Donor Lymphocyte Collection and Infusion

Donor Lymphocyte Infusions (DLI’s) may be given after allogeneic bone marrow transplantation if there is evidence of disease progression or resistance or if there is a mixed chimera. None of these situations is an absolute indication for DLI.

Management of Unrelated Donor Lymphocyte Collection
The co-ordinator will:
- Check whether there is stored DLI from initial harvest.
- If there is no frozen DLI, they should liaise with the appropriate donor registry to arrange the date of collection and transportation of the product to Oxford.
- Ensure that donor registry documentation is completed and signed.
- Liaise with NHSBT SCI to arrange receipt, processing, cryopreservation and issue of the DLI harvest.
- Ensure that NHSBT request forms are completed and signed.

Book the recipient into the Day Treatment Unit to receive DLI (first DLI)

Management of Sibling Donor Lymphocyte Collection
Donor assessment will be conducted in the same manner as pre-bone marrow or peripheral blood stem cell collection.
1. The donor will be reviewed by a Consultant Haematologist/Specialist Registrar.
2. The doctor will describe the process of the lymphocyte donation and the potential complications of the apheresis procedure.
3. The doctor will take a medical history to assess the donor’s suitability to donate lymphocytes and complete a reassessment of potential contraindications to donation. The history will include:
   - Pregnancy assessment of all females of childbearing age
   - Physical examination
   - Investigations as directed by consultant/Specialist Registrar
   - Assessment of venous access
4. The donor will be given the opportunity to ask questions.
5. If the donor expresses a willingness to proceed with the donation, the doctor will outline the treatment plan and obtain written consent for the procedure.
6. The BMT Nurse co-ordinator will collate all results and ensure that they are reviewed by a Consultant/Specialist Registrar.
7. Donor eligibility must be documented by the Consultant/Specialist Registrar in the recipients medical notes.
8. Upon confirming suitability to donate the BMT Nurse co-ordinator/doctor will complete NHSBT referral forms, the BMT Nurse Co-ordinator will confirm the date of the donor lymphocyte collection & first dose of the donor lymphocyte infusion with the donor and the recipient.

Donor Assessment
Medical history & clinical examination
1. Vaccination history
2. Travel history
3. Transfusion history

This is a controlled document and therefore must not be changed.
4. Assessment of risk for transmissible diseases – B.2.23 Viral infections transmitted by Bone Marrow, Stem Cells and Lymphocytes
5. Pregnancy assessment
6. ECG - if clinically indicated
7. Chest x-ray – if clinically indicated

Laboratory Investigations
1. FBC, ESR and blood film
2. Creatinine, electrolytes, LFTs, glucose
3. CMV IgG, VZV IgG, EBV EBNA IgG and toxoplasma IgG antibodies
4. HepBs antigen, HepBs antibody, HepBc antibody, Hepatitis C antibody, HIV antigen and antibody, HTLV 1 and 2 antibody and Syphilis antibody. NHSBT virology tubes should be used and samples taken to Stem Cell Services laboratory.
5. Written consent is required for HIV testing on NHSBT form 2b.
6. Pregnancy test if indicated, within 7 days of the procedure

Documentation/other
1. Obtain OUH written consent.
2. Write to donor’s GP.
3. Arrange date for harvest by contacting the BMT Co-ordinator.
4. Complete NHSBT request forms.

Patient assessment
The patient should be made aware of the need and indication for the DLI therapy. Patients should be consented in clinic. It is recommended that patients are appropriately restaged shortly prior to DLI therapy to enable adequate monitoring of disease response. Mixed chimerism results should be confirmed on at least two separate tests. The patient should be warned of the potential risks of DLIs which are principally those of graft-versus-host disease (incidence ca. 30% but dependent on cell dose) and graft hypoplasia (incidence 5 – 10%).

Patients for DLI should be referred to BMT MDT for discussion to support planning.

Donor Lymphocyte Dosage
The evidence for DLI dosage is limited and so the following is for guidance only. Individual patient dosing should be carefully considered with the consultant, bearing in mind the potential risk and previous degree of graft-versus-host disease as well as the aggressiveness of the disease being treated. Dosing should be discussed with the BMT consultant.

Recipients of haploidentical transplants should receive the standard doses of DLI for relapse.

After the initial dose, the timing and frequency of subsequent infusions is dependent on individual patient circumstances and should be discussed with the consultant.
Standard frequency for DLI is every 3 months but can be given bimonthly in cases of urgent clinical need. Target DLI dose is $150 \times 10^6$/kg.

In patients who are not enrolled in clinical trials DLIs are given according to a suggested escalating schedule as follows:

1 $\times 10^6$ CD3+ cells / kg
3 $\times 10^6$ CD3+ cells / kg
1 $\times 10^7$ CD3+ cells / kg
3 $\times 10^7$ CD3+ cells / kg
1 $\times 10^8$ CD3+ cells / kg

Patients with CML with molecular evidence of the BCR-ABL transcript post allogeneic bone marrow transplantation OR patients with mixed chimerism following RIC bone marrow transplantation will usually receive the initial lowest dose of $1 \times 10^6$ CD3+ cells / kg. If necessary, subsequent doses will be escalated according to response. Patients in whom there is clinical evidence of disease resistance or progression will usually require a higher initial dose of lymphocytes. Individual dosing should be discussed with the BMT consultant.

**Donor Lymphocyte Infusion**

1. The request for the donor lymphocytes should be made with NHSBT by completing the appropriate request form. Note that an additional form is required to request frozen cell issue.
2. DLI schedule to be issued weekly, distribution should include appropriate administration staff to ensure an encounter is created for the day unit in order to ensure correct prescribing on EPR.

Donor lymphocytes should be prescribed electronically on EPR. Ensure that the correct pre-registration encounter for the day of DLI is chosen. Prescription of DLI should be completed as for any other therapeutics by using the DLI Prescribing PowerPlan. The required dose should be selected from the pre-set doses (as above based on the escalating schedule) together with the premedication drugs. Use free text for non-conventional doses. The date and time of DLI should be changed accordingly, as the requested time for administration will automatically appear as the time of prescription. For frozen doses patients are pre-medicated with paracetamol (1 g po 30mins pre DLI) and chlorphenamine (10 mg iv bolus 30mins pre DLI). Avoid hydrocortisone.
3. Donor lymphocytes are given intravenously either peripherally or via central venous catheter as a bolus or stat infusion in the Day Treatment Unit.
4. Refer to Nursing care plan N62.

**References**

efficacy of donor lymphocyte infusions given after reduced-intensity conditioning allogeneic stem cell transplantation. Blood. 2002 Nov 1;100(9):3108-14


Audit
These processes are subject to the OxBMT audit programme.

Author(s)
Pamela Roberts, Clinical Nurse Specialist, Version 1, 2006
Denise Wareham, BMT Co-ordinator, amendments 2008
Denise Wareham, BMT Co-ordinator, Version 2, 2009
Sandy Hayes, Project Nurse, Amendments, Version 3, July 2010

Circulation
NSSG Haematology Website

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<td>Cell dosage</td>
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<td>Minor amendments and addition of EPR instruction</td>
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