinician(s)

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This is the most current document and is to be used until a revised version is available

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Key amendments to this guideline

Date	Amendment	By:
14/10/09	Guideline approved	Medicines Safety Group
August 2013	Document reviewed with no amendments made	Dr S Shafeek
August 2015	Document extended for 12 months as per TMC paper approved on 22 nd July 2015	TMC
05/12/2016	Document extended for 12 months as per TMC paper approved 22 nd July 2015	TMC
October 2017	Document reviewed with no amendments	Dr S Shafeek
December 2017	Sentence added in at the request of the Coroner	
4 th January 2018	Document extended for 2 years, no changes made	Dr S Shafeek
13 th November 2019	Document reviewed and approved with amendments made to Lead Clinician(s).	Dr S Shafeek
17/01/2024	Document reviewed and approved with amendments made to Lead Clinician(s).	Dr S Shafeek

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Introduction

Bone Marrow aspiration and trephines are used for the diagnosis and staging of a number of haematological disorders. Bone marrow samples may also be required according to trial guidelines. Bone marrow samples can only be taken by a registered nurse working within Haematology at Band 6 or above, who have been appropriately trained, using only the iliac crest and without sedation. A consultant haematologist must request the procedure, clearly stating which samples are to be obtained, and reason for the test. The haematologist remains responsible for the patient.

Bone marrow aspiration and trephine biopsy are techniques for obtaining bone marrow in order to assess haemopoiesis (development of blood cells) in the bone marrow. They are most often performed from the posterior iliac crest although marrow can also be obtained from the sternum, anterior iliac crests and the anterior tibia (in children).

This procedure is usually performed under local anaesthetic and can be performed by a Registered Nurse who has:

- Undertaken training and clinical supervision provided by a Haematology consultant or staff grade already competent in the procedure.
- Achieved a level of Band 6 or above and is working within haematology
- Observed 10 procedures
- Been observed performing 10 procedures using the correct technique
- Been assessed using the Trust criteria
- On completion been deemed competent by a Consultant Haematologist-or competent Clinical Nurse Specialist (CNS) or Haematology Advanced Clinical Practitioner (ACP)

1.1

The procedure will take place in allocated areas as specified below:

For in-patients

- Laurel 3 Treatment Room
- Laurel 3 inpatient side-room

For outpatients

- Garden Suite side-room
- Millbrook Suite side-room

The nurse will perform routine procedures in the allocated sessions.

1.2

- The nurse will receive a written request (see appendix 1) from the haematologist giving patient details, samples required, reason for the procedure, and whether information has been given to the patient explaining the risks benefits of this investigation. The request must also be documented in the patient's notes.
- Written consent must be taken prior to the procedure
- The consultant will retain responsibility for the patient referred to the nurse.
- A Haematology doctor must be contactable via telephone to offer advice to the nurse as required.
- The procedure will be performed in a suitable clinical environment where help can be summoned easily if needed.

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- All patients must be wearing an identity bracelet which is checked prior to the procedure.
- A full blood count should be taken and checked by the nurse prior to the procedure
- The patient must not have had any thrombolytic therapy within 48 hrs.
- A second nurse should be available to support the patient during the procedure.
- The procedure must be documented in the patient's notes.

1.3 The following patients are not suitable for bone marrow sampling by a nurse and therefore should not be referred to the nurse by the doctor.

- Any patient requiring intravenous sedation.
- Any patient requiring a sternal marrow.
- Any patient with extreme anxiety or in whom previous sampling has been difficult or failed.
- Any patient with a platelet count below $50 \times 10^9/l$
- Any patient from whom the nurse is not confident of being able to obtain a sample.
- A child under the age of 16 years.

