Autologous Hematopoietic Stem Cell Transplantation for Malignant Astrocytomas and Gliomas

Hematopoietic Stem-Cell Transplantation
Hematopoietic stem-cell transplantation (HSCT) refers to a procedure in which hematopoietic stem cells are infused to restore bone marrow function in cancer patients who receive bone-marrow-toxic doses of cytotoxic drugs with or without whole-body radiation therapy. Bone marrow stem cells may be obtained from the transplant recipient (autologous HSCT) and can be harvested from bone marrow, peripheral blood, or umbilical cord blood and placenta shortly after delivery of neonates. Although cord blood is an allogeneic source, the stem cells in it are antigenically “naive” and thus are associated with a lower incidence of rejection or graft-versus-host disease. Cord blood is discussed in greater detail in policy #285.

Preparative Conditioning for Hematopoietic Stem-Cell Transplantation
Autologous HSCT necessitates myeloablative chemotherapy to eradicate cancerous cells from the blood and bone marrow, thus permitting subsequent engraftment and repopulation of bone marrow space with presumably normal hematopoietic progenitor cells. As a consequence, autologous HSCT is typically performed as consolidation therapy when the patient’s disease is in complete remission. Patients who undergo autologous HSCT are susceptible to chemotherapy-related toxicities and opportunistic infections prior to engraftment, but not graft-versus-host disease.

Astrocytomas and Gliomas
Diffuse fibrillary astrocytomas are the most common type of brain tumor in adults. These tumors are classified histologically into 3 grades of malignancy: grade II astrocytoma, grade III anaplastic astrocytoma, and grade IV glioblastoma multiform. Oligodendrogliomas are diffuse neoplasms that are clinically and biologically most closely related to diffuse fibrillary astrocytomas. However, these tumors generally have better prognoses than diffuse astrocytomas, with mean survival times of 10 years versus 2–3 years. In addition, oligodendrogliomas appear to be more chemosensitive than other types of astrocytomas. Glioblastoma multiforme is the most malignant stage of astrocytoma, with survival times of less than 2 years for most patients.

Treatment of primary brain tumors focuses on surgery, either with curative intent or optimal tumor debulking. Surgery may be followed by radiation therapy and/or chemotherapy. Survival after chemoradiotherapy is largely dependent on the extent of residual tumor after surgical debulking. Therefore, tumors arising in the midline, basal ganglia, or corpus callosum or those arising in the eloquent speech or motor areas of the cortex, which typically cannot be extensively resected, have a particularly poor outcome. Treatment of children younger than 3 years is complicated by the long-term effects of radiation therapy on physical and intellectual function. Therefore, in young children, radiation of the central nervous system (CNS) is avoided whenever possible.

Note: Astrocytomas and gliomas arise from the glial cells. Tumors arising from the neuroepithelium constitute a separate category of malignancies that include CNS neuroblastoma, medulloblastoma,
ependymoblastomas, and pinealblastomas. Collectively these tumors may be referred to as primitive neuroectodermal tumors (PNETs). Ependymomas also arise from the neuroepithelium but, because of their more mature histologic appearance, are not considered a member of the PNET family.

**When services are not covered for commercial products or for Medicare HMO Blue, Medicare PPO Blue**

We do not cover autologous hematopoietic stem-cell transplantation as a treatment of malignant astrocytomas and gliomas because it is considered investigational as it does not meet our Medical Technology Assessment Guidelines, #350.

The latter diagnosis includes both glioblastoma multiforme and oligodendroglioma.

**Individual consideration**

All our medical policies are written for the majority of people with a given condition. Each policy is based on medical science. For many of our medical policies, each individual’s unique clinical circumstances may be considered in light of current scientific literature. For consideration of an individual patient, physicians may send relevant clinical information to:

**For services already billed**

<table>
<thead>
<tr>
<th>Blue Cross Blue Shield of Massachusetts Provider Appeals</th>
<th>Blue Cross Blue Shield of Massachusetts Case Creation/Medical Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>PO Box 986065</td>
<td>One Enterprise Drive</td>
</tr>
<tr>
<td>Boston, MA 02298</td>
<td>Quincy, MA 02171</td>
</tr>
<tr>
<td></td>
<td>Tel: 1-800-327-6716</td>
</tr>
<tr>
<td></td>
<td>Fax: 1-888-641-5330</td>
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**Managed care guidelines**

This is not a covered service.

**Indemnity and PPO Guidelines**

This is not a covered service.

**Other information**

For our Medical Technology Assessment Guidelines, see document #350.

**Coding information**

Procedure codes are from current CPT, HCPCS Level II, Revenue Code, and/or ICD-9-CM manuals, as recommended by the American Medical Association, Centers for Medicare and Medicaid Services and American Hospital Associations. Blue Cross Blue Shield Association national codes may be developed when appropriate.

The following codes are included below for informational purposes. Inclusion or exclusion of a code does not constitute or imply member coverage or provider reimbursement. Please refer to the member’s contract benefits in effect at the time of service to determine coverage or non-coverage as it applies to an individual member.

**CPT codes:**

- **38204**: Management of recipient hematopoietic cell donor search and cell acquisition
- **38206**: Blood-derived hematopoietic progenitor cell harvesting for transplantation, per collection; autologous

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HCPCS codes:
- **Q0083-Q0085**: Chemotherapy, administer code range
- **J9000-J9999**: Chemotherapy drug code range
- **S2150**: Bone marrow or blood-derived peripheral stem-cell (peripheral or umbilical), allogeneic or autologous, harvesting, transplantation, and related complications including pheresis and cell preparation/storage; marrow ablative therapy; drugs, supplies, hospitalization with outpatient follow-up; medical/surgical, diagnostic, emergency, and rehabilitative services; and the number of days of pre- and post-transplant care in the global definition

**Policy update history**
New policy, effective 3/01/10. Reviewed 9/2010 MPG-Hematology and Oncology, no changes in coverage were made. Updated 1/2011 with added references. Reviewed 7/2011 MPG – Hematology and Oncology, no changes in coverage were made.

**References**

**References for footnote 1:**
1. Blue Cross and Blue Shield Association Technology Evaluation Center (TEC). HDC/AuSCS for high-grade glial tumors of the brain in adults. TEC Assessments 1994; Volume 9, Tab 34.
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This document is designed for informational purposes only and is not an authorization, or an explanation of benefits, or a contract. Receipt of benefits is subject to satisfaction of all terms and conditions of the coverage. Medical technology is constantly changing, and we reserve the right to review and update our policies periodically.

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Footnotes

1 Based on BCBSA policy # 8.01.31, Autologous Hematopoietic Stem Cell Transplantation for Malignant Astrocytomas and Gliomas, reviewed September 2010.