

## Corporate Medical Policy

# Bone Marrow Transplant Allogeneic for Genetic Diseases and Acquired Anemias

**File Name:** bone\_marrow\_transplant\_allogeneic\_for\_genetic\_diseases\_and\_acquired\_anemias  
**Policy Number:** SUR6090.1  
**Origination:** 2/2001  
**Last Review:** 11/2004  
**Next Review:** 11/2006

### Description of Procedure or Service

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This policy addresses high-dose chemotherapy and [allogeneic](#) stem cell support for genetic diseases and acquired anemias. Bone marrow transplants typically include high-dose chemotherapy (HDC).

High dose chemotherapy (HDC) involves the administration of cytotoxic agents using doses several times greater than the standard therapeutic dose. Whole body radiotherapy may also be given and is included in the term HDC when applicable. The most significant side effect of HDC is marrow ablation also known as myeloablation which is the destruction of the bone marrow. In most cancer treatment marrow ablation or destruction is considered a complication, but in the treatment of marrow-based diseases, the therapeutic intent is marrow ablation, with marrow reconstitution using [allogeneic stem cells](#).

[Allogeneic](#) bone marrow transplantation involves [harvesting](#) bone marrow or [stem cells](#) from a healthy donor (related or unrelated to the recipient) for [infusion](#) into a patient whose bone marrow is compromised. This procedure is an established treatment for certain marrow [dysplasias](#) and [aplasias](#) and inborn errors of [metabolism](#).

There are three potential sources of [allogeneic stem cells](#).

1. Bone marrow cells: Bone marrow [stem cells](#) can be harvested from a related or unrelated donor.
2. Peripheral [stem cells](#): [Stem cells](#) may be harvested from the peripheral blood circulation. This may involve several pheresis procedures. Pheresis involves withdrawing blood from a donor in which a portion containing [stem cells](#) is separated and retained with the remainder retransfused back to the donor.
3. [Umbilical cord](#) blood: Blood harvested from the [umbilical cord](#) and [placenta](#) shortly after the delivery of neonates contains [stem cells](#). Although cord blood is an [allogeneic](#) source, these [stem cells](#) are associated with a lower incidence of rejection or graft versus host disease.

[Immunologic](#) compatibility between donor and patient is a critical factor for achieving a good outcome of [allogeneic](#) bone marrow transplantation. Compatibility is established by serologic tissue typing of human leukocyte antigens (HLA) using cellular, serologic, or molecular techniques. HLA refers to the tissue type expressed at the HLA, A, B, and DR loci on each leg of chromosome 6. Depending upon the disease being treated, an acceptable donor will match the patient at all six HLA antigens or most HLA loci.

Marrow based diseases are **not malignant**, but are considered fatal (i.e., aplastic anemia or immunodeficiencies), or are associated with severe morbidity (i.e., sickle cell disease), if not adequately treated. The inborn errors of [metabolism](#) such as mucopolysaccharidoses and mucopolipidoses are characterized by a congenital defect in one of the enzymes critical to intermediate [metabolism](#). [Allogeneic](#) stem cell transplant may correct the enzymatic defect.

## Policy

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BCBSNC will provide coverage for [Allogeneic](#) Bone Marrow Transplant (BMT), high dose chemotherapy and stem cell support for Genetic Diseases and Acquired Anemias when it is determined to be medically necessary because the medical criteria and guidelines shown below are met.

## Benefits Application

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Please refer to certificate for availability of benefits. This policy relates only to the services or supplies described herein. Benefits may vary according to benefit design, therefore certificate language should be reviewed before applying the terms of the policy.

There may be certificates which exclude benefits for transplantation or for specific diagnoses.

**Services for or related to the search for a donor are not covered.**

## When Allogeneic Bone Marrow Transplant for Genetic Diseases and Acquired Anemias are covered

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**Note: The clinical indications and discussion of [Allogeneic](#) BMT for Genetic Diseases and Acquired Anemias are complex and technical. If you have any questions concerning this treatment, please talk with your physician.**

[Allogeneic](#) bone marrow transplants are considered medically necessary for selected patients with the following disorders:

- Sickle cell anemia for children or young adults with either a history of prior stroke or at increased risk of stroke or end-organ damage, and with an HLA-identical, related donor; factors associated with a high risk of stroke or end-organ damage include: recurrent chest syndrome, recurrent vaso-occlusive crises, red blood cell alloimmunization on chronic transfusion therapy;
- Severe or very severe aplastic anemia, including congenital (e.g., Fanconi's anemia or Diamond-Blackfan syndrome) or acquired (e.g., secondary to drug or toxin exposure) forms. Appropriate patients include those with platelets less than  $20 \times 10^9$  /L, granulocytes less than  $0.5 \times 10^9$  /L, and reticulocytes less than 1% (corrected for hematocrit) and who have failed antihymocyte globulin therapy;
- Homozygous beta-thalassemia (i.e., thalassemia major);
- Wiskott-Aldrich syndrome;
- Severe combined immunodeficiencies;
- Infantile [malignant](#) osteopetrosis (Albers-Schonberg disease or marble bone disease);
- Mucopolysaccharidoses (e.g., Hunter's, Hurler's, Sanfilippo, Maroteaux-Lamy variants) in patients who are neurologically intact;
- Mucopolipidoses (e.g., Gaucher's disease, metachromatic leukodystrophy, globoid cell leukodystrophy, adrenoleukodystrophy) for patients who have failed conventional therapy (e.g., diet, enzyme replacement) and who are neurologically intact;
- Kostmann's syndrome;
- Leukocyte adhesion deficiencies;
- X-linked lymphoproliferative syndrome.

