Plerixafor and G-CSF Therapy

INDICATIONS FOR USE:

INDICATION	ICD10	Regimen Code	Reimbursement Status
Is indicated in combination with granulocyte-colony stimulating factor (G-CSF) to enhance mobilisation of haematopoietic stem cells to the peripheral blood for collection and subsequent autologous transplantation in adult patients with lymphoma and multiple myeloma whose cells mobilise poorly	C85 C90	00536a	Hospital

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TREATMENT:

The starting dose of the drugs detailed below may be adjusted downward by the prescribing clinician, using their independent medical judgement, to consider each patients individual clinical circumstances.

Plerixafor is administered by subcutaneous injection 11 hours (+/- 1hour) prior to initiation of each apheresis following 4 day pre-treatment with G-CSF. A total of up to 3 doses of plerixafor is recommended.

Day	Drug	Dose	Route	Cycle
1 onwards	G-CSF	10mcg/kg (round to nearest whole syringe)	SC	Given in the morning from Day 1 onwards until harvest complete
4 onwards	Plerixafor	[a]20mg	SC	Given in evening (with initiation of apheresis on morning of day 5 (11 hours (+/- 1 hour) later)[b]. Continue to administer each night if required, until harvest complete. This should be to a maximum of 3 doses.
[a]A flat dose of 20mg is recommended for patients weighing 65-83kg A dose of 0.24mg/kg is recommended for patients weighing <65kg or > 83kg The dose should not exceed 40mg/day The weight used to calculate the dose of plerixafor should be obtained within 1 week before the first dose of plerixafor. Plerixafor dose and treatment of patients weighing more than 175% of ideal body weight have not been investigated. Ideal body weight can be determined using the following equations: ○ Male (kg): 50 + 2.3 x ((Height (cm) x 0.394) – 60) ○ Female (kg): 45.5 + 2.3 x ((Height (cm) x 0.394) – 60)				
[b]Treatment can be given up to 16 hours prior to collection at discretion of prescribing consultant. This would facilitate administration on the day ward prior to collection				

ELIGIBILITY:

- Indication as above

EXCLUSIONS:

- Hypersensitivity to plerixafor or any of the excipients

PRESCRIPTIVE AUTHORITY:

The treatment plan must be initiated by a Consultant Haematologist working in the area of haematological malignancies

TESTS:

Baseline tests:

- FBC, renal and liver profile

Regular tests:

- FBC, renal and CD34 count daily

Disease monitoring:
Disease monitoring should be in line with the patient's treatment plan and any other test/s as directed by the supervising Consultant.

DOSE MODIFICATIONS:

- Any dose modification should be discussed with a Consultant.

Renal and Hepatic Impairment:

Table 1: Dose modification of plerixafor in renal and hepatic impairment

Renal Impairment		Hepatic Impairment
CrCl (ml/min)	**Dose**	No information available
20-50	Reduce dose by 1/3 to 0.16mg/kg	
< 20 or haemodialysis	Insufficient clinical experience to make dose recommendations	
Based on increasing exposure with increasing body weight the dose should not exceed 27 mg/day if the creatinine clearance is lower than 50 ml/min		

SUPPORTIVE CARE:

EMETOGENIC POTENTIAL: Minimal (**Refer to local policy).**

PREMEDICATIONS: None

OTHER SUPPORTIVE CARE: No specific recommendations

ADVERSE EFFECTS / REGIMEN SPECIFIC COMPLICATIONS

The adverse effects listed are not exhaustive. Please refer to the relevant Summary of Product Characteristics for full details.

- **Haematological effects:** Administration of plerixafor in conjunction with G-CSF increases circulating leukocytes as well as haematopoietic stem cell populations. White blood cell counts should be monitored during plerixafor therapy. Clinical judgment should be exercised when administering plerixafor to patients with peripheral blood neutrophil counts above 50 x 10^9 /L. Thrombocytopenia is a known complication of apheresis and has been observed in patients receiving plerixafor. Platelet counts should be monitored in all patients receiving plerixafor and undergoing apheresis.
- **Allergic reactions:** Plerixafor has been uncommonly associated with potential systemic reactions related to subcutaneous injection such as urticaria, periorbital swelling, dyspnoea, or hypoxia Symptoms responded to treatments (e.g., antihistamines, corticosteroids, hydration or supplemental oxygen) or resolved spontaneously. Cases of anaphylactic reactions, including anaphylactic shock, have been reported from world-wide post-marketing experience. Appropriate

precautions should be taken because of the potential for these reactions.

- **Spleen size**: The effect of plerixafor on spleen size in patients has not been specifically evaluated in clinical studies. Cases of splenic enlargement and/or rupture have been reported following the administration of plerixafor in conjunction with growth factor G-CSF. Individuals receiving plerixafor in conjunction with G-CSF who report left upper abdominal pain and/or scapular or shoulder pain should be evaluated for splenic integrity.
- Other adverse effects include gastrointestinal symptoms such as nausea, flatulence and vomiting, headache, arthralgia, dizziness and insomnia (patients should be advised against driving).

DRUG INTERACTIONS:

- Current drug interaction databases should be consulted for more information.

REFERENCES:

1. Duarte et al. Plerixafor plus granulocyte CSF can mobilize hematopoietic stem cells from multiple myeloma and lymphoma patients failing previous mobilization attempts: EU compassionate use data. Bone Marrow Transplant. 2011 46(1):52-8.
2. Micallef IN et al. Successful stem cell remobilization using plerixafor (mozobil) plus granulocyte colony-stimulating factor in patients with non-hodgkin lymphoma: results from the plerixafor NHL phase 3 study rescue protocol. Biol Blood Marrow Transplant 2009; 15(12):1578-1586.
3. Stover et al. Evaluation of Hematopoietic Stem Cell Mobilisation Rates with Early Plerixafor Administration for Adult Stem Cell transplantation. Biol Blood Marrow Transplant 2017 Aug; 23(8):1290-1294
4. Plerixafor (Mozobil®) Summary of Product characteristics Accessed November 2023 Available at https://www.ema.europa.eu/documents/product-information/mozobil-epar-product-information_en.pdf

Version	Date	Amendment	Approved By
1	23/11/2018		Dr Kamal Fadalla
2	01/03/2020	Reviewed	Dr Kamal Fadalla
3	23/10/2023	Reviewed. Added footnote to treatment table regarding extended administration time.	Dr Kamal Fadalla

Comments and feedback welcome at oncologydrugs@cancercontrol.ie.