OHCA Guideline

Medical Procedure Class:	**Organ Transplantation (excluding Renal and Corneal Transplants)**
Initial Implementation Date:	07/16/2014
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* This document is not a contract, and these guidelines do not reflect or represent every conceived situation. Although all items contained in these guidelines may be met, this does not reflect, or imply any responsibility of this agency or department to change the plan provision to include the stated service as an eligible benefit.

☐ New Criteria ☒ Revision of Existing Criteria

Summary

Purpose:	To provide guidelines to assure medical necessity and consistency in the prior authorization process.

Definitions

Allogenic – a transplant where the donated material comes from a different (although often related) individual than the recipient.
Atresia – the absence, or failure to develop, of a normal body opening or duct.
Autologous – derived or transferred from the same individual's body.
Biliary – of or relating to bile, the bile ducts, or the gallbladder.
Body Mass Index (BMI) – a measure of body fat that gives an indication of nutritional status; calculated by weight in kilograms (kg) divided by the square of the height in meters.
Cachexia – weight loss, wasting of muscle, loss of appetite, and general debility that can occur during a chronic disease.
Cholestasis – suppression of biliary flow
Co-morbidities – two or more co-existing medical conditions or disease processes that are additional to an initial diagnosis.
Donor – a person that supplies. an organ or tissue to be used in another body, usually a cadaver, living related, or living unrelated donor.
Dysplasia – abnormal development or growth of tissues, organs, or cells
End Stage – the late, fully developed phase of a disease
Euglycemic – normal level of glucose in the blood
Graft failure – loss of function in a transplanted organ or tissue
Hematopoietic – pertaining to or related to the formation of blood cells.
Hepatocellular – relating to the cells of the liver.
Heterotopic – grafted or transplanted into an abnormal location.
Homeostasis – the process through which body equilibrium is maintained.
Labile diabetes – diabetes in which serum glucose fluctuates widely, swinging rapidly from hypoglycemia to hyperglycemia despite frequent titrations of insulin; also known as "brittle" diabetes.
Left Ventricle Ejection Fraction (LVEF) - the percentage of blood present in the left ventricle that is effectively pumped forward during asystole to supply the peripheral circulation.
Model for End-stage Liver Disease (MELD) - for transplant candidates aged 12 and over; numerical system for prioritizing liver transplant candidates; statistical formula designed to predict who would need a transplant more urgently.
Myelotoxic – inhibitory, depressant, or destructive to one or more of the components of bone marrow

Organ failure – the inability of one or more of the body's organ systems to perform the task of preserving health or homeostasis; may be acute or chronic.
Orthotopic – pertaining to a tissue transplant grafted into its normal place in the body.
Pediatric End-stage Liver Disease (PELD) - for transplant candidates aged 11 and under; numerical system for prioritizing liver transplant candidates; statistical formula designed to predict who would need a transplant more urgently.
Pulmonary Function Test (PFT) - a group of procedures to measure the function of the lungs; reveals problems with the way a person breathes.
Pulmonary Vascular Resistance (PVR) - vascular resistance of pulmonary circulation; the difference between the mean pulmonary arterial pressure and the left atrial filling pressure divided by the cardiac output.
Procurement – the obtaining of something, such as an organ for transplantation
Rejection – the immunological attack against organisms or substances that the immune system recognizes as foreign, including grafts and transplants; may be hyper-acute, acute, or chronic.
Sclerosis – a hardening or thickening of organs, tissues, or vessels from chronic inflammation, abnormal growth of fibrous tissue or degeneration of the myelin sheath of nerve fibers or deposition of fatty plaques.
Transplantation – the transfer of living organs or tissues from one part of the body to another or from one individual to another
Type 1 Diabetes Mellitus (T1DM) – typically begins early in life; affected individuals have a primary insulin deficiency and must take insulin injections.
Type 2 Diabetes Mellitus (T2DM) – most common form of diabetes and usually appears in middle aged adults; often associated with obesity; can be controlled with diet, exercise, and medication; if uncontrolled, insulin injections may be necessary.

Description

The Oklahoma Health Care Authority recognizes that the treatment decisions must consider the patient's entire clinical and social situation as well as chronicity, severity, distribution, locus of injury and co-morbidities. Acute and chronic organ failure is evidenced by presence of irreversible organ disease and life expectancy of less than 12 months (without transplant) with no other treatment alternatives.