## **When Allogeneic Bone Marrow Transplant for Genetic Diseases and Acquired Anemias are not covered**

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For diagnoses other than those listed above.

## **Policy Guidelines**

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Refer to the individual certificate for prior approval/precertification requirements.

## **Billing/Coding/Physician Documentation Information**

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This policy may apply to the following codes. Inclusion of a code in this section does not guarantee that it will be reimbursed. For further information on reimbursement guidelines, please see Administrative Policies on the Blue Cross Blue Shield of North Carolina web site at [www.bcbsnc.com](http://www.bcbsnc.com). They are listed in the Category Search on the Medical Policy search page.

*Applicable codes: 38205, 38230, 38240, 38242, S2150*

BCBSNC may request medical records for determination of medical necessity. When medical records are requested, letters of support and/or explanation are often useful, but are not sufficient documentation unless all specific information needed to make a medical necessity determination is included.

## **Policy Key Words**

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**Key Words:** Allogeneic Bone Marrow Transplant, Nonmalignant Diseases, BMT, Cancer, High Dose Chemotherapy, HDC, Stem Cell Support, SCS, Genetic Diseases, Acquired Anemias, SUR6090.1

## **Medical Term Definitions**

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### **Allogeneic**

genetically dissimilar - involves a donor and a recipient; genes are not identical in each organism

### **Aplasia**

a lack of development of an organ or tissue or of the cellular products from an organ or tissue

### **Dysplasia**

abnormality of development, in pathology, an alteration in size, shape and organization of adult cells.

### **Harvesting**

to remove tissues or cells from a donor and preserve for transplantation.

### **Immunologic**

pertains to antigens, the immune process and how humans and higher animals fight off disease.

## **Policy: Bone Marrow Transplant Allogeneic for Genetic Diseases and Acquired Anemias**

### **Infuse**

the therapeutic introduction of a fluid other than blood into a vein (example: saline solution with a drug added).

### **Malignant**

cancerous, not benign; describes a tumor that invades and destroys the tissues in which it originates and can spread to other sites in the body via the bloodstream and lymphatic system. If untreated, these tumors cause progressive deterioration and death.

### **Metabolism**

sum total of all the chemical reactions occurring in body cells; reaction that transform substances into energy or materials the body can use by means of anabolism or catabolism.

### **Placenta**

Temporary organ formed from both fetal and maternal tissues that provides nutrients and oxygen to the developing fetus, carries away fetal metabolic wastes, and produces the hormones of pregnancy.

### **Stem cells**

immature generic blood cells that will mature into the various types of blood cells in the body.

### **Umbilical cord**

a flexible structure through which the umbilical arteries and vein pass and which connects the fetus to the placenta.

## **Scientific Background and Reference Sources**

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BCBSA Medical Policy Reference Manual, 12/1/1999; 8.01.22

BCBSA Medical Policy Reference Manual, 7/12/2002; 8.01.22

Specialty Matched Consultant Advisory Panel - 11/2002

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.22, 4/16/2004

Specialty Matched Consultant Advisory Panel - 11/2004

## **Policy Implementation/Update Information**

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1/01 Specialty Matched Consultant Advisory Group.

2/01 Original policy issued.

2/03 Specialty Matched Consultant Advisory Panel review 11/2002. No change in criteria. Codes 86812-86822 removed; codes 38231 and 86915 deleted and codes 38242 and 38205 added to the Billing/Coding section. System coding changes.

1/04 Benefits Application and Billing/Coding sections updated for consistency.

7/29/04 Added HCPCS code S2150 to the Billing/Coding section of the policy.

12/9/04 Specialty Matched Consultant Advisory Group review 11/29/04. No changes to criteria. Description of Procedure or Service updated. References added.

## **Policy: Bone Marrow Transplant Allogeneic for Genetic Diseases and Acquired Anemias**

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Medical policy is not an authorization, certification, explanation of benefits or a contract. Benefits and eligibility are determined before medical guidelines and payment guidelines are applied. Benefits are determined by the group contract and subscriber certificate that is in effect at the time services are rendered. This document is solely provided for informational purposes only and is based on research of current medical literature and review of common medical practices in the treatment and diagnosis of disease. Medical practices and knowledge are constantly changing and BCBSNC reserves the right to review and revise its medical policies periodically.