Guideline for the use of Haemopoietic Growth Factors

Nottingham University Hospitals NHS Trust

Guideline Number & Full Title:	1851 – Guideline for the Haemopoietic Growth Factors
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Division & Specialty:	CAS, Clinical Haematology
Version:	16
Ratified by:	Stem Cell and Cellular Therapy Quality Management Meeting and Haematology Clinical Governance
Consultation:	Members of the above groups including consultants and pharmacy.
Scope ***(Target audience, state if Trust wide):***	Haematology Specialist Trainees and all FY1, FY2, CT1 and CT2 grades who rotate through the Department. Haematology Clinical Areas. Pharmacy.
Review date ***(when this version goes out of date):***	31/05/2027
Explicit definition of patient group to which it applies ***(e.g. inclusion and exclusion criteria, diagnosis):***	All in-patients and out-patients within the Clinical Haematology Directorate receiving treatment for haematological malignancies
Changes from previous version ***(not applicable if this is a new guideline, enter below if extensive):***	Reference to a particular brand of filgrastim removed and reference to the current NUH preferred brand added.
NICE guidance reference:	1 Guidance | Erythropoiesis-stimulating agents (epoetin and darbepoetin) for treating anaemia in people with cancer having chemotherapy | Guidance | NICE
Summary of evidence base this guideline has been created from: (other than NICE)	

This guideline has been registered with the trust. However, clinical guidelines are guidelines only. The interpretation and application of clinical guidelines will remain the responsibility of the individual clinician. If in doubt contact a senior colleague or expert. Caution is advised when using guidelines after the review date or outside of the Trust.

The Department of Clinical Haematology currently uses G-CSF (Filgrastim) for the following broad indications:

1. Mobilisation of peripheral blood stem cells for allogeneic transplantation (both allogeneic and autologous) –**- SEE DOSE SCHEDULE BELOW**
2. Reduction in neutropenia after Autologous or Allogeneic Stem Cell Transplantation
3. Reduction in the duration of neutropenia following SACT

The use of other growth factors (eg pegfilgrastim) or for other indications must be at the Consultant Haematologists' request .

Filgrastim (G-CSF)

See the NUH formulary for the preferred brand of choice that is routinely used and stocked at NUH.

It is essential that filgrastim prescribing is by brand to ensure that the correct preparation is selected and given. Filgrastim is routinely used and rarely pegylated filgrastim may occasionally be used for trial patients as specified by individual study protocols

1) Mobilisation of Peripheral Blood Stem Cells - from Donors and Patients Mobilising with Filgrastim Alone

Following completion of a full medical assessment and after signing a consent form, donors are to be given:

Weight	Daily Dose Filgrastim	Number of syringes per day*
< 50kg	**480 mcg**	*1 x 480 mcg*
50 - 60kg	**600 mcg**	*2 x 300 mcg*
61 - 80kg	**780 mcg**	*1 x 300 mcg and 1 x 480 mcg*
81 - 90kg	**900 mcg**	*3 x 300mcg*
≥91kg	**960 mcg**	*2 x 480 mcg*

The first dose is to be administered on the Haematology Day Case Unit and the donor is to be monitored for 1-2 hours afterwards to ensure no adverse reaction occurs.

2) Mobilisation of Autologous Peripheral Blood Stem Cells

Lymphoma patients are usually mobilised with a combination of chemotherapy and filgrastim . The chemotherapy given for mobilisation is either IVE , ICE or ESHAP .The dose of filgrastim is dependent on weight and is commenced on day +1 following IVE / ICE / ESHAP.

Occasionally myeloma patients may be mobilised with a combination of chemotherapy and filgrastim. The chemotherapy given for mobilisation is cyclophosphamide 3g/m^2. The dose of filgrastim is based on weight and is commenced on day +5 after cyclophosphamide.

The recommended dose schedule *(approximating to 5mcg/kg)* is as follows:

Weight	Daily Dose filgrastim	Number of syringes per day*
<60kg	**300 mcg**	*1 x 300 mcg*
60 – 96 kg	**480 mcg**	*1 x 480 mcg*
96 – 120 kg	**600 mcg**	*2 x 300mcg*
>120 kg	**780 mcg**	*1 x 300mcg + 1 x 480 mcg*

Filgrastim should be continued until completion of leukapheresis. Occasionally an increased dose may be prescribed if there is poor mobilisation (double the filgrastim).

3) Reducing Neutropenia Following Autologous Peripheral Blood Stem Cell Transplantation

Autologous PBSCT - dose of filgrastim 300 micrograms s/c daily from Day +5 (unless patient on study and specified differently in the protocol) until ANC > 0.5 for 2 days.

4) Reduction of Neutropenia after Allogeneic Transplantation

Filgrastim is routinely administered following haemopoietic progenitor cell transplantation according to the transplant protocols. In brief:

All Allogeneic PBSCT/BMT/cord blood transplants –filgrastim dose of 300 micrograms s/c daily from Day +9 until ANC > 0.5 for 2 days.

5) Reduction of Neutropenia following Intra-venous Chemotherapy

a) Lymphoma/Myeloma Protocols

For primary prophylaxis: Use of figrastim support should be considered in patients who are receiving chemotherapy regimens with a febrile neutropenia rate of >20%. The ChemoCare

protocol states when filgrastim should start e.g. For RCHOP, filgrastim should be given from day +4 for patients

For secondary prophylaxis: Use of filgrastim to support chemotherapy regimens should be considered for patients receiving chemotherapy who have experienced neutropenic complications with a previous cycle of treatment. For example in ABVD.If previous episode of neutropenia after ABVD, give filgrastim three times a week.

b) Acute Leukaemia Protocols

APL patients - NO filgrastim required unless delayed regeneration (D/W Consultant).
FLAG, FLAG-Ida - please note that filgrastim (G-CSF) is an integral part of the chemotherapy regimen

- Use filgrastim 300 micrograms s/c daily from Day -1 to Day+5 (Omit Day -1 dose if wcc > 50 x 10^9/l or using in ALL).
- filgrastim 300 micrograms s/c daily can be used routinely after D+7 following consolidation courses of AML chemotherapy in patients who are in CR

ALL patients - start filgrastim after completion of chemotherapy

2) Congenital Neutropenia / Severe Cyclical Neutropenia / Autoimmune Neutropenia

Filgrastim may be prescribed only at the Consultant Haematologist's specific request. The dose would normally be 300 micrograms s/c and it may not need to be given every day.

Erythropoietin

The use of erythropoietin for the management of patients with anaemia during chemotherapy or post-transplant or for the management of low grade MDS (IPSS score 0-1, provided serum erythropoietin level is < 500) is NICE approved. It may also be used for patients who are Jehovah's witnesses who are receiving chemotherapy.

Eythropoietin-alpha (Eprex) is the usual formulation in use at NUH and the dose varies between 10,000 units to 40,000 units per week given as sub-cutaneous injections as a weekly or divided twice weekly dosage.

For low grade MDS patients it is usual to check the serum erythropoietin levels first before prescribing Eprex and ensuring that serum erythropoietin level is < 200 as otherwise it is unlikely to work. If there is no response to Eprex alone it may be combined with once weekly filgrastim (or biosmiliar) at a dose of 300 micrograms s/c od.

If there is no response in the Hb concentration after 4-6 weeks of therapy then Eprex should be discontinued.

Plerixafor

See BMT SOP PRB61 Protocol for Plerixafor PBSC mobilisation.