Reimbursable services that are deemed reasonable and necessary may include: physician services, inpatient hospital services, transplantation surgical services, follow-up care for patients who have been discharged from the hospital setting after having received a transplant, and any re-transplantation surgery as required.

CPT Codes Covered Requiring Prior Authorization (PA)

32851 — Lung transplant, single; without cardiopulmonary bypass
32852 — with cardiopulmonary bypass
32853 — Lung transplant, double; without cardiopulmonary bypass
32854 — with cardiopulmonary bypass
33935 — Heart-lung transplant
33945 — Heart transplant
38205 — Blood-derived hematopoietic progenitor cell harvesting for transplantation; allogeneic
38206 — autologous
38230 — Bone marrow harvesting; allogeneic
38232 — Bone marrow harvesting; autologous
38240 — Hematopoietic progenitor cell (HPC); allogenic
38241 — Hematopoietic progenitor cell (HPC); autologous
38242 — Allogeneic lymphocyte infusions
44135 — Intestinal allotransplantation; from cadaver donor

44136 — from living donor
47135 — Liver allotransplantation
48160 — Pancreatectomy, with autologous transplantation of islet cells
48554 — Transplantation of pancreatic allograft

**Please see CPT book for full definition of codes.

Approval Criteria

I. GENERAL

A. Medical necessity must be met. All documentation submitted to request services or substantiate previously provided services must demonstrate through adequate objective medical records, evidence sufficient to justify the member's needs for the service, in the most cost-effective manner, in accordance with the OAC 317:30-3-1.
B. Organ and tissue transplantation services for children and adults are covered services as outlined in OAC 317:30-3-57(36) and 317:30-5-41.2.
C. Multi-organ transplant requests must meet criteria for each organ transplant requested. In those situations, an individual may present with a concurrent medical condition which would be considered an exclusion or a comorbidity that would preclude a successful outcome but would be treated with the other organ transplant. Such cases will be reviewed on an individual basis for coverage determination to assess the member's candidacy for transplantation.

II. **UNIVERSAL INDICATIONS** (all of the following apply to any organ transplant):

A. Specific organ and tissue "Indications and Contraindications" are listed in the following Appendices A-F. Please refer to appropriate Appendix for detailed indicators for <u>each</u> organ and/or tissue requested, prior to review.
B. Transplant procedures must be furnished in a Medicare certified transplant facility; **<u>and</u>**
C. Treatment must be an approved standard of care and cannot be an experimental or investigational procedure; **<u>and</u>**
D. Documentation submitted shall include a Letter of Medical Necessity (LMN) from the transplant team along with a statement from the transplant physician and/or surgeon indicating irreversible (end-stage) organ disease, failure and optimization of medical therapy, and organ transplantation offers realistic expectation of functional improvement and extension of life; **<u>and</u>**
E. Documentation from transplant physician and / or transplant surgeon indicating that patient is a suitable candidate for transplant surgery; **<u>and</u>**
F. Evaluation and clearance for surgery from Cardiology (or a documented LVEF > 40%); **<u>and</u>**
G. Evaluation and clearance for surgery from Pulmonology (or a normal chest x-ray or PFT showing no significant impairment); **<u>and</u>**
H. Evaluation and clearance for surgery from Dental:
    1. If a dental evaluation cannot be obtained secondary to patient hospitalization, a Panorex result may be accepted.
    2. To request additional (limited) dental services, a dental provider must submit a dental treatment plan along with supporting documentation when submitting the transplant prior authorization (PA) request. Supporting documentation may include x-rays or images of tooth / teeth involved, six-point periodontal charting, narratives, and comprehensive treatment plan. The request for additional services will be reviewed by the OHCA and the dental unit will notify the provider with the status of the request. Additional services that may be authorized are as follows:

comprehensive oral evaluation, 2 radiographic bitewings, prophylaxis, fluoride application, limited restorative procedures, and periodontal scaling / root planing; **and**

I. Evaluation and clearance for surgery from all appropriate specialties (e.g., Oncology/Tumor Board, Neurology, Gynecology, and / or Infectious Diseases) to rule out significant co-morbidities and / or infection; **and**
J. Evaluation of patient and caregiver and clearance for surgery from a Psychiatrist, Psychologist, or Licensed Clinical Social Worker indicating adequate family / social support system, expectations regarding compliance with post-transplant medical regimens, expectations regarding follow-up appointments, and absence of uncontrolled psychiatric disorder. Refer to Appendix G for additional Psychosocial criteria; **and**
K. Documentation of adequate nutritional status to undergo transplant surgery; and
L. Absence of morbid obesity (BMI < 50), or cachexia; **and**
M. Abstinence from alcohol, illicit drug use, smoking and / or use of tobacco products should be at least 6 months as evidenced by laboratory results and / or history. ***If marijuana is used as a prescribed medication pre-transplant, theoretically, this should not contraindicate the transplant; **and**
N. Absence of any other contraindication for transplant surgery; **and**
O. Medical evaluations as stated above have been completed within the previous 6 months; **and**
P. Documentation indicates complete understanding by patient / parent / guardian about all the aspects of specific organ(s) / tissue for transplantation.