2. Equipment

- Antiseptic skin cleansing agent
- Sterile pack and extra gauze
- Selection of syringes and needles
- Scalpel
- Local anaesthetic (2% lignocaine Injection)
- Marrow aspirate and trephine biopsy needles
- Microscope slides and slide tray
- Specimen bottles
- Dressings.
- Sharps bin

3. Procedure

- Check with the patient if they are on any anti-coagulation drugs, e.g. aspirin, warfarin, clopidogrel, ensuring they have been omitted. Check with the consultant before proceeding if there are any concerns.
- Fully explain the procedure to the patient and answer any questions relating to the procedure or its outcome.
- Obtain informed consent highlighting the risks and benefits of the procedure as indicated on the pre-printed sheet.
- Open all packs and prepare all equipment using aseptic technique throughout the procedure.
- Ask the patient to lie on their left (or right) side with their knees bent towards their abdomen.
- Palpate the posterior iliac crest and locate the posterior superior iliac spine as the most appropriate area for sampling.
- Wash hands and wearing sterile gloves cleanse the area thoroughly using appropriate cleansing agent and allow drying.
- Using a 25G needle infiltrate intradermally an area approximately 1-1.5 cm in diameter with 2% lignocaine injection local anaesthetic. Change to a 23G or 21G needle for deeper penetration of the anaesthetic through the various layers including the periosteum. Approximately 5 ml of 2% lignocaine injection should be used

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depending on the patient's reaction. (Occasional patients require a greater amount of local anaesthetic, but a total of 10 ml should not be exceeded)

- Check that the anaesthetic has been successful by inserting the 23/21G needle into the periosteum. If the patient complains of discomfort, infiltrate with further anaesthetic
- Make a small incision in the skin with a scalpel if necessary.
- With a twisting motion and perpendicular to the skin, introduce the bone marrow aspirate needle through the skin, fat and periosteum into the bone marrow cavity.
- Remove the stylet from the needle, and using a 10ml syringe with draw approximately 0.5ml of bone marrow. (More than this may dilute the sample (although some requests for Trials samples may be for 2ml)). Warn the patient they may feel transient pain, which may radiate down the leg as the marrow is withdrawn. Replace the stylet in the aspirate needle.
- With as little delay as possible apply a small amount of marrow to the slides (approximately 8) and spread using a glass slide at an angle of about 45 degrees. This should allow visual observation of the bone marrow cells.
- Take further samples as needed for immunophenotyping (in EDTA or TC199) +/- molecular studies (in EDTA) and cytogenetics (in lithium heparin or TC199)
- Remove the aspirate needle, pressing the puncture site with a gauze swab to prevent bleeding.
- Slightly enlarge the original puncture site if necessary, using a scalpel blade, then introduce the trephine needle through the skin, aiming for an adjacent part of the iliac crest. Ensure penetration of skin, fat and periosteum.
- Locate the bone and with a twisting motion push the trochar and needle into the bone until it feels firmly anchored.
- Remove the trochar and core a small (1-2 cms) piece of bone marrow out using as much pressure as is needed and a twisting motion
- Insert the retaining device fully into the trephine needle
- Remove the needle with the sample retained within it and apply pressure to the puncture site until any bleeding stops.
- Place trephine at clear end of smeared slide and roll back and forth to deposit bone marrow cell. (trephine roll)
- Place the trephine biopsy sample in formalin using the needle guard and equipment provided.
- Place a pressure dressing on the puncture site after any bleeding has stopped.
- Ask the patient to lie on their back for 5-10 minutes.
- Clear away all equipment and dispose of all sharps into the appropriate container.
- Ensure the patient has an information sheet on bone marrow sampling and aftercare of the puncture site.
- Ensure the puncture site is not bleeding before allowing the patient to leave.
- Document all the information in the patient's outpatient history sheet, Mosaiq notes and Mosaiq assessment
- Ensure all specimens are correctly labelled and sent to the laboratory with the necessary form.

Posting

Samples are posted to the appropriate centres via the pathology labs and therefore samples should be taken Monday to Thursday, excluding bank holidays.

Incident Reporting

All incidents will be reported appropriately, according to Trust guideline. Electronic incident reporting system (Datix Web).

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Escalating Incident/Problems

In the event of a clinical problem during the procedure the haematologist in charge of the patients care will be informed.

If any assistance is required during the procedure a consultant haematologist will respond to any requests of assistance whether planned or unplanned.

