

Health Plan of Washington

# MEDICAL POLICY – 8.01.529 Hematopoietic Cell Transplantation for Non-Hodgkin Lymphomas

| BCBSA Ref. Policy:   | 8.01.20       |  |   |  |
|--|---------------|--|---|--|
| Effective Date:  | May 1, 2024   | RELATED MEDICAL POLICIES:  |   |  |
| Last Revised:  | April 8, 2024 | 8.01.15  | Hematopoietic Cell Transplantation for Chronic Lymphocytic Leukemia   |  |
| Replaces:   8.01.20   and Small Lymphocytic Lymphoma       |               | and Small Lymphocytic Lymphoma   |   |  |
|  |               | 8.01.24  | Hematopoietic Cell Transplantation for Miscellaneous Solid Tumors in  |  |
|  |               |  | Adults  |  |
|  |               | 8.01.25  | Hematopoietic Cell Transplantation for Autoimmune Diseases  |  |
| 8.01.29 Hematopoietic Cell Transplantation for Hodgkin Lym |               | Hematopoietic Cell Transplantation for Hodgkin Lymphoma                    |   |  |
|  |               | 8.01.511 Hematopoietic Cell Transplantation for Solid Tumors of Ch         |   |  |
| 8.01.532 Hematopoietic Cell Transplantation<br>Tumors      |               | Hematopoietic Cell Transplantation in the Treatment of Germ-Cell<br>Tumors |   |  |
|  |               | 8.01.538   | Allogeneic Hematopoietic Cell Transplantation for Genetic Diseases and Acquired Anemias                         |  |
|  |               | 8.01.539   | Allogeneic Hematopoietic Cell Transplantation for Myelodysplastic<br>Syndromes and Myeloproliferative Neoplasms |  |

#### Select a hyperlink below to be directed to that section.

POLICY CRITERIA | DOCUMENTATION REQUIREMENTS | CODING RELATED INFORMATION | EVIDENCE REVIEW | REFERENCES | HISTORY

Clicking this icon returns you to the hyperlinks menu above.

#### Introduction

A hematopoietic cell is an immature cell that can mature into different types of blood cells. Certain chemotherapy drugs can destroy the bone marrow, and bone marrow is where blood cells form. Infusing immature blood cells gives the body a chance to restore blood cell production in the bone marrow. When the immature blood cells are taken from the patient it's known as an autologous hematopoietic cell transplant (HCT). Using immature cells from a donor is known as an allogeneic HCT. This policy discusses when hematopoietic cell transplants may be considered medically necessary for non-Hodgkin lymphoma, a type of immune system cancer. **Note:** The Introduction section is for your general knowledge and is not to be taken as policy coverage criteria. The rest of the policy uses specific words and concepts familiar to medical professionals. It is intended for providers. A provider can be a person, such as a doctor, nurse, psychologist, or dentist. A provider also can be a place where medical care is given, like a hospital, clinic, or lab. This policy informs them about when a service may be covered.

#### Policy Coverage Criteria

Small lymphocytic lymphoma may be considered a node-based variant of chronic lymphocytic leukemia. Therefore, small lymphocytic lymphoma is considered along with chronic lymphocytic leukemia in a separate policy. Lymphoplasmacytic lymphoma and Waldenstrom macroglobulinemia are considered in separate policies (see **Related Policies**).

| Indication              | Coverage Statement  |  |
|-------------------------|---|--|
| Non-Hodgkin lymphoma    | Myeloablative autologous, myeloablative allogeneic or             |  |
| (NHL) B-cell aggressive | reduced-intensity conditioning (RIC) allogeneic HCT with          |  |
| subtype (except mantle  | curative intent may be considered medically necessary:            |  |
| cell)                   | As salvage for individuals not in complete remission after first  |  |
|                         | line chemotherapy induction                                       |  |
|                         | OR  |  |
|                         | • To achieve or consolidate a complete remission in               |  |
|                         | chemotherapy sensitive first or subsequent relapse                |  |
|                         | OR  |  |
|                         | • To consolidate a complete remission in individuals with an age- |  |
|                         | adjusted International Prognostic Index (IPI) that predicts a     |  |
|                         | high or high-intermediate risk of relapse                         |  |
| Mantle cell NHL B-cell  | Autologous HCT may be considered medically necessary to           |  |
| subtype                 | consolidate a first remission of mantle cell NHL B-cell subtype.  |  |
|                         |   |  |
|                         | Allogeneic and RIC allogeneic HCT are considered                  |  |
|                         | investigational to consolidate a first remission of mantle cell   |  |
|                         | NHL B-cell subtype.   |  |
|                         |   |  |
|                         | Allogeneic or RIC allogeneic HCT with curative intent may be      |  |
|                         | considered medically necessary as salvage for individuals with    |  |
|                         | mantle cell NHL B-cell subtype who are not in complete            |  |
|                         | remission after first line chemotherapy.                          |  |



| Indication          | Coverage Statement  |
|---------------------|---|
|                     | Myeloablative autologous HCT is considered investigational as<br>salvage for individuals with mantle cell NHL B-cell subtype<br>who are not in complete remission after first line<br>chemotherapy. |
| NHL B-cell indolent | Myeloablative autologous, allogeneic, or RIC allogeneic HCT   |
| subtypes            | <ul> <li>with curative intent may be considered medically necessary:</li> <li>As salvage for individuals not in complete remission after first line (induction) chemotherapy</li> </ul>             |
|                     | <ul> <li>To achieve or consolidate a complete remission in</li> </ul>   |
|                     | chemotherapy sensitive first or subsequent relapse (regardless<br>of transformation)  |
|                     | Myeloablative autologous, allogeneic, and RIC allogeneic HCT are considered investigational:  |
|                     | • As initial therapy (without standard induction chemotherapy) for all B-Cell NHL   |
|                     | OR  |
|                     | To consolidate a first complete remission for low or low-<br>intermediate IPI score diffuse large P. Cell NHI   |
|                     |   |
|                     | <ul> <li>To consolidate a first complete remission for indolent B-cell<br/>NHL</li> </ul>   |
| Mature T-cell or NK | Myeloablative autologous HCT may be considered medically  |
| (peripheral T-cell) | necessary:  |
| lymphoma            | • To consolidate a first complete remission in high-risk subtypes   |
|                     | (see Table 1 below)   |
|                     | Myeleshistiya sutelegeye allegeneis, er reduced intensity   |
|                     | conditioning allogeneic HCT may be considered medically   |
|                     | necessary as salvage therapy.   |
|                     | Myeloablative and reduced intensity conditioning allogeneic   |
|                     | HCT are considered investigational to consolidate a first   |
|                     | complete remission.   |

| Indication           | Coverage Statement  |
|----------------------|---|
| Hepatosplenic T-cell | Allogeneic HCT may be considered medically necessary to   |
| lymphoma             | consolidate a first CR or partial response.   |
|                      | Autologous HCT may be considered medically necessary to<br>consolidate a first response if a suitable donor is not available<br>or for individuals who are ineligible for allogeneic HCT. |
|                      | Autologous or allogeneic HCT as initial therapy (i.e., without a full course of standard-dose induction chemotherapy) is considered investigational.                                      |
| Tandem transplants   | Tandem transplants are considered investigational to treat individuals with any stage, grade, or subtype of NHL.  |

| Table 1: Allowable Treatment by NHL Type |  |                     |                        |                        |                        |                      |
|--|--|---------------------|------------------------|------------------------|------------------------|----------------------|
| NHL Type                                 | Presenting<br>Stage  | Treatment<br>Intent | Autologous<br>HCT      | Allogeneic<br>HCT      | RIC                    | Tandem<br>Transplant |
| B-Cell<br>aggressive (not<br>mantle)     | Not in CR<br>post 1 <sup>st</sup> Line                     | Salvage             | Medically<br>Necessary | Medically<br>Necessary | Medically<br>Necessary | Investigational      |
| mantie)                                  | Chemo-<br>sensitive 1st<br>or later<br>relapse             | Consolidate<br>(CR) | Medically<br>Necessary | Medically<br>Necessary | Medically<br>Necessary | Investigational      |
| High or high-<br>intermediate IPI        | CR   | Consolidate         | Medically<br>Necessary | Medically<br>Necessary | Medically<br>Necessary | Investigational      |
| Mantle cell                              | 1st<br>Remission   | Consolidate         | Medically<br>Necessary | Investigational        | Investigational        | Investigational      |
|  | Not in CR<br>post 1st Line                                 | Salvage             | Investigational        | Medically<br>Necessary | Medically<br>Necessary | Investigational      |
| Indolent                                 | CR   | Consolidate         | Investigational        | Investigational        | Investigational        | Investigational      |
|  | Not in CR<br>post 1 <sup>st</sup> Line<br>Chemo            | Salvage             | Medically<br>Necessary | Medically<br>Necessary | Medically<br>Necessary | Investigational      |
|  | Chemo-<br>sensitive 1 <sup>st</sup><br>or later<br>relapse | Consolidate<br>(CR) | Medically<br>Necessary | Medically<br>Necessary | Medically<br>Necessary | Investigational      |



| Table 1: Allowable Treatment by NHL Type |                    |             |                 |                 |                 |                      |
|--|--------------------|-------------|-----------------|-----------------|-----------------|----------------------|
| NHL Type                                 | Presenting         | Treatment   | Autologous      | Allogeneic      | RIC             | Tandem<br>Transplant |
|  | Stage              | intent      | пст             | пст             |                 | папяріані            |
| Mature T-cell or                         | 1 <sup>st</sup> CR | Consolidate | Medically       | Investigational | Investigational | Investigational      |
| NK cell high risk                        |                    |             | Necessary       |                 |                 |                      |
|  | Not CR post        | Salvage     | Medically       | Medically       | Medically       | Investigational      |
|  | Chemo              |             | Necessary       | Necessary       | Necessary       |                      |
| Mature T-cell or                         | 1 <sup>st</sup> CR | Consolidate | Investigational | Investigational | Investigational | Investigational      |
| NK cell not high                         |                    |             |                 |                 |                 |                      |
| risk                                     |                    |             |                 |                 |                 |                      |
|  |                    |             |                 |                 |                 |                      |
| All NHL low or                           | 1 <sup>st</sup> CR | Consolidate | Investigational | Investigational | Investigational | Investigational      |
| low-                                     |                    |             |                 |                 |                 |                      |
| intermediate IPI                         |                    |             |                 |                 |                 |                      |
|  |                    |             |                 |                 |                 |                      |

#### **Additional Information**

Reduced-intensity conditioning (RIC) would be considered an option in individuals who meet criteria for an allogeneic hematopoietic cell transplant (HCT), but whose age (typically older than 55 years) or comorbidities (e.g., liver or kidney dysfunction, generalized debilitation, prior intensive chemotherapy) preclude use of a standard conditioning regimen.