***All other indications / contraindications for transplantation not otherwise noted as covered or non-covered nationally, remain at the discretion of the Oklahoma Health Care Authority.

III. **UNIVERSAL CONTRAINDICATIONS**: (any of the following)

A. Active infection; **or**
B. Active solid organ or hematologic malignancy; **or**
C. Presence of other severe or irreversible medical conditions (e.g., hepatic, renal, pulmonary, or cardiac dysfunction) that will create inability to tolerate transplant surgery and are unlikely to improve with transplantation; **or**
D. Demonstrated patient noncompliance, which places the organ at risk by not adhering to medical recommendations; **or**
E. Potential complications from immunosuppressive medications are unacceptable to the patient; **or**
F. Human immunodeficiency virus (HIV) unless **all** the following are noted:
    1. CD4 count greater than 200 cells/mm3 for greater than 6 months; **and**
    2. HIV-1 RNA undetectable; **and**
    3. On stable anti-retroviral therapy greater than 3 months; **and**
    4. No other complications from AIDS (e.g., opportunistic infection, including aspergillus, tuberculosis, coccidioidomycosis, resistant fungal infections, Kaposi's sarcoma, or other neoplasm); **or**
G. Psychosocial contraindications (see Appendix G); **or**
H. Systemic illness with life expectancy < 2 years despite transplant; **or**
I. Technical and / or anatomic barriers to organ transplantation.

IV. FREQUENCY

- Re-transplantation in patients with organ rejection or graft failure may be considered medically necessary if the patient continues to meet initial criteria. See individual organ transplant indications.

- Re-transplantation in patients with chronic rejection or recurrent disease may be considered medically necessary. See individual organ transplant indications.

Appendices

Appendix A

Heart Transplantation

Heart transplantation involves the removal of either all or part of a cadaver heart and its implantation into a recipient. There are two types of cardiac transplant: orthotopic and heterotopic.

- Orthotopic transplant is the usual method and involves implanting the ventricles of the donor heart onto the right atria and main arteries of the recipient's heart.
- Heterotopic transplants involve placing the entire donor heart into the chest cavity and surgically attaching it to the recipient's entire heart.

Heart transplantation is considered medically necessary in carefully selected individuals when the following clinical indications and criteria are met:

Indications (Adult):

A low cardiac functional status with an estimated life expectancy of less than one year without transplant; and one of the following:

1. Maximal VO-2 (maximal oxygen consumption) less than 10mL/kg/min with achievement of anaerobic metabolism; or
2. Maximal VO-2 greater than 10mL/kg/min and less than 15 mL/kg/min (or 55% of predicted) and major limitation of the individual's activities; or
3. Heart failure classified as class III or IV by the NYHA classification of heart failure (see table below); or

Class III:	Persons with cardiac disease resulting in marked limitation of physical activity. They are comfortable at rest. Less than ordinary activity (i.e., mild exertion) causes fatigue, palpitation, dyspnea, or anginal pain.
Class IV:	Persons with cardiac disease resulting in inability to carry on any physical activity without discomfort. Symptoms of cardiac insufficiency or of the anginal syndrome may be present even at rest. If any physical activity is undertaken, discomfort is increased.

4. Refractive cardiogenic shock; or
5. Recurrent unstable ischemia not amenable to bypass surgery or percutaneous coronary intervention (PCI); or
6. Cardiomyopathy of various causes not amenable to medical therapy or revascularization procedures; or
7. Inoperable heart valve disease with congestive heart failure; or
8. Severe congenital heart disease without other surgical options; or
9. Recurrent symptomatic and life-threatening abnormal heart rhythms that do not respond to other therapeutic modalities; or
10. Documentation showing previous medical therapy has been optimal and that no medical therapy or surgical procedure other than transplantation offers realistic expectation of extension of life and functional improvement.

Indications (Pediatric): (