Monitoring Tool

Auditing will be undertaken by the CNS for Haematology on a yearly basis and will include:

- Adherence to guidelines
- Any untoward incidents or complaints
- Number of procedures undertaken
- Patient satisfaction and waiting times
- Quality of bone marrow samples taken

STANDARDS	%	CLINICAL EXCEPTIONS
All practitioners must be assessed as competent following practical and theoretical education.	100%	None
All practitioner must carry out one procedure a month	100%	None
Correct procedure followed	100%	None
Correct follow up advice and care given to the patient	100%	None
Contemporaneous documentation in medical notes	100%	None

References

- Mallett, J and Dougherty, L (2004) The Royal Marsden Hospital Manual of Clinical Nursing Procedures (Sixth Edition) Blackwell Sciences, Oxford
- WAHNSHST (2005) Medicines Policy 2nd Edition (revised Sept 2006)
- WAHNSHST (2007) Policy for Consent to Examination and Treatment
- WAHNSHST (2007) Waste Management Policy
- WAHNSHST (2008) Incident Reporting Policy

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APPENDIX 2

Assessment of Competence for Registered Health Care Practitioners Clinical Skill: Bone Marrow Aspirate and Trepine Biopsy

Name:

Ward/Dept:

Aim:	To successfully obtain bone marrow samples. (aspirate and trephine biopsy)
Objectives:	The practitioner will be able to: <ul style="list-style-type: none">◆ demonstrate understanding of the knowledge and skills necessary to obtain bone marrow samples.◆ demonstrate competency in performing the procedure
Training:	By a professional deemed competent by the trust
Assessment:	Using performance criteria overleaf
Final Assessment:	By haematology consultants
Risk assessment:	High (level of risk to patient due to user error)
Assessment of competency will be assessed by trainer	
Update:	Competence to be reviewed annually at Appraisal/Personal Development Review (PDR)

Underpinning Knowledge

The practitioner will be able to:

- ◆ Describe the related anatomy.
- ◆ Explain the risks and benefits of the procedure to the patient
- ◆ State the risks and benefits of using local anaesthetic
- ◆ Explain the procedure for informed consent
- ◆ Demonstrate appropriate knowledge, skills and use of equipment in order to obtain correct samples
- ◆ Treat samples appropriately and spread slides
- ◆ Implement the Trust Labelling Policy
- ◆ Identify which patients are not suitable for bone marrow sampling by a nurse and decide when to refer to a consultant haematologist.

I certify that the above-named Registered Health Care Practitioner has completed the assessment covering the above:

Signed:		Date:	
Print Name:		Position:	

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Clinical Skill	
Performance Criteria: The practitioner will:	Performed Safely (✓)
1. Obtain informed consent	
2. Assemble the correct equipment and sample bottles	
3. Position patient correctly and locate the appropriate sample area	
4. Administer local anaesthetic to appropriate area	
5. Perform bone marrow aspirate according to Trust Policy	
6. Spread slides competently	
7. Perform bone marrow trephine according to Trust Policy	
8. Use aseptic technique throughout	
9. Label specimens correctly	
10. Dispose of sharps correctly	
11. Document procedure in the medical notes	
I confirm that the Registered Healthcare Practitioner named overleaf has completed the assessment competently.	
Signed:	Date:
Print Name:	Position:
Assessor Comments:	
Candidate Comments:	
Declaration I confirm that I have had theoretical and practical instruction on how to safely and competently perform a bone marrow aspirate and trephine biopsy and agree to comply with the policy and procedures of the Trust. I acknowledge that it is my responsibility to maintain and update my knowledge and skills regarding this competency.	
Signed:	Grade:

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Appendix 4

Patient information

After Your Investigation

You will be asked to lie down and rest for a short time after the procedure to make sure that there is no excessive bleeding.

You may have some discomfort and bruising over the test site for a few days, which you can ease with painkillers such as paracetamol.

Leaving Hospital

Once you get home, it is important to rest quietly for the rest of the day.

The effects of anaesthetic and the procedure itself should have worn off by the next day, when most patients are able to start normal activities again.

The dressing should be left in place for 48 hours. You may have a shower but soaking the wound should be avoided for 48 hours, to prevent infection.

You must contact your haematology nurse or GP if you experience any of the following:

- Severe or persistent pain
- Bleeding which you are unable to stop
- Pins and needles or numbness in your leg.

Contact Details

If you have any specific concerns that you feel have not been answered and need explaining, please contact the following.

- Garden Suite, Alexandra Hospital: 01527 512092
- Millbrook Suite, Kidderminster Hospital: 01562 513093
- Clinical Nurse Specialist, Worcester: 01905 760695 or 01905 763333 and ask switchboard to bleep 357
- Laurel 3 (Haematology Inpatient Unit at Worcester) phone 01905 760568

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CONTRIBUTION LIST

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