In individuals who qualify for a myeloablative allogeneic hematopoietic HCT on the basis of overall health and disease status, allogeneic HCT using either myeloablative or RIC may be considered. However, a myeloablative conditioning regimen with allogeneic HCT may benefit younger individuals with good performance status and minimal comorbidities more than allogeneic HCT with RIC.

#### **Documentation Requirements**

The individual's medical records submitted for review should document that medical necessity criteria are met. The record should include clinical documentation of:

- Diagnosis/condition (including type of non-Hodgkin's Lymphoma)
- History and physical examination documenting the severity of the condition
- Prior treatment (if any) individual has received
- Any poor-risk features
- History of remission(s) and relapse(s) (if any)



| Code  | Description  |
|-------|--|
| СРТ   |  |
| 38230 | Bone marrow harvesting for transplantation; allogeneic   |
| 38232 | Bone marrow harvesting for transplantation; autologous   |
| 38240 | Hematopoietic progenitor cell (HPC); allogeneic transplantation per donor  |
| 38241 | Hematopoietic progenitor cell (HPC); autologous transplantation  |
| HCPCS |  |
| S2142 | Cord blood-derived stem-cell transplantation, allogeneic   |
| S2150 | Bone marrow or blood-derived stem cells (peripheral or umbilical), allogeneic or<br>autologous, harvesting, transplantation, and related complications; including: pheresis<br>and cell preparation/storage; marrow ablative therapy; drugs, supplies, hospitalization<br>with outpatient follow-up; medical/surgical, diagnostic, emergency, and rehabilitative<br>services; and the number of days of pre and post-transplant care in the global<br>definition |

**Note**: CPT codes, descriptions and materials are copyrighted by the American Medical Association (AMA). HCPCS codes, descriptions and materials are copyrighted by Centers for Medicare Services (CMS).

#### **Related Information**

## **Consideration of Age**

The ages stated in this policy for which reduced intensity conditioning would be considered an option in individuals who meet other criteria for an allogeneic HSCT are based on the risk factors defined by the International Prognostic Index. See Evidence Review section and National Comprehensive Cancer Network.

#### **Definition of Terms**

**Allogeneic HCT:** The conventional ("classical") practice of allogeneic HCT involves administration of cytotoxic agents (e.g., cyclophosphamide, busulfan) with or without total -



body irradiation at doses sufficient to destroy endogenous hematopoietic capability in the recipient.

**Autologous HCT:** This involves the administration of cytotoxic chemotherapy with or without radiation to eradicate cancerous cells from the blood and bone marrow. It is typically performed as consolidation therapy when the individual's disease is in complete remission.

**Chemo-sensitive relapse:** This is defined as relapsed non-Hodgkin lymphoma (NHL) that does not progress during or immediately after standard-dose induction chemotherapy (i.e., achieves stable disease or a partial response).

**Complete remission (CR)**: This is the disappearance of all the signs of cancer in response to treatment. Also called complete response.

**Consolidation therapy:** This is treatment that is given after cancer has disappeared following initial therapy with the goal of killing any cancer cells that may be left in the body. Also referred to as intensification therapy and post-remission therapy.

**Disease-free survival:** This is the length of time after primary treatment for a cancer that the individual survives free of any signs or symptoms of the cancer being treated. Also called relapse-free survival.

**First-line therapy:** This is the first treatment given for a disease and is often part of a standard set of treatments, which may include surgery followed by chemotherapy and radiation.

**Hematopoietic cell transplantation (HCT):** This refers to a procedure in which hematopoietic 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. Hematopoietic cells may be obtained from the transplant recipient (autologous HCT) or from a donor (allogeneic HCT).

**International Prognostic Index (IPI):** This model was developed for predicting outcomes in individuals with aggressive non-Hodgkin's lymphoma based on the patients' clinical characteristics before treatment.

**Myeloablative chemotherapy:** This is high-dose chemotherapy that kills all cells in the bone marrow, including the cancer cells. It is generally followed by bone marrow or stem-cell transplant to rebuild the bone marrow.

**Reduced-intensity conditioning (RIC):** This refers to the pretransplant use of lower doses or less intense regimens of cytotoxic drugs or radiation than are used in conventional full-dose myeloablative conditioning treatments.



**Relapse:** The return of a disease or the signs and symptoms after a period of improvement.

**Salvage therapy:** This describes therapy given to individuals with refractory or relapsed disease. For individuals with peripheral T-cell lymphoma, salvage therapy includes individuals who do not achieve a complete response (e.g., achieve only a partial response, have no response, or have progressive disease) with first-line induction chemotherapy (refractory disease) or who relapse after achieving a complete response with first-line induction chemotherapy. For mantle cell lymphoma, salvage therapy includes individuals with progressive disease with first-line induction chemotherapy (refractory disease) or in individuals who relapse after a complete or partial response after initial induction chemotherapy, or individuals who fail a previous autologous HCT.

**Tandem transplants:** These are usually defined as the planned administration of two successive cycles of high-dose myeloablative chemotherapy, each followed by infusion of autologous hematopoietic stem cells, whether or not there is evidence of persistent disease following the first treatment cycle. Sometimes, the second cycle may use non-myeloablative immunosuppressive conditioning followed by infusion of allogeneic cells.

**Transformation:** This term describes a lymphoma whose histologic pattern has evolved to a higher-grade lymphoma. Transformed lymphomas typically evolve from a nodular pattern to a diffuse pattern.

## High-Risk (Aggressive) T-Cell and NK-Cell Neoplasms:

The T-cell and NK-cell neoplasms are a clinically heterogeneous group of rare disorders, most of which have an aggressive clinical course and poor prognosis. The exception would include the following subtypes which typically have a relatively indolent and protracted course:

- T-cell large granulocyte leukemia (T-LGL),
- Chronic lymphoproliferative disorder of NK cells,
- Early-stage mycosis fungoides,
- Primary cutaneous ALCL, and
- ALK+ ALCL.<sup>11</sup>

# **Benefit Application**

The following considerations may supersede this policy:

- State mandates requiring coverage for autologous bone marrow transplantation offered as part of clinical trials of autologous bone marrow transplantation approved by the National Institutes of Health.
- Some contracts or certificates of coverage may include specific conditions in which autologous bone marrow transplantation would be considered eligible for coverage.

#### **Evidence Review**

#### Description

Hematopoietic cell transplantation (HCT) refers to a procedure by 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 radiotherapy. Hematopoietic stem cells may be obtained from the transplant recipient (autologous HCT) or from a donor (allogeneic HCT [allo-HCT]). They can be harvested from bone marrow, peripheral blood, or umbilical cord blood shortly after delivery of neonates. Although umbilical cord blood is an allogeneic source, the cells in it are antigenically "naïve" and thus are associated with a lower incidence of rejection or graft-versus-host disease.

#### Background

#### Non-Hodgkin Lymphoma

A heterogeneous group of lymphoproliferative malignancies, non-Hodgkin lymphoma (NHL) usually originates in lymphoid tissue. Historically, uniform treatment of individuals with NHL was hampered by the lack of a uniform classification system. In 1982, the Working Formulation was developed to unify different classification systems into one.<sup>1</sup> The Working Formulation divided NHL into low-, intermediate-, and high-grade, with subgroups based on histologic cell type. Because our understanding of NHL has improved, the diagnosis has become more sophisticated

and includes the incorporation of new immunophenotyping and genetic techniques. As a result, the Working Formulation has become outdated.

European and American pathologists proposed a new classification, the Revised European-American Lymphoma (REAL) Classification<sup>2</sup> and an updated version of the REAL system, the new World Health Organization (WHO) classification.<sup>3</sup> The WHO/REAL classification recognized three major categories of lymphoid malignancies based on morphology and cell lineage: B-cell neoplasms, T-cell/natural killer cell neoplasms, and Hodgkin lymphoma.

The most recent lymphoma classification is the 2022 WHO classification (see Table 2).<sup>4</sup>

# Table 2. Updated WHO Classification (2022)

| Tumour-like lesions with B-cell predominance                                      |  |  |  |
|---|--|--|--|
| Reactive B-cell-rich lymphoid proliferations that can mimic lymphoma <sup>a</sup> |  |  |  |
| lgG4-related disease <sup>a</sup>   |  |  |  |
| Unicentric Castleman disease <sup>a</sup>   |  |  |  |
| Idiopathic multicentric Castleman disease <sup>a</sup>                            |  |  |  |
| KSHV/HHV8-associated multicentric Castleman disease <sup>a</sup>                  |  |  |  |
| Precursor B-cell neoplasms  |  |  |  |
| B-cell lymphoblastic leukaemias/lymphomas   |  |  |  |
| B-lymphoblastic leukaemia/lymphoma, NOS   |  |  |  |
| B-lymphoblastic leukaemia/lymphoma with high hyperdiploidy <sup>a</sup>           |  |  |  |
| B-lymphoblastic leukaemia/lymphoma with hypodiploidy                              |  |  |  |
| B-lymphoblastic leukaemia/lymphoma with iAMP21                                    |  |  |  |
| B-lymphoblastic leukaemia/lymphoma with BCR::ABL1 fusion <sup>a</sup>             |  |  |  |
| B-lymphoblastic leukaemia/lymphoma with BCR::ABL1-like features <sup>a</sup>      |  |  |  |
| B-lymphoblastic leukaemia/lymphoma with KMT2A rearrangement <sup>a</sup>          |  |  |  |
| B-lymphoblastic leukaemia/lymphoma with ETV6::RUNX1 fusion <sup>a</sup>           |  |  |  |
| B-lymphoblastic leukaemia/lymphoma with ETV6::RUNX1-like features <sup>a</sup>    |  |  |  |
| B-lymphoblastic leukaemia/lymphoma with TCF3::PBX1 fusion <sup>a</sup>            |  |  |  |
| B-lymphoblastic leukaemia/lymphoma with IGH::IL3 fusion <sup>a</sup>              |  |  |  |
| B-lymphoblastic leukaemia/lymphoma with TCF3::HLF fusion <sup>a</sup>             |  |  |  |
| B-lymphoblastic leukaemia/lymphoma with other defined genetic abnormalities       |  |  |  |
|   |  |  |  |



#### Mature B-cell neoplasms

Pre-neoplastic and neoplastic small lymphocytic proliferations

- Monoclonal B-cell lymphocytosis
- Chronic lymphocytic leukaemia/small lymphocytic lymphoma

Splenic B-cell lymphomas and leukaemias

- Hairy cell leukaemia
- Splenic marginal zone lymphoma
- Splenic diffuse red pulp small B-cell lymphoma
- Splenic B-cell lymphoma/leukaemia with prominent nucleolia

