Autologous Hematopoietic Progenitor Cells

Attributes	Details
Intended product	Hematopoietic progenitor cells (HPCs)
Description	Autologous HPCs are the patient's own healthy, immature blood-forming cells, collected before high-dose chemotherapy or treatment, and then returned to the patient to “rescue” the blood-forming system and restore healthy blood cell production.
ISBT name	HPC, Apheresis
Apheresis collection protocol	Mononuclear cell collection Continuous mononuclear cell collection
Donor considerations before, during, and after collection (prior and concurrent medications)	Before collection: • Patient tolerance of procedure • Medications • Laboratory parameters – Complete blood count – WBCs/hemoglobin/hematocrit/platelets • CD34+ cell count in peripheral blood • Electrolyte abnormalities • Interim donor eligibility and suitability just before the collection procedure (and for each collection procedure) • Information on previous collections, if available During collection: • Mobilization medication side effects – Filgrastim: bone pain might require repositioning – Plerixafor/motixafortide: gastrointestinal side effects might require access to toilet facilities during procedure • Monitoring for potential adverse events during the procedure After collection: • Follow-up of donor for any adverse events • Communication plan in place to coordinate need for additional mobilization and procedures
Mobilization	Growth factors: G-CSF (filgrastim) and/or plerixafor or motixafortide
Donor/patient complications/adverse events (before, during, and after collection)	Hypocalcemia • If baseline paresthesias are present due to prior therapies, might not be able to rely on symptoms for management Decreased platelet count from thrombocytopenic baseline
Venous access	Peripheral venous access Central venous catheters (CVCs) may be needed for patients with inadequate venous access to support apheresis. **Note:** Many accreditation organizations require documentation of rationale for CVC use.
Apheresis specifics	Anticoagulant: • Acid-citrate-dextrose, solution A (ACD-A) • Heparin can be considered if indicated Collection goals for a single transplant: • Minimum: 2×10^6 CD34+ cells/kg (autologous) • Optimal: 5×10^6 CD34+ cells/kg (autologous) Goals may be higher if multiple transplants are planned.

Other technical considerations	General procedure time: • Varies, generally 5-7 hours per collection procedure Any predictive tools for collection: • Peripheral blood CD34+ cell count threshold of at least 5-10/μL • If CD34+ cell count is low, can consider adding mobilization meds (plerixafor/motixafortide)	Blood volumes processed: • 2-3 total blood volumes • 10-15 L
Expected number of collections	Approximately 1-2, but may be more with poor mobilization or collections for multiple transplants	
Description of the final product (after collection, before transportation)	Approximately 300 mL of product containing WBCs, some red cells, plasma and platelets, and anticoagulant Concurrent plasma may be collected at end of procedure and sent with product to lab	
Transportation of the product/special handling	Before transportation: held fresh Quarantine up to 4 hours at room temperature Storage at 2-8 C for longer if needed	
Further manufacturing	Cryopreservation: • To split into doses • Storage of potential future transplants • Allow time for recipient conditioning Cell selection	
Diseases treated	Hematologic malignancies: • Plasma cell dyscrasias: multiple myeloma (most common), amyloidosis • Lymphoma: Hodgkin lymphoma, diffuse large B-cell lymphoma, follicular lymphoma, mantle cell lymphoma, T-cell lymphoma, lymphoplasmacytic lymphoma/Waldenström macroglobulinemia • Leukemia: acute promyelocytic leukemia	Solid malignancies: • Germ cell tumor • Ewing sarcoma (pediatric) • Neuroblastoma (pediatric) Nonmalignant conditions: • Autoimmune disorders (eg, systemic sclerosis)
	Note: For the diseases listed, treatments are considered standard of care in certain states of the indicated disease by the most recent clinical guidelines from the American Society for Transplantation and Cellular Therapy; refer to current guidelines for more information.	
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