Introduction

NHSBT provides services for collection and processing of stem cell immunotherapy products for the treatment of patients in the UK. Therapeutic Apheresis Services (TAS) are available in Oxford, Bristol, Sheffield, Liverpool, Manchester and Leeds. Stem cell processing is available through five Stem Cell Immunotherapy (SCI) centres in Oxford, Filton (Bristol), Southampton, Birmingham, and Barnsley.

Referral form (FRM5071) is used for the referral of patients for stem cell or other therapeutic cell collection and processing. Key elements are:

1. The form is designed in Microsoft Word and can be completed electronically. There is no specific requirement to print the form.
2. A signature is not required although the form must be submitted by someone approved by the referring transplant centre and known to NHSBT TAS and SCI staff. Forms can't be accepted from other hospital staff without prior notification.
3. The form should be submitted to NHSBT by secure email such as nhs.net.
4. The form has two sections. The first section contains essential information required by NHSBT to reserve TAS and SCI services on a specified date. The second section contains essential information for the collection and processing facilities to ensure collection and processing can be completed as intended. Section two must be completed prior to mobilisation of the donor for autografts or prior to conditioning of the patient for allografts. Both sections should be completed at the same time if all the information is available.
5. Information is entered as either free text or from dropdown selection options.
6. Referrals for the collection of cells intended for further processing into CAR-T cells are dealt with as follows: FRM5071 is used to request the collection/possible freeze/despatch to an external non-NHSBT facility. FRM5071 has an option to select 'PBMC for CAR-T' in the Type of Collection dropdown, and in the processing options there is the option to select the company/product name involved. For other CAR-T collections not in the dropdown selection options, choose 'other' and specify the company/product name in the additional information comment box. The Novartis – Kymriah option indicates that the NHSBT SCI laboratory will receive, freeze and send the cells to Novartis for processing. The additional information section should be used to indicate that the final product will be returned to NHSBT for storage until issue or will be returned to a different site for storage/issue. The Kite – Yescarta/Tecartus option indicates that the apheresis unit will send the fresh cells directly to the Kite processing centre and the NHSBT SCI lab will receive back the final product for storage until issue.

Please note: Please consent the donor using form 2B and return with the appropriate blood samples for testing by NHSBT at least **five days** before the planned collection date. NHSBT is unable to accept a 2B form or virology samples before a referral form has been received with section one completed as a minimum.

Accessing the referral form (FRM5071).
Please do not save a blank version of the form on your local IT system. To ensure the most up to date version is used please always use the blank form on the website when referring new patients.

How to complete FRM5071
Use the tab key to navigate the form. Some boxes in the form contain advisory notes. These can be overwritten directly if the tab key is used to access the box.

Please complete all boxes. If a box isn't applicable, please enter 'not applicable' or 'NA' so it's clear the box entry hasn't been omitted in error.

Completing Section One.
This section contains essential information required by NHSBT to reserve a date(s) for collection and processing. All data fields are mandatory and should be completed before submitting. Please use standard EBMT disease definitions for patient diagnosis. Where an unrelated donor is selected, please complete the Panel ID field and type 'NA' or 'not applicable' in the remaining donor ID fields. The person completing section one must provide their name and the date the form was completed. The patient's consultant must be known by NHSBT and aware of the Third-Party Agreement between the hospital trust and NHSBT. The person completing the form must be trained and authorised by the hospital trust to complete the form and be known to NHSBT.

The form with Section one completed can be saved on your local IT system in a secure location. We recommend the document is saved with a unique file name comprising the patients Surname, forename, NHS number and date of referral.

Once complete send the form to your local NHSBT TAS and/or SCI laboratory. You will receive a reply confirming availability on the selected dates. NHSBT strongly advises that you send the form using a secure email account.

If the patient/donor information changes or the proposed collection or processing dates change you can amend the saved form and resubmit to TAS and/or SCI laboratories. They will confirm receipt of the amended form and confirm availability.

For those requiring apheresis procedures from NHSBT, TAS will contact you with a request for additional information required as part of the donor workup for collection. The TAS form (FRM5110) has been designed to work alongside the referral form to avoid duplicate requests for information. Please complete FRM5110 as soon as possible and return to the TAS unit by secure email.