Lymphoplasmacytic lymphoma

Marginal zone lymphoma

- Extranodal marginal zone lymphoma of mucosa-associated lymphoid tissue
- Primary cutaneous marginal zone lymphoma<sup>a</sup>
- Nodal marginal zone lymphoma
- Paediatric marginal zone lymphoma
- Follicular lymphoma
- In situ follicular B-cell neoplasm<sup>a</sup>
- Follicular lymphoma
- Paediatric-type follicular lymphoma
- Duodenal-type follicular lymphoma

Cutaneous follicle centre lymphoma

• Primary cutaneous follicle centre lymphoma

Mantle cell lymphoma

- In situ mantle cell neoplasm<sup>a</sup>
- Mantle cell lymphoma
- Leukaemic non-nodal mantle cell lymphoma

Transformations of indolent B-cell lymphomas

• Transformations of indolent B-cell lymphomas<sup>a</sup>

Large B-cell lymphomas

- Diffuse large B-cell lymphoma, NOS
- T-cell/histiocyte-rich large B-cell lymphoma
- Diffuse large B-cell lymphoma/ high grade B-cell lymphoma with MYC and BCL2 rearrangements<sup>a</sup>



- ALK-positive large B-cell lymphoma
- Large B-cell lymphoma with IRF4 rearrangement
- High-grade B-cell lymphoma with 11q aberrations<sup>a</sup>
- Lymphomatoid granulomatosis
- EBV-positive diffuse large B-cell lymphoma<sup>a</sup>
- Diffuse large B-cell lymphoma associated with chronic inflammation
- Fibrin-associated large B-cell lymphoma<sup>a</sup>
- Fluid overload-associated large B-cell lymphoma<sup>a</sup>
- Plasmablastic lymphoma
- Primary large B-cell lymphoma of immune-privileged sites<sup>a</sup>
- Primary cutaneous diffuse large B-cell lymphoma, leg type
- Intravascular large B-cell lymphoma
- Primary mediastinal large B-cell lymphoma
- Mediastinal grey zone lymphoma<sup>a</sup>
- High-grade B-cell lymphoma, NOS

#### Burkitt lymphoma

KSHV/HHV8-associated B-cell lymphoid proliferations and lymphomas

- Primary effusion lymphoma
- KSHV/HHV8-positive diffuse large B-cell lymphoma<sup>a</sup>
- KSHV/HHV8-positive germinotropic lymphoproliferative disorder<sup>a</sup>

Lymphoid proliferations and lymphomas associated with immune deficiency and dysregulation

- Hyperplasias arising in immune deficiency/dysregulation<sup>a</sup>
- Polymorphic lymphoproliferative disorders arising in immune deficiency/dysregulation<sup>a</sup>
- EBV-positive mucocutaneous ulcer
- Lymphomas arising in immune deficiency / dysregulation<sup>a</sup>
- Inborn error of immunity-associated lymphoid proliferations and lymphomas<sup>a</sup>

#### Hodgkin lymphoma

- Classic Hodgkin lymphoma
- Nodular lymphocyte predominant Hodgkin lymphoma

#### Plasma cell neoplasms and other diseases with paraproteins

Monoclonal gammopathies

• Cold agglutinin disease<sup>a</sup>



- IgM monoclonal gammopathy of undetermined significance
- Non-IgM monoclonal gammopathy of undetermined significance
- Monoclonal gammopathy of renal significance<sup>a</sup>

Diseases with monoclonal immunoglobulin deposition

- Immunoglobulin-related (AL) amyloidosis<sup>a</sup>
- Monoclonal immunoglobulin deposition disease<sup>a</sup>

#### Heavy chain diseases

- Mu heavy chain disease
- Gamma heavy chain disease
- Alpha heavy chain disease

Plasma cell neoplasms

- Plasmacytoma
- Plasma cell myeloma
- Plasma cell neoplasms with associated paraneoplastic syndrome<sup>a</sup>
- POEMS syndrome
- TEMPI syndrome
- AESOP syndrome

<sup>a</sup>Changes from 2016 WHO classification. AESOP: adenopathy and extensive skin patch overlying a plasmacytoma; ALK: anaplastic lymphoma kinase; EBV: Epstein-Barr virus; HHV: human herpes virus; KSHV: Kaposi's sarcoma-associated herpesvirus; NOS: not otherwise specified; POEMS: polyneuropathy, organomegaly, endocrinopathy, monoclonal protein, skin changes; TEMPI: telangiectasias, elevated erythropoietin level and erythrocytosis, monoclonal gammopathy, perinephric fluid collections, and intrapulmonary shunting.

In the United States, B-cell lymphomas represent 85% of cases of NHL, and T-cell lymphomas represent 15%.<sup>5</sup> Natural killer lymphomas are relatively rare.<sup>1</sup>

The International Lymphoma Classification Project identified the most common NHL subtypes as follows: DLBCL 31%, follicular lymphoma (FL) 22%, small lymphocytic lymphoma/chronic lymphocytic leukemia (SLL/CLL) 6%, mantle cell lymphoma (MCL) 6%, peripheral T-cell lymphoma (PTCL) 6%, and marginal zone B-cell lymphoma/MALT lymphoma 5%. All other subtypes each represent less than 2% of cases of NHL.<sup>1</sup>



# Types of Non-Hodgkin lymphoma

In general, the NHL can be divided into two prognostic groups, indolent and aggressive. Indolent NHL has a relatively good prognosis, with a median survival of 10 years; however, it is not curable in advanced clinical stages.<sup>1</sup> Early-stage indolent NHL (stage I or II) may be effectively treated with radiation alone. Although indolent NHL is responsive to radiation and chemotherapy, a continuous rate of relapse is seen in advanced stages. These individuals can often be treated again if their disease remains of the indolent type. Indolent NHL may transform into a more aggressive form, which is generally treated with regimens that are used for aggressive, recurrent NHL. Histologic transformation to higher grade lymphoma occurs in up to 70% of individuals with low-grade lymphoma,<sup>6</sup> and median survival with conventional chemotherapy is 1 year or less.

Follicular lymphoma (FL) is the most common indolent NHL (70%-80% of cases), and often the terms indolent lymphoma and FL are used synonymously. Also included in the indolent NHL are small lymphocytic lymphoma/chronic lymphocytic lymphoma, lymphoplasmacytic lymphoma, marginal zone lymphomas, and cutaneous T-cell lymphoma.

Aggressive NHL has a shorter natural history; however, 30% to 60% of these individuals can be cured with intensive combination chemotherapy regimens.<sup>1</sup> Aggressive lymphomas include DLBCL, MCL, PTCL, anaplastic large cell lymphoma, and Burkitt lymphoma.

#### **Risk Assessment**

Oncologists developed a clinical tool to aid in predicting the prognosis of individuals with aggressive NHL (specifically DLBCL), referred to as the International Prognostic Index (IPI).<sup>16</sup> Before its development in 1993, prognosis was predominantly based on disease stage.

Based on the following 5 risk factors prognostic of overall survival (OS) and adjusted for patient age, the IPI defines 4 risk groups: low, low-intermediate, high-intermediate, and high-risk:

- 1. Age older than 60 years
- 2. Elevated serum lactate dehydrogenase (LDH) level
- 3. Ann Arbor stage III or IV disease
- 4. Eastern Cooperative Oncology Group (ECOG) performance status of 2, 3, or 4
- 5. Involvement of more than 1 extranodal site



Risk groups are stratified according to the number of adverse factors as follows: 0 or 1 is low risk, 2 is low intermediate, 3 is high intermediate, and 4 or 5 are high risk.

Individuals with two or more risk factors have a less than 50% chance of relapse-free survival (RFS) and OS at 5 years. Age-adjusted IPI and stage-adjusted modifications of this IPI are used for younger individuals with localized disease.

Adverse risk factors for age-adjusted IPI include stage III or IV disease, elevated LDH and ECOG Performance Status of 2 or greater and can be calculated as follows: 0 is low risk, 1 is low intermediate, 2 is high intermediate, and 3 is high risk.

With the success of the IPI, a separate prognostic index was developed for FL, which has multiple independent risk factors for relapse after a first complete remission. The proposed and validated Follicular Lymphoma International Prognostic Index (FLIPI) contains five adverse prognostic factors:

- 1. Age older than 60 years
- 2. Ann Arbor stage III or IV disease
- 3. Hemoglobin level less than 12.0 g/dL
- 4. More than 4 lymph node areas involved
- 5. Elevated serum LDH level

These five factors are used to stratify individuals into three categories of risk: low (0-1 risk factor), intermediate (2 risk factors), or poor (3 or more risk factors).<sup>17</sup>

## Mantle Cell Lymphoma

Mantle Cell Lymphoma (MCL) comprises 65% to 68% of NHL and has been recognized for some time now as a unique lymphoma subtype with a particularly aggressive course. MCL is characterized by a chromosomal translocation t(11;14), and the term mantle cell lymphoma was proposed by Banks et al(1992)<sup>43</sup> The number of therapeutic trials is not as numerous for MCL as for other NHL, because it was not widely recognized until the REAL classification. MCL shows a strong predilection for senior men, and most cases (70%) present with disseminated (stage IV) disease; extranodal involvement is common. Localized MCL is quite rare. MCL has a median survival of approximately 2 to 4 years, and although most individuals achieve remission with first-line therapy, relapse inevitably occurs, often within 12 to 18 months. MCL is rarely, if ever, cured with conventional therapy, and no standardized therapeutic approach to MCL is used.



#### **Risk Assessment**

A prognostic index has recently been established for individuals with MCL. Application of the IPI or FLIPI system to individuals with MCL has shown limitations, which included no separation of some important risk groups. In addition, some of the individual IPI and FLIPI risk factors, including number of extranodal sites and number of involved nodal areas showed no prognostic relevance, and hemoglobin showed no independent prognostic relevance in individuals with MCL.<sup>44</sup> Therefore, a new prognostic index for individuals with MCL was developed and is useful in comparing clinical trial results for MCL.

The MCL International Prognostic Index (MIPI) is based on the following risk factors prognostic for OS.

- 1. Age
- 2. ECOG performance status
- 3. Serum LDH (calculated as a ratio of LDH to a laboratory's upper limit of normal)
- 4. White blood cell (WBC) count
  - 0 points each are assigned for age younger than 50 years, ECOG Performance Status score of 0-1, LDH ratio of less than 0.67 U/L, WBC of less than 6700m/L
  - o 1 point each for age 50 to 59 years, LDH ratio of 0.67-0.99 U/L, WBC 6700-9999m/L
  - 2 points each for age 60 to 69 years, ECOG Performance Status score of 2-4, LDH ratio of 1.00-1.49 U/L, WBC of 10,000-14,999m/L:
  - 3 points each for age 70 years or older, LDH ratio of 1.5 U/L or greater, WBC of 15,000m/L or more

MCL IPI allows separation of 3 groups with significantly different prognoses<sup>44</sup>:

- 0-3 points denotes low risk, which affects 44% of individuals, who have a 5-year OS rate of 60% (median OS, not reached)
- 4-5 points denotes intermediate risk, which affects 35% of individuals, who have a median OS of 51 months
- 6-11 points denotes high risk, which affects 21% of individuals, who have a median OS of 29 months

# Peripheral T-Cell Lymphoma

Most peripheral T-cell lymphomas (PTCL) are aggressive and fall into the category of PTCL, unspecified (PTCL-u) or not otherwise specified (PTCL-NOS), angioimmunoblastic or anaplastic large cell, which combined make up 60% to 70% of all T-cell lymphomas. PTCLs are less responsive to standard chemotherapy than DLBCLs and thus carry a worse prognosis than aggressive B-cell counterparts. Survival rates at 5 years with standard chemotherapy regimens range from 20% to 35%. The poor results with conventional chemotherapy have prompted exploration of the role of HCT as therapy.

# Staging

The Ann Arbor staging classification is commonly used to stage lymphomas. Originally developed for Hodgkin disease, the classification was later expanded to include NHL.

#### Table 3. Ann Arbor Classification

| Stage | Involvement  |
|-------|--|
| 1     | Involvement of a single lymph node region (I) or of a single extralymphatic organ or site (IE)   |
| II    | Involvement of 2 or more lymph node regions on the same side of the diaphragm (II) or localized involvement of extralymphatic organ or site and of one or more lymph node regions on the same side of the diaphragm (IIE)    |
| 111   | Involvement of lymph node regions on both sides of the diaphragm (III), which may also be accompanied by localized involvement of extralymphatic organ or site (IIIE) or by involvement of the spleen (IIIS) or both (IIISE) |
| IV    | Diffuse or disseminated involvement of one or more extralymphatic organs or tissues with or without associated lymph node enlargement  |

## **Treatment for NHL**

#### Hematopoietic Cell Transplantation

Immunologic compatibility between infused hematopoietic stem cells and the recipient is not an issue in autologous HCT. However, immunologic compatibility between donor and patient is



critical for achieving a good outcome with allogenic HCT. Compatibility is established by typing of human leukocyte antigens (HLAs) using cellular, serologic, or molecular techniques. HLA refers to the tissue type expressed at the HLA-A, -B, and -DR loci on each arm of chromosome 6. Depending on the disease being treated, an acceptable donor will match the patient at all or most of the HLA loci (with the exception of umbilical cord blood).

#### **Conventional Preparative Conditioning for HCT**

The conventional ("classical") practice of allogeneic HCT involves administration of cytotoxic agents (e.g., cyclophosphamide, busulfan) with or without total body irradiation at doses sufficient to cause bone marrow ablation in the recipient. The beneficial treatment effect of this procedure is due to a combination of initial eradication of malignant cells and subsequent graft-versus-malignancy effect mediated by non-self-immunologic effector cells. While the slower graft-versus-malignancy effect is considered the potentially curative component, it may be overwhelmed by extant disease in the absence of pretransplant conditioning. Intense conditioning regimens are limited to individuals who are sufficiently medically fit to tolerate substantial adverse events. These include opportunistic infections secondary to loss of endogenous bone marrow function and organ damage or failure caused by the cytotoxic drugs. Subsequent to graft infusion in allo-HCT, immunosuppressant drugs are required to minimize graft rejection and graft-versus-host disease, which increases susceptibility to opportunistic infections.

The success of autologous HCT is predicated on the potential of cytotoxic chemotherapy (with or without radiation) to eradicate cancerous cells from the blood and bone marrow. This permits subsequent engraftment and repopulation of bone marrow with presumably normal hematopoietic stem cells obtained from the patient before undergoing bone marrow ablation. Therefore, autologous HCT is typically performed as consolidation therapy when the individual's disease is in complete remission. Individuals who undergo autologous HCT are susceptible to chemotherapy-related toxicities and opportunistic infections before engraftment, but not graft-versus-host disease.

#### **Reduced-Intensity Conditioning for Allogeneic HCT**

RIC refers to the pretransplant use of lower doses of cytotoxic drugs or less intense regimens of radiotherapy than are used in traditional full-dose myeloablative conditioning treatments. Although the definition of RIC is variable, with numerous versions employed, all regimens seek to balance the competing effects of relapse due to residual disease and non-relapse mortality.

The goal of RIC is to reduce disease burden and to minimize associated treatment-related morbidity and non-relapse mortality in the period during which the beneficial graft-versusmalignancy effect of allogeneic transplantation develops. RIC regimens range from nearly totally myeloablative to minimally myeloablative with lymphoablation, with intensity tailored to specific diseases and patient condition. Individuals who undergo RIC with allogeneic HCT initially demonstrate donor cell engraftment and bone marrow mixed chimerism. Most will subsequently convert to full-donor chimerism. For the purposes of this policy, the term "reduced-intensity conditioning" will refer to all conditioning regimens intended to be nonmyeloablative.

#### **Summary of Evidence**

For individuals who have indolent B-cell NHL who receive autologous HCT as first-line therapy, the evidence includes observational studies, randomized controlled trials (RCTs), and systematic reviews. The relevant outcomes are overall survival (OS), disease-specific survival, change in disease status, morbid events, and treatment-related mortality and morbidity. The RCTs have not shown a survival advantage with HCT as first-line therapy for indolent B-cell lymphomas; however, RCTs have shown a survival benefit for relapsed disease. Observational studies have shown similar results. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have aggressive B-cell NHL, excluding mantle cell lymphoma (MCL), who receive autologous HCT as consolidation therapy after first complete remission, the evidence includes RCTs and a systematic review. The relevant outcomes are OS, disease-specific survival, change in disease status, morbid events, and treatment-related mortality and morbidity. While the data from the RCTs offer conflicting results, some of the data has revealed an OS benefit in individuals with aggressive B-cell lymphomas (at high or high-intermediate risk of relapse) who receive HCT to consolidate a first complete remission. The RCTs of HCT for relapsed aggressive B-cell lymphomas have shown an OS benefit with the previously described approach. Results of a retrospective study comparing autologous and allo-HCT for relapsed or refractory B-cell NHL showed more positive outcomes for autologous HCTs. The evidence is sufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have NHL, excluding MCL, who receive tandem autologous and allogeneic HCT, the evidence includes several nonrandomized trials. The relevant outcomes are OS, disease-specific survival, change in disease status, morbid events, and treatment-related mortality and morbidity. No RCTs have been conducted on the use of tandem HCT for the treatment of NHL, and the published evidence comprises a limited number of individuals. Presently, conclusions on the use of tandem transplants cannot be made about autologous and



allogeneic HCT. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have MCL who receive autologous, allogeneic, or tandem HCT, the evidence includes case series and RCTs. The relevant outcomes are OS, disease-specific survival, change in disease status, morbid events, and treatment-related mortality and morbidity. Case series and RCTs have shown long-term disease control of this aggressive lymphoma with autologous HCT (with rituximab) to consolidate a first remission; however, the use of autologous HCT in the relapsed setting has not shown improved outcomes. Allo-HCT has shown prolonged disease control in the relapsed or refractory setting. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have peripheral T-cell lymphoma (PTCL) who receive autologous or allogeneic HCT, the evidence includes prospective trials and case reports/series. The relevant outcomes are OS, disease-specific survival, change in disease status, morbid events, and treatment-related mortality and morbidity. The role of HCT in PTCL is not well-defined. Few studies have been conducted, and most were performed retrospectively, with a limited number of individuals; moreover, the patient populations were heterogeneous and included good- and poor-risk patients in the same study. Patient population and characteristics of the studies can be explained partially by the rarity and heterogeneity of the particular group of lymphomas addressed. Additionally, studies of this nature often mix three types of individuals: one type of individual has PTCL not otherwise specified, which has a poorer prognosis; another type has anaplastic lymphoma kinase (ALK)-positive anaplastic large-cell lymphomas (ALCL), which has a better prognosis—even with conventional chemotherapy regimens; and a third type has ALKnegative ALCL, which has a worse prognosis than ALK-positive ALCL (but better than individuals with PTCL not otherwise specified). For first-line therapy, autologous and allo-HCT were compared in a phase 3 trial, and there were comparable OS and progression-free survival (PFS) rates between the two groups. Results from recent phase 2 studies with autologous HCT as consolidation offers the best survival outcomes for individuals with high-risk features; randomized trials to confirm this have not been performed. A single retrospective registry study showed a potential survival benefit among individuals treated with allo-HCT in the front-line setting; however, prospective studies are not available. Similarly, high-dose chemotherapy plus consolidation with autologous HCT as the first-line therapy for adults with nodal PTCL demonstrated improved OS and PFS in a systematic review. Individuals with relapsed or refractory PTCL are generally considered incurable with chemotherapy alone. In the salvage setting, data have shown that the use of HCT may improve survival outcomes similar to the results seen in corresponding aggressive B-cell lymphomas in the same treatment setting. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

For individuals who have hepatosplenic T-cell lymphoma (HSTCL) who receive autologous or allo-HCT as consolidation therapy after first response (complete or partial), the evidence includes observational studies and systematic reviews. Relevant outcomes are OS, DSS, change in disease status, morbid events, and treatment-related mortality and morbidity. Two metaanalyses using patient-level data found that consolidation therapy with HCT improves survival in individuals with HSTCL. Two small, retrospective studies have shown similar results. The evidence is sufficient to determine that the technology results in an improvement in the net health outcome.

# Ongoing and Unpublished Clinical Trials

Some currently ongoing and unpublished phase III trials that might influence this review are listed in National Cancer Institute's Physician Data Query database.

Other currently unpublished trials that might influence this review are listed in Table 4.

|             |  | Planned    | Completion |
|-------------|--|------------|------------|
| NCT No.     | Trial Name   | Enrollment | Date       |
| Ongoing     |  |            |            |
| NCT01827605 | A Phase III Multicenter,Randomized Study Comparing<br>Consolidation With 90yttrium-Labeled Ibritumomab<br>Tiuxetan (Zevalin®) Radioimmunotherapy Vs<br>Autologous Stem Cell Transplantation (ASCT) in<br>Patients With Relapsed/Refractory Follicular<br>Lymphoma (FL) Aged 18-65 Years                  | 159        | Jan 2024   |
| NCT02881086 | Treatment Optimization in Adult Patients With Newly<br>Diagnosed Acute Lymphoblastic Leukemia (ALL) or<br>Lymphoblastic Lymphoma by Individualised, Targeted<br>and Intensified Treatment - a Phase IV-trial With a<br>Phase III-part to Evaluate Safety and Efficacy of<br>Nelarabine in T-ALL Patients | 1000       | Jul 2025   |
| NCT00882895 | Tandem Stem Cell Transplantation for Non-Hodgkin's<br>Lymphoma   | 18         | Jun 2028   |
| NCT03267433 | A Randomized Phase III Trial of Consolidation With<br>Autologous Hematopoietic Cell Transplantation<br>Followed by Maintenance Rituximab vs. Maintenance   | 689        | Jan 2032   |

# Table 4. Summary of Key Trials



| NCT No. | Trial Name   | Planned<br>Enrollment | Completion<br>Date |
|---------|--|-----------------------|--------------------|
|         | Rituximab Alone for Patients With Mantle Cell<br>Lymphoma in Minimal Residual Disease-Negative First<br>Complete Remission |                       |                    |

NCT: national clinical trial.