Completing Section Two

This section contains essential information required by TAS and/or SCI to confirm collection and processing. If a processing option isn't applicable, please enter 'not applicable' or 'NA'. The transplant information section is for fresh allografts and does not need to be completed for collections that will be cryopreserved. It is important the form is completed as soon as possible but no later than the start of donor mobilisation or patient conditioning for transplant. The TAS and/or SCI laboratory will respond by email to confirm the collection and processing requirements can be accommodated on the dates requested. Confirmation of the collection and/or processing dates from NHSBT should be received before donors are mobilised or recipients are conditioned for transplant.

a) Collection Details

1) Complete the target $CD34^+$ or $CD3^+$ collection dose taking into account any cell losses anticipated from processing.
2) Provide the recipient weight to be used for dose calculations to the nearest whole number.
3) Using the dropdown options please indicate if the donor has been tested for the mandatory infectious disease markers (IDM) within 30 days of the planned collection dates. If the donor has been tested, please provide a copy of the results if testing was performed outside NHSBT. If IDM testing has not been completed, please ensure this is done prior to the planned collection date.
Please consent the donor using form 2B and return with the appropriate blood samples for testing by NHSBT at least five days before the planned collection date.

b) Processing Options

Although processing can change following receipt of the donation it is important that the SCI laboratory is aware of intended processing requirements for planning purposes. Please note it may not be possible to accommodate significant changes to processing so please provide as much information as possible. Reagents and consumables for some procedures are only ordered when required so reasonable notice is essential.

Cryopreserve Cells: Options include:

(1) Cryopreserve in minimum number of bags.
(2) Cryopreserve in even number of bags. This may be applicable to Myeloma patients where two transplants are required.
(3) Cryopreserve excess cells. This may be selected where excess cells are available from an allograft for cryopreservation as a top up graft. Additional information should be provided to identify the maximum dose required for immediate transplantation above which cells can be cryopreserved.
(4) Cryopreservation is not required.

Bone Marrow Processing: Options include:

(1) Red Cell Depletion. This is recommended when a major ABO incompatibility between donor and recipient has been identified, especially where the patients ABO-reactive antibody titres are high. For ABO incompatible bone marrow grafts where red cell depletion is not requested, please include the patient's antibody titre in the additional information box.
(2) Plasma Depletion.
(3) Volume Reduction. This is recommended to reduce storage costs if donations are being cryopreserved or the marrow volume is too large for the recipient.
(4) Filter only. This is recommended where the bone marrow will be infused whole. Filtration is required to remove clots and bone fragments.

If bone marrow processing is not required, please select 'Not applicable'.

Fresh DLI (State dose x10^6/Kg): If a fresh DLI is required, please indicate the CD3 dose (x10^6/Kg).

Enrichment/Depletion: All enrichment/depletions options use the Miltenyi CliniMacs System. Options include:

(1) CD34 Selection
(2) CD3/CD19 depletion
(3) TCRαβ/CD19 depletion
(4) Campath in the bag.
(5) Other – please provide detail

If an enrichment/depletion process is not required, please select 'not applicable'.

Cryopreserve DLIs: Options are Yes or No

State start dose for half log increments: Donor lymphocyte infusions (DLI) can be cryopreserved in half log increments (e.g., 1x10^5; 3x10^5; 1x10^6; 3x10^6, etc.). Please indicate the start dose in the dropdown menu provided. If an alternative dose range is required, please specify the CD3 doses in the additional information box. Please note we are restricted by the bag sizes and patient weight when preparing DLI doses causing some larger doses to be cryopreserved in more than one bag.

Cell Therapy processing/storage: Options include:

(1) Novartis – Kymriah
(2) Kite – Yescarta
(3) Kite – Tecartus
(4) Other-Please specify

Other CAR-T collections include: ACHIEVE, AlloVir P-105-202, AlloVir P-105-303, CA097-001, CASSIOPEIA, Cartitude 5, Celgene – Breyanzi, CHIRON, EBV CTLs, IOV-COM-202, IOV-LUN-202, MB-CART2019.1, Novartis Study PHE885B12201, Steadfast TX200-KT02, STH22599 Upside, STH22343 Study M-2020-371, ToTem, ZUMA-22

If CAR-T processing/storage is not required, please select 'not applicable'.

Additional Information. This is available to provide details of non-standard processing requirements/storage information e.g. company/product name.

c) Transplant Information

This section includes information required for fresh allogeneic transplants.

Blood Groups: Please provide both recipient and donor blood groups. This information is required for product labels and to identify transfusion reaction risks.

Fresh Cells (max CD34 dose – x10^6/Kg). Please provide the maximum CD34 cell dose required above which DLIs or excess cells can be cryopreserved.

Fresh Cell (max CD3 dose– x10^6/Kg): Please provide the maximum CD3 dose required. This would apply primarily to CD3/*TCRαβ* depleted or CD34 enriched grafts.

Please provide the hospital and ward and the date of transplant.

The person completing section two must provide their name and the date the section two was completed. The person completing the form must be trained and authorised by the hospital trust to complete the form and be known to NHSBT.