# Clinical Input From Physician Specialty Societies and Academic Medical Centers

While the various physician specialty societies and academic medical centers may collaborate with and make recommendations during this process, through the provision of appropriate reviewers, input received does not represent an endorsement or position statement by the physician specialty societies or academic medical centers, unless otherwise noted.

#### 2011 Input

In response to requests, input was received from three physician specialty societies and three academic medical centers while this policy was under review in 2011. Input was solicited particularly for the use of HCT in mantle cell lymphoma (MCL) and peripheral T-cell lymphoma. There was a uniform agreement for the use of autologous HCT to consolidate the first remission in MCL. There was a general agreement for the use of allogeneic HCT as salvage therapy for MCL, with less agreement on the use of autologous HCT in the salvage setting. For peripheral T-cell lymphoma, there was general agreement on the use of autologous HCT to consolidate a complete remission in high-risk patients and the salvage setting. Input was split on the use of allogeneic HCT to consolidate a first complete remission or as salvage therapy, but there was more support to consider it medically necessary in both settings.

#### 2009 Input

In response to requests, input was received from one physician specialty society and one academic medical center while this policy was under review in 2009. There was general agreement with the policy statements. Both reviewers agreed that allogeneic HCT with RIC



should be considered medically necessary in individuals with non-Hodgkin lymphoma who do not qualify for a myeloablative allogeneic HCT. One reviewer responded on the medical necessity of HCT in individuals with MCL in the first remission and recently published literature supported this. There was conflicting input on whether HCT should be considered investigational for peripheral T-cell lymphoma. Also, the one reviewer commented that with the increasing use of rituximab and its success in improving patient outcomes, the role of HCT in consolidating first complete response in high-risk patients is coming into question.

#### **Practice Guidelines and Position Statements**

The purpose of the following information is to provide reference material. Inclusion does not imply endorsement or alignment with the policy conclusions.

Guidelines or position statements will be considered for inclusion if they were issued by, or jointly by, a US professional society, an international society with US representation, or National Institute for Health and Care Excellence (NICE). Priority will be given to guidelines that are informed by a systematic review, include strength of evidence ratings, and include a description of management of conflict of interest.

# National Comprehensive Cancer Network

Current National Comprehensive Cancer Network (NCCN) guidelines on B-cell lymphomas (v.6.2023) include the following recommendations<sup>73</sup>:

- For follicular lymphoma, marginal zone lymphomas, and mantle cell lymphoma, recommend allogeneic HCT as second-line consolidation therapy in select cases, which include mobilization failures and persistent bone marrow involvement. NCCN does note that with recent approval of CART T-cell therapy for relapsed/ refractory MCL, allogeneic HCT has been deferred to disease relapse following multiple prior therapies in many NCCN member institutions.
- For DLBCL, "[a]llogeneic HCT should be considered in selected patients with mobilization failures and persistent bone marrow involvement or lack of adequate response to second-line therapy, though patients should be in CR or near CR at the time of transplant."
- For Burkitt lymphoma, allogeneic HCT is an option for selected patients to achieve a complete or partial response to second-line therapy.



National Comprehensive Cancer Network guidelines on T-cell lymphomas (v.1.2023) include the following recommendations:<sup>74</sup>

For peripheral T-cell lymphoma: "Second-line systemic therapy followed by consolidation with HDT [high-dose therapy]/ASCR [autologous stem cell rescue] or allogeneic HCT for those with a CR [complete response] or PR [partial response] is recommended for patients who are candidates for transplant."

For adult T-cell leukemia/lymphoma:

- "Allogeneic HCT should be considered for patients with acute or lymphoma [ATLL] subtype, if donor is available."
- "In patients with acute or lymphoma subtypes who achieve a response to second-therapy, allogeneic HSCT should be considered if a donor is available."

For T-cell Prolymphocytic Leukemia: "In patients [with T-PLL] who achieve a CR or PR following initial therapy, consolidation with allogeneic HCT should be considered. Autologous HCT may be considered, if a donor is not available and if the patient is not physically fit enough to undergo allogeneic HCT."

For hepatosplenic T-Cell Lymphoma (HSTCL):

- "Consolidation therapy with allogeneic HCT is recommended for eligible patients with complete response or partial response after initial induction therapy or second-line therapy. Consolidation therapy with autologous HCT can be considered if a suitable donor is not available or for patients who are ineligible for allogeneic HCT."
- "Long-term remission is primarily or exclusively seen in those who have undergone consolidative HCT."
- "Few studies have reported improved survival outcomes with autologous or allogeneic HCT as consolidation therapy for patients with disease in first or second remission. Some studies have also reported that graft-versus-lymphoma effect associated with allogeneic HCT may result in long-term survival in a significant proportion of patients with HSTCL and active disease at the time of transplant was not necessarily associated with poor outcomes."
- "The goal of initial therapy is to induce complete or near complete response to allow successful bridging to HCT, preferably an allogeneic HCT."

# The American Society of Transplantation and Cellular Therapy

In 2021, the American Society of Transplantation and Cellular Therapy (ASTCT), Center of International Blood and Marrow Transplant Research (CIBMTR), and the European Society for Blood and Marrow Transplantation (EBMT) formulated consensus recommendations regarding autologous HCT, allogeneic HCT, and chimeric antigen receptor (CAR) T-cell therapy for individuals with MCL.<sup>75</sup> The panel of experts, consisting of physicians and investigators, recommended the use of autologous HCT as consolidation therapy in newly diagnosed MCL patients (without TP53 mutation or bi-allelic deletion) who are in complete or partial remission after first-line therapies.

The ASTCT Committee on Practice Guidelines published guidance on transplantation and cellular therapies in Diffuse Large B Cell Lymphoma (DLBCL) in 2023.<sup>76</sup> The committee made the following recommendations:

- "The panel does not recommend autologous HCT in DLBCL (regardless of IPI score) as consolidation in complete remission after first-line (R-CHOP or similar) therapy." Grading: A
- "Autologous HCT may be considered for eligible patients with DLBCL with secondary CNS involvement at diagnosis achieving complete remission and with undetectable CNS disease after first-line therapy." Grading: C
- "The panel recommends consolidation with autologous HCT for eligible primary CNS lymphoma patients in CR1." Grading: A
- "In DLBCL patients with early relapse who achieve a complete remission with salvage therapy, the panel considers autologous HCT an acceptable consolidation therapy in eligible patients." Grading: B
- "In DLBCL patients with early relapse who achieve a partial remission with salvage therapy, the panel considers autologous HCT an acceptable consolidation therapy in eligible patients." Grading: B
- "In DLBCL patients with late relapse, the panel recommends autologous HCT consolidation therapy in eligible patients who have achieved a complete or partial remission after second-line therapies." Grading: A
- "The panel recommends allogeneic HCT in eligible DLBCL patients relapsing/progressing after CAR-T therapy if they achieve a complete or partial remission with subsequent antilymphoma therapies." Grading: C

• "The panel recommends allogeneic HCT in eligible relapsed or refractory DLBCL patients after autologous HCT failure in regions without access to CAR-T therapy, and in those with CAR T cell manufacturing failure, ideally after achieving a complete or partial remission with subsequent antilymphoma therapies." Grading: C

Grading of recommendations: A, There is good research-based evidence to support the recommendation; B, There is fair research-based evidence to support the recommendation; C, The recommendation is based on expert opinion and panel consensus; X, There is evidence of harm from this intervention.

## Medicare National Coverage

Medicare has the following national coverage determination for the use of autologous cell transplantation for Hodgkin and non-Hodgkin lymphomas.<sup>77</sup>

"a) Effective .... 1989, AuSCT [autologous stem cell transplantation] is considered reasonable and necessary ... for the following conditions and is covered under Medicare for patients with:

- Acute leukemia in remission who have a high probability of relapse and who have no human leucocyte antigens (HLA)-matched;
- Resistant non-Hodgkin's lymphomas or those presenting with poor prognostic features following an initial response;
- Recurrent or refractory neuroblastoma; or,
- Advanced Hodgkin's disease who have failed conventional therapy and have no HLAmatched donor.

b) Effective ... 2000, single AuSCT is only covered for Durie-Salmon Stage II or III patients that fit the following requirements:

- Newly diagnosed or responsive multiple myeloma. This includes those patients with
  previously untreated disease, those with at least a partial response to prior
  chemotherapy (defined as a 50% decrease either in measurable paraprotein [serum
  and/or urine] or in bone marrow infiltration, sustained for at least 1 month), and those in
  responsive relapse; and
- Adequate cardiac, renal, pulmonary, and hepatic function.

c) Effective ... 2005, when recognized clinical risk factors are employed to select patients for transplantation, high dose melphalan (HDM) together with AuSCT is reasonable and necessary for Medicare beneficiaries of any age group with primary amyloid light chain (AL) amyloidosis who meet the following criteria:

- Amyloid deposition in 2 or fewer organs; and,
- Cardiac left ventricular ejection fraction (EF) greater than 45%."

#### **Regulatory Status**

The US Food and Drug Administration regulates human cells and tissues intended for implantation, transplantation, or infusion through the Center for Biologics Evaluation and Research, under Code of Federal Regulation title 21, parts 1270 and 1271. Hematopoietic stem cells are included in these regulations.

#### References

- National Cancer Institute. Adult Non-Hodgkin Lymphoma Treatment (PDQ)Health Professional Version. 2022; http://www.cancer.gov/cancertopics/pdq/treatment/adult-non-hodgkins/healthprofessional. Accessed February 27, 2024.
- 2. Harris NL, Jaffe ES, Stein H, et al. A revised European-American classification of lymphoid neoplasms: a proposal from the International Lymphoma Study Group. Blood. Sep 01 1994; 84(5): 1361-92. PMID 8068936
- Harris NL, Jaffe ES, Diebold J, et al. The World Health Organization classification of neoplastic diseases of the hematopoietic and lymphoid tissues. Report of the Clinical Advisory Committee meeting, Airlie House, Virginia, November, 1997. Ann Oncol. Dec 1999; 10(12): 1419-32. PMID 10643532
- 4. Alaggio R, Amador C, Anagnostopoulos I, et al. The 5th edition of the World Health Organization Classification of Haematolymphoid Tumours: Lymphoid Neoplasms. Leukemia. Jul 2022; 36(7): 1720-1748. PMID 35732829
- 5. American Cancer Society. Non-Hodgkin Lymphoma (Adults). https://www.cancer.org/cancer/non-hodgkinlymphoma/about.html Accessed February 27, 2024.
- 6. Laport GG. The role of hematopoietic cell transplantation for follicular non-Hodgkin's lymphoma. Biol Blood Marrow Transplant. Jan 2006; 12(1 Suppl 1): 59-65. PMID 16399587
- 7. Al Khabori M, de Almeida JR, Guyatt GH, et al. Autologous stem cell transplantation in follicular lymphoma: a systematic review and meta-analysis. J Natl Cancer Inst. Jan 04 2012; 104(1): 18-28. PMID 22190633
- Schaaf M, Reiser M, Borchmann P, et al. High-dose therapy with autologous stem cell transplantation versus chemotherapy or immuno-chemotherapy for follicular lymphoma in adults. Cochrane Database Syst Rev. Jan 18 2012; 1: CD007678. PMID 22258971



- Ladetto M, De Marco F, Benedetti F, et al. Prospective, multicenter randomized GITMO/IIL trial comparing intensive (R-HDS) versus conventional (CHOP-R) chemoimmunotherapy in high-risk follicular lymphoma at diagnosis: the superior disease control of R-HDS does not translate into an overall survival advantage. Blood. Apr 15 2008; 111(8): 4004-13. PMID 18239086
- Sebban C, Mounier N, Brousse N, et al. Standard chemotherapy with interferon compared with CHOP followed by high-dose therapy with autologous stem cell transplantation in untreated patients with advanced follicular lymphoma: the GELF-94 randomized study from the Groupe d'Etude des Lymphomes de l'Adulte (GELA). Blood. Oct 15 2006; 108(8): 2540-4. PMID 16835383
- Deconinck E, Foussard C, Milpied N, et al. High-dose therapy followed by autologous purged stem-cell transplantation and doxorubicin-based chemotherapy in patients with advanced follicular lymphoma: a randomized multicenter study by GOELAMS. Blood. May 15 2005; 105(10): 3817-23. PMID 15687232
- 12. Lenz G, Dreyling M, Schiegnitz E, et al. Myeloablative radiochemotherapy followed by autologous stem cell transplantation in first remission prolongs progression-free survival in follicular lymphoma: results of a prospective, randomized trial of the German Low-Grade Lymphoma Study Group. Blood. Nov 01 2004; 104(9): 2667-74. PMID 15238420
- Schouten HC, Qian W, Kvaloy S, et al. High-dose therapy improves progression-free survival and survival in relapsed follicular non-Hodgkin's lymphoma: results from the randomized European CUP trial. J Clin Oncol. Nov 01 2003; 21(21): 3918-27. PMID 14517188
- 14. Bozkaya Y, Uncu D, Dağdaş S, et al. Evaluation of Lymphoma Patients Receiving High-Dose Therapy and Autologous Stem Cell Transplantation: Experience of a Single Center. Indian J Hematol Blood Transfus. Sep 2017; 33(3): 361-369. PMID 28824238
- Jiménez-Ubieto A, Grande C, Caballero D, et al. Autologous stem cell transplantation may be curative for patients with follicular lymphoma with early therapy failure who reach complete response after rescue treatment. Hematol Oncol. Dec 2018; 36(5): 765-772. PMID 30129233
- 16. International Non-Hodgkin's Lymphoma Prognostic Factors Project. A predictive model for aggressive non-Hodgkin's lymphoma. N Engl J Med. Sep 30 1993; 329(14): 987-94. PMID 8141877
- 17. Solal-Céligny P, Roy P, Colombat P, et al. Follicular lymphoma international prognostic index. Blood. Sep 01 2004; 104(5): 1258-65. PMID 15126323
- Greb A, Bohlius J, Schiefer D, et al. High-dose chemotherapy with autologous stem cell transplantation in the first line treatment of aggressive non-Hodgkin lymphoma (NHL) in adults. Cochrane Database Syst Rev. Jan 23 2008; 2008(1): CD004024. PMID 18254036
- Haioun C, Lepage E, Gisselbrecht C, et al. Benefit of autologous bone marrow transplantation over sequential chemotherapy in poor-risk aggressive non-Hodgkin's lymphoma: updated results of the prospective study LNH87-2. Groupe d'Etude des Lymphomes de l'Adulte. J Clin Oncol. Mar 1997; 15(3): 1131-7. PMID 9060555
- 20. Kaiser U, Uebelacker I, Abel U, et al. Randomized study to evaluate the use of high-dose therapy as part of primary treatment for "aggressive" lymphoma. J Clin Oncol. Nov 15 2002; 20(22): 4413-9. PMID 12431962
- 21. Kluin-Nelemans HC, Zagonel V, Anastasopoulou A, et al. Standard chemotherapy with or without high-dose chemotherapy for aggressive non-Hodgkin's lymphoma: randomized phase III EORTC study. J Natl Cancer Inst. Jan 03 2001; 93(1): 22-30. PMID 11136838
- 22. Sweetenham JW, Santini G, Qian W, et al. High-dose therapy and autologous stem-cell transplantation versus conventionaldose consolidation/maintenance therapy as postremission therapy for adult patients with lymphoblastic lymphoma: results of a randomized trial of the European Group for Blood and Marrow Transplantation and the United Kingdom Lymphoma Group. J Clin Oncol. Jun 01 2001; 19(11): 2927-36. PMID 11387366
- 23. Fisher RI. Autologous stem-cell transplantation as a component of initial treatment for poor-risk patients with aggressive non-Hodgkin's lymphoma: resolved issues versus remaining opportunity. J Clin Oncol. Nov 15 2002; 20(22): 4411-2. PMID 12431961
- 24. Haioun C, Lepage E, Gisselbrecht C, et al. Survival benefit of high-dose therapy in poor-risk aggressive non-Hodgkin's lymphoma: final analysis of the prospective LNH87-2 protocol--a groupe d'Etude des lymphomes de l'Adulte study. J Clin Oncol. Aug 2000; 18(16): 3025-30. PMID 10944137

- 25. Fisher RI. Autologous bone marrow transplantation for aggressive non-Hodgkin's lymphoma: lessons learned and challenges remaining. J Natl Cancer Inst. Jan 03 2001; 93(1): 4-5. PMID 11136829
- 26. Hahn T, Wolff SN, Czuczman M, et al. The role of cytotoxic therapy with hematopoietic stem cell transplantation in the therapy of diffuse large cell B-cell non-Hodgkin's lymphoma: an evidence-based review. Biol Blood Marrow Transplant. 2001; 7(6): 308-31. PMID 11464975
- 27. Kimby E, Brandt L, Nygren P, et al. A systematic overview of chemotherapy effects in aggressive non-Hodgkin's lymphoma. Acta Oncol. 2001; 40(2-3): 198-212. PMID 11441932
- 28. Philip T, Biron P. High-dose chemotherapy and autologous bone marrow transplantation in diffuse intermediate- and highgrade non-Hodgkin lymphoma. Crit Rev Oncol Hematol. Feb 2002; 41(2): 213-23. PMID 11856597
- 29. Betticher DC, Martinelli G, Radford JA, et al. Sequential high dose chemotherapy as initial treatment for aggressive sub-types of non-Hodgkin lymphoma: results of the international randomized phase III trial (MISTRAL). Ann Oncol. Oct 2006; 17(10): 1546-52. PMID 16888080
- 30. Baldissera RC, Nucci M, Vigorito AC, et al. Frontline therapy with early intensification and autologous stem cell transplantation versus conventional chemotherapy in unselected high-risk, aggressive non-Hodgkin's lymphoma patients: a prospective randomized GEMOH report. Acta Haematol. 2006; 115(1-2): 15-21. PMID 16424644
- 31. Olivieri A, Santini G, Patti C, et al. Upfront high-dose sequential therapy (HDS) versus VACOP-B with or without HDS in aggressive non-Hodgkin's lymphoma: long-term results by the NHLCSG. Ann Oncol. Dec 2005; 16(12): 1941-8. PMID 16157621
- 32. Stiff PJ, Unger JM, Cook JR, et al. Autologous transplantation as consolidation for aggressive non-Hodgkin's lymphoma. N Engl J Med. Oct 31 2013; 369(18): 1681-90. PMID 24171516
- 33. Casasnovas RO, Ysebaert L, Thieblemont C, et al. FDG-PET-driven consolidation strategy in diffuse large B-cell lymphoma: final results of a randomized phase 2 study. Blood. Sep 14 2017; 130(11): 1315-1326. PMID 28701367
- 34. Strüßmann T, Fritsch K, Baumgarten A, et al. Favourable outcomes of poor prognosis diffuse large B-cell lymphoma patients treated with dose-dense Rituximab, high-dose Methotrexate and six cycles of CHOP-14 compared to first-line autologous transplantation. Br J Haematol. Sep 2017; 178(6): 927-935. PMID 28643323
- Qualls D, Sullivan A, Li S, et al. High-dose Thiotepa, Busulfan, Cyclophosphamide, and Autologous Stem Cell Transplantation as Upfront Consolidation for Systemic Non-Hodgkin Lymphoma With Synchronous Central Nervous System Involvement. Clin Lymphoma Myeloma Leuk. Dec 2017; 17(12): 884-888. PMID 28870642
- 36. Jaffe ES. The 2008 WHO classification of lymphomas: implications for clinical practice and translational research. Hematology Am Soc Hematol Educ Program. 2009: 523-31. PMID 20008237
- 37. Philip T, Guglielmi C, Hagenbeek A, et al. Autologous bone marrow transplantation as compared with salvage chemotherapy in relapses of chemotherapy-sensitive non-Hodgkin's lymphoma. N Engl J Med. Dec 07 1995; 333(23): 1540-5. PMID 7477169
- 38. Fujita N, Kobayashi R, Atsuta Y, et al. Hematopoietic stem cell transplantation in children and adolescents with relapsed or refractory B-cell non-Hodgkin lymphoma. Int J Hematol. Apr 2019; 109(4): 483-490. PMID 30701466
- Monjanel H, Deconinck E, Perrodeau E, et al. Long-term follow-up of tandem high-dose therapy with autologous stem cell support for adults with high-risk age-adjusted international prognostic index aggressive non-Hodgkin Lymphomas: a GOELAMS pilot study. Biol Blood Marrow Transplant. Jun 2011; 17(6): 935-40. PMID 21109011
- 40. Papadopoulos KP, Noguera-Irizarry W, Wiebe L, et al. Pilot study of tandem high-dose chemotherapy and autologous stem cell transplantation with a novel combination of regimens in patients with poor risk lymphoma. Bone Marrow Transplant. Sep 2005; 36(6): 491-7. PMID 16044139
- 41. Tarella C, Zanni M, Di Nicola M, et al. Prolonged survival in poor-risk diffuse large B-cell lymphoma following front-line treatment with rituximab-supplemented, early-intensified chemotherapy with multiple autologous hematopoietic stem cell support: a multicenter study by GITIL (Gruppo Italiano Terapie Innovative nei Linfomi). Leukemia. Aug 2007; 21(8): 1802-11. PMID 17554382

- 42. Satwani P, Jin Z, Martin PL, et al. Sequential myeloablative autologous stem cell transplantation and reduced intensity allogeneic hematopoietic cell transplantation is safe and feasible in children, adolescents and young adults with poor-risk refractory or recurrent Hodgkin and non-Hodgkin lymphoma. Leukemia. Feb 2015; 29(2): 448-55. PMID 24938649
- 43. Banks PM, Chan J, Cleary ML, et al. Mantle cell lymphoma. A proposal for unification of morphologic, immunologic, and molecular data. Am J Surg Pathol. Jul 1992; 16(7): 637-40. PMID 1530105
- 44. Hoster E, Dreyling M, Klapper W, et al. A new prognostic index (MIPI) for patients with advanced-stage mantle cell lymphoma. Blood. Jan 15 2008; 111(2): 558-65. PMID 17962512
- 45. Dreyling M, Lenz G, Hoster E, et al. Early consolidation by myeloablative radiochemotherapy followed by autologous stem cell transplantation in first remission significantly prolongs progression-free survival in mantle-cell lymphoma: results of a prospective randomized trial of the European MCL Network. Blood. Apr 01 2005; 105(7): 2677-84. PMID 15591112
- 46. Zoellner AK, Unterhalt M, Stilgenbauer S, et al. Long-term survival of patients with mantle cell lymphoma after autologous haematopoietic stem-cell transplantation in first remission: a post-hoc analysis of an open-label, multicentre, randomised, phase 3 trial. Lancet Haematol. Sep 2021; 8(9): e648-e657. PMID 34450102
- 47. Till BG, Gooley TA, Crawford N, et al. Effect of remission status and induction chemotherapy regimen on outcome of autologous stem cell transplantation for mantle cell lymphoma. Leuk Lymphoma. Jun 2008; 49(6): 1062-73. PMID 18452065
- García-Noblejas A, Cannata-Ortiz J, Conde E, et al. Autologous stem cell transplantation (ASCT) in patients with mantle cell lymphoma: a retrospective study of the Spanish lymphoma group (GELTAMO). Ann Hematol. Aug 2017; 96(8): 1323-1330. PMID 28536895
- 49. Metzner B, Müller TH, Casper J, et al. Long-term outcome in patients with mantle cell lymphoma following high-dose therapy and autologous stem cell transplantation. Eur J Haematol. Aug 2023; 111(2): 220-228. PMID 37094812
- 50. Villanueva ML, Vose JM. The role of hematopoietic stem cell transplantation in non-Hodgkin lymphoma. Clin Adv Hematol Oncol. Jul 2006; 4(7): 521-30. PMID 17147239
- 51. Khouri IF, Lee MS, Saliba RM, et al. Nonablative allogeneic stem-cell transplantation for advanced/recurrent mantle-cell lymphoma. J Clin Oncol. Dec 01 2003; 21(23): 4407-12. PMID 14645431
- 52. Maris MB, Sandmaier BM, Storer BE, et al. Allogeneic hematopoietic cell transplantation after fludarabine and 2 Gy total body irradiation for relapsed and refractory mantle cell lymphoma. Blood. Dec 01 2004; 104(12): 3535-42. PMID 15304387
- Krüger WH, Hirt C, Basara N, et al. Allogeneic stem cell transplantation for mantle cell lymphoma-update of the prospective trials of the East German Study Group Hematology/Oncology (OSHO#60 and #74). Ann Hematol. Jun 2021; 100(6): 1569-1577. PMID 33829299
- 54. Tam CS, Bassett R, Ledesma C, et al. Mature results of the M. D. Anderson Cancer Center risk-adapted transplantation strategy in mantle cell lymphoma. Blood. Apr 30 2009; 113(18): 4144-52. PMID 19168784
- 55. Geisler C. Mantle cell lymphoma: are current therapies changing the course of disease?. Curr Oncol Rep. Sep 2009; 11(5): 371-7. PMID 19679012
- 56. Zhai Y, Wang J, Jiang Y, et al. The efficiency of autologous stem cell transplantation as the first-line treatment for nodal peripheral T-cell lymphoma: results of a systematic review and meta-analysis. Expert Rev Hematol. Mar 2022; 15(3): 265-272. PMID 35152814
- 57. Schmitz N, Truemper L, Bouabdallah K, et al. A randomized phase 3 trial of autologous vs allogeneic transplantation as part of first-line therapy in poor-risk peripheral T-NHL. Blood. May 13 2021; 137(19): 2646-2656. PMID 33512419
- Reimer P. Impact of autologous and allogeneic stem cell transplantation in peripheral T-cell lymphomas. Adv Hematol. 2010; 2010: 320624. PMID 21253465
- 59. Corradini P, Tarella C, Zallio F, et al. Long-term follow-up of patients with peripheral T-cell lymphomas treated up-front with high-dose chemotherapy followed by autologous stem cell transplantation. Leukemia. Sep 2006; 20(9): 1533-8. PMID 16871285



- Mercadal S, Briones J, Xicoy B, et al. Intensive chemotherapy (high-dose CHOP/ESHAP regimen) followed by autologous stemcell transplantation in previously untreated patients with peripheral T-cell lymphoma. Ann Oncol. May 2008; 19(5): 958-63.
   PMID 18303032
- 61. Rodríguez J, Conde E, Gutiérrez A, et al. Frontline autologous stem cell transplantation in high-risk peripheral T-cell lymphoma: a prospective study from The Gel-Tamo Study Group. Eur J Haematol. Jul 2007; 79(1): 32-8. PMID 17598836
- 62. Wang J, Wei L, Ye J, et al. Autologous hematopoietic stem cell transplantation may improve long-term outcomes in patients with newly diagnosed extranodal natural killer/T-cell lymphoma, nasal type: a retrospective controlled study in a single center. Int J Hematol. Jan 2018; 107(1): 98-104. PMID 28856590
- 63. Wu M, Wang F, Zhao S, et al. Autologous hematopoietic stem cell transplantation improves survival outcomes in peripheral Tcell lymphomas: a multicenter retrospective real-world study. Ann Hematol. Nov 2023; 102(11): 3185-3193. PMID 37700194
- 64. Mamez AC, Dupont A, Blaise D, et al. Allogeneic stem cell transplantation for peripheral T cell lymphomas: a retrospective study in 285 patients from the Société Francophone de Greffe de Moelle et de Thérapie Cellulaire (SFGM-TC). J Hematol Oncol. May 19 2020; 13(1): 56. PMID 32429979
- Du J, Yu D, Han X, et al. Comparison of Allogeneic Stem Cell Transplant and Autologous Stem Cell Transplant in Refractory or Relapsed Peripheral T-Cell Lymphoma: A Systematic Review and Meta-analysis. JAMA Netw Open. May 03 2021; 4(5): e219807.
   PMID 34042995
- 66. Song KW, Mollee P, Keating A, et al. Autologous stem cell transplant for relapsed and refractory peripheral T-cell lymphoma: variable outcome according to pathological subtype. Br J Haematol. Mar 2003; 120(6): 978-85. PMID 12648067
- 67. Rodríguez J, Conde E, Gutiérrez A, et al. The adjusted International Prognostic Index and beta-2-microglobulin predict the outcome after autologous stem cell transplantation in relapsing/refractory peripheral T-cell lymphoma. Haematologica. Aug 2007; 92(8): 1067-74. PMID 17640855
- 68. Kyriakou C, Canals C, Finke J, et al. Allogeneic stem cell transplantation is able to induce long-term remissions in angioimmunoblastic T-cell lymphoma: a retrospective study from the lymphoma working party of the European group for blood and marrow transplantation. J Clin Oncol. Aug 20 2009; 27(24): 3951-8. PMID 19620487
- 69. Klebaner D, Koura D, Tzachanis D, et al. Intensive Induction Therapy Compared With CHOP for Hepatosplenic T-cell Lymphoma. Clin Lymphoma Myeloma Leuk. Jul 2020; 20(7): 431-437.e2. PMID 32284297
- 70. Rashidi A, Cashen AF. Outcomes of allogeneic stem cell transplantation in hepatosplenic T-cell lymphoma. Blood Cancer J. Jun 05 2015; 5(6): e318. PMID 26047388
- 71. Voss MH, Lunning MA, Maragulia JC, et al. Intensive induction chemotherapy followed by early high-dose therapy and hematopoietic stem cell transplantation results in improved outcome for patients with hepatosplenic T-cell lymphoma: a single institution experience. Clin Lymphoma Myeloma Leuk. Feb 2013; 13(1): 8-14. PMID 23107915
- 72. Tanase A, Schmitz N, Stein H, et al. Allogeneic and autologous stem cell transplantation for hepatosplenic T-cell lymphoma: a retrospective study of the EBMT Lymphoma Working Party. Leukemia. Mar 2015; 29(3): 686-8. PMID 25234166
- 73. National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology: B-Cell Lymphomas. Version 6.2023. https://www.nccn.org/professionals/physician\_gls/pdf/b-cell.pdf. Accessed February 27, 2024.
- 74. National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology: T-Cell Lymphomas. Version 1.2023. https://www.nccn.org/professionals/physician\_gls/pdf/t-cell.pdf. Accessed February 27, 2024.
- 75. Munshi PN, Hamadani M, Kumar A, et al. ASTCT, CIBMTR, and EBMT clinical practice recommendations for transplant and cellular therapies in mantle cell lymphoma. Bone Marrow Transplant. Dec 2021; 56(12): 2911-2921. PMID 34413469
- 76. Epperla N, Kumar A, Abutalib SA, et al. ASTCT Clinical Practice Recommendations for Transplantation and Cellular Therapies in Diffuse Large B Cell Lymphoma. Transplant Cell Ther. Sep 2023; 29(9): 548-555. PMID 37419325
- 77. Centers for Medicare & Medicaid Services. National Coverage Determination (NCD) for Stem Cell Transplantation (Formerly 110.8.1) (110.23). 2016; https://www.cms.gov/medicare-coverage-database/details/ncd-



details.aspx?NCDId=366&ncdver=1&DocID=110.23&list\_type=ncd&bc=gAAAAAgAAAAAAA%3d%3d&. Accessed February 27, 2024.

# History

| Date     | Comments   |
|----------|--|
| 04/14/14 | New PR policy; replaces 8.01.20. Policy updated with literature search through<br>December 23, 2013. Policy section reworded and reformatted. Policy statements<br>changed as follows: NHL B-cell – RIC is now medically necessary; B-cell Indolent – RIC<br>is now investigational (previously medically necessary); Mature T-cell or NK – RIC is<br>now investigational to consolidate CR (previously medically necessary). References 37<br>and 42 added; reference 66 updated. |
| 06/24/14 | Update Related Policies. Remove 8.01.35, 8.01.42 and 8.01.54, then add 8.01.532  |
| 12/03/14 | Update Related Policies. Remove 8.01.17 and 8.01.26.   |
| 04/24/15 | Annual Review. Policy updated with literature review; no change in policy statements.  |
| 08/09/16 | Update Related Policies. Remove 8.01.27 as it was archived.  |
| 11/04/16 | Coding update. Removed codes that are transplant benefit related.  |
| 12/01/16 | Annual review, approved November 8, 2016. Added references 68 and 69. No changes to policy statement.  |
| 04/01/17 | Updated titles in Related Policies.  |
| 08/01/17 | Updated title of Related Policy 8.01.511.  |
| 12/01/17 | Annual Review, approved November 9, 2017. Updated WHO classifications and Summary of Evidence section. No changes to policy statement.   |
| 05/01/18 | Annual Review, approved April 3, 2018. Policy updated with literature review through November 2017. Policy statements unchanged.   |
| 09/01/18 | Minor update. Re-adding Consideration of Age information which was inadvertently removed during a previous update.   |
| 04/01/19 | Minor update, added Documentation Requirements section.  |
| 05/01/19 | Annual Review, approved April 18, 2019. Policy updated with literature review through November 2018; reference 60 added. Policy statements unchanged.  |
| 05/01/20 | Annual Review, approved April 23, 2020. Policy updated with literature review through November 2019; references added. Policy statements unchanged.  |
| 05/06/20 | Delete policy, approved May 5, 2020. This policy will be deleted effective July 2, 2020 and replaced with InterQual criteria for dates of service on or after July 2, 2020.  |



| Date     | Comments   |
|----------|--|
| 06/10/20 | Interim Review, approved June 9, 2020, effective June 10, 2020. This policy is reinstated immediately and will no longer be deleted or replaced with InterQual criteria on July 2, 2020.   |
| 04/01/21 | Annual Review, approved March 23, 2021. Policy updated with literature review through November 19, 2020; references added. Update Related Policies, removed reference to policy 8.01.22 and replaced with policy 8.01.538.   |
| 05/01/21 | Update Related Policies. Removed policy 7.01.50 as it was archived.  |
| 04/01/22 | Annual Review, approved March 21, 2022. Policy updated with literature review through December 6, 2021; references added. Policy statements unchanged.   |
| 10/01/22 | Coding update. Removed HCPC code S2140.  |
| 05/01/23 | Annual Review, approved April 11, 2023. Policy updated with literature review through<br>December 1, 2022; references added. New medically necessary policy statement added<br>for hepatosplenic T-cell lymphoma. Minor editorial refinements made to other policy<br>statements; intent unchanged. Changed the wording from "patient" to "individual"<br>throughout the policy for standardization. |
| 05/01/24 | Annual Review, approved April 8, 2024. Policy updated with literature review through<br>November 15, 2023; references added. Policy statements unchanged. Updated Related<br>Policy section; removed 8.01.21 and replaced with 8.01.539 Allogeneic Hematopoietic<br>Cell Transplantation for Myelodysplastic Syndromes and Myeloproliferative<br>Neoplasms.  |

**Disclaimer**: This medical policy is a guide in evaluating the medical necessity of a particular service or treatment. The Company adopts policies after careful review of published peer-reviewed scientific literature, national guidelines and local standards of practice. Since medical technology is constantly changing, the Company reserves the right to review and update policies as appropriate. Member contracts differ in their benefits. Always consult the member benefit booklet or contact a member service representative to determine coverage for a specific medical service or supply. CPT codes, descriptions and materials are copyrighted by the American Medical Association (AMA). ©2024 Premera All Rights Reserved.

**Scope**: Medical policies are systematically developed guidelines that serve as a resource for Company staff when determining coverage for specific medical procedures, drugs or devices. Coverage for medical services is subject to the limits and conditions of the member benefit plan. Members and their providers should consult the member benefit booklet or contact a customer service representative to determine whether there are any benefit limitations applicable to this service or supply. This medical policy does not apply to Medicare Advantage.



#### Discrimination is Against the Law

LifeWise Health Plan of Washington (LifeWise) complies with applicable Federal and Washington state civil rights laws and does not discriminate on the basis of race, color, national origin, age, disability, sex, gender identity, or sexual orientation. LifeWise does not exclude people or treat them differently because of race, color, national origin, age, disability, sex, gender identity, or sexual orientation. LifeWise provides free aids and services to people with disabilities to communicate effectively with us, such as gualified sign language interpreters and written information in other formats (large print, audio, accessible electronic formats, other formats). LifeWise provides free language services to people whose primary language is not English, such as qualified interpreters and information written in other languages. If you need these services, contact the Civil Rights Coordinator. If you believe that LifeWise has failed to provide these services or discriminated in another way on the basis of race, color, national origin, age, disability, sex, gender identity, or sexual orientation, you can file a grievance with: Civil Rights Coordinator - Complaints and Appeals, PO Box 91102, Seattle, WA 98111, Toll free: 855-332-6396, Fax: 425-918-5592, TTY: 711, Email AppealsDepartmentInguiries@LifeWiseHealth.com. You can file a grievance in person or by mail, fax, or email. If you need help filing a grievance, the Civil Rights Coordinator is available to help you. You can also file a civil rights complaint with the U.S. Department of Health and Human Services, Office for Civil Rights, electronically through the Office for Civil Rights Complaint Portal, available at https://ocrportal.hhs.gov/ocr/portal/lobby.isf, or by mail or phone at: U.S. Department of Health and Human Services, 200 Independence Ave SW, Room 509F, HHH Building, Washington, D.C. 20201, 1-800-368-1019, 800-537-7697 (TDD). Complaint forms are available at http://www.hhs.gov/ocr/office/file/index.html. You can also file a civil rights complaint with the Washington State Office of the Insurance Commissioner, electronically through the Office of the Insurance Commissioner Complaint Portal available at https://www.insurance.wa.gov/file-complaint-or-check-your-complaint-status, or by phone at 800-562-6900, 360-586-0241 (TDD). Complaint forms are available at https://fortress.wa.gov/oic/onlineservices/cc/pub/complaintinformation.aspx.

#### Language Assistance

<u>ATENCIÓN</u>: si habla español, tiene a su disposición servicios gratuitos de asistencia lingüística. Llame al 800-817-3056 (TTY: 711). 注意:如果您使用繁體中文,您可以免費獲得語言援助服務。請致電 800-817-3056 (TTY: 711)。 <u>CHÚÝ</u>: Nếu bạn nói Tiếng Việt, có các dịch vụ hỗ trợ ngôn ngữ miễn phí dành cho bạn. Gọi số 800-817-3056 (TTY: 711). <u>주의</u>: 한국어를 사용하시는 경우, 언어 지원 서비스를 무료로 이용하실 수 있습니다. 800-817-3056 (TTY: 711) 번으로 전화해 주십시오. <u>BHИМАНИЕ</u>: Если вы говорите на русском языке, то вам доступны бесплатные услуги перевода. Звоните 800-817-3056 (телетайп: 711). <u>PAUNAWA</u>: Кипg nagsasalita ka ng Tagalog, maaari kang gumamit ng mga serbisyo ng tulong sa wika nang walang bayad. Титаwag sa 800-817-3056 (TTY: 711). <u>УВАГА!</u> Якщо ви розмовляєте українською мовою, ви можете звернутися до безкоштовної служби мовної підтримки.

Телефонуйте за номером 800-817-3056 (телетайп: 711).

<u>ملحوظة:</u> إذا كنت تتحدث اذكر اللغة، فإن خدمات المساعدة اللغوية تتوافر لك بالمجان. اتصل برقم 800-817-3056 (رقم هاتف الصم والبكم: 711). <u>पिਆਨ ਦਿਉ</u>: ਜੇ ਤੁਸੀਂ ਪੰਜਾਬੀ ਬੋਲਦੇ ਹੋ, ਤਾਂ ਭਾਸ਼ਾ ਵਿੱਚ ਸਹਾਇਤਾ ਸੇਵਾ ਤੁਹਾਡੇ ਲਈ ਮੁਫਤ ਉਪਲਬਧ ਹੈ। 800-817-3056 (TTY: 711) 'ਤੇ ਕਾਲ ਕਰੋ। <u>ACHTUNG</u>: Wenn Sie Deutsch sprechen, stehen Ihnen kostenlos sprachliche Hilfsdienstleistungen zur Verfügung. Rufnummer: 800-817-3056 (TTY: 711). <u>ਪਿਨਕਾਹ</u>: ຖ້າວ່າ ທ່ານເວົ້າພາສາ ລາວ, ການບໍລຶການຊ່ວຍເຫຼືອດ້ານພາສາ, ໂດຍບໍ່ເສັງຄ່າ, ແມ່ນມືພ້ອມໃຫ້ທ່ານ. ໂທຣ 800-817-3056 (TTY: 711). <u>ATANSYON</u>: Si w pale Kreyòl Ayisyen, gen sèvis èd pou lang ki disponib gratis pou ou. Rele 800-817-3056 (TTY: 711).

<u>ATTENTION</u> : Si vous parlez français, des services d'aide linguistique vous sont proposés gratuitement. Appelez le 800-817-3056 (ATS : 711). <u>UWAGA</u>: Jeżeli mówisz po polsku, możesz skorzystać z bezpłatnej pomocy językowej. Zadzwoń pod numer 800-817-3056 (TTY: 711).

ATENÇÃO: Se fala português, encontram-se disponíveis serviços linguísticos, grátis. Ligue para 800-817-3056 (TTY: 711).

<u>ATTENZIONE</u>: In caso la lingua parlata sia l'italiano, sono disponibili servizi di assistenza linguistica gratuiti. Chiamare il numero 800-817-3056 (TTY: 711). توجه: اگر به زبان فارسی گفتگو می کنید، تسهیلات زبانی بصورت رایگان برای شما فراهم می باشد. با (TTY: 711) 800-817-3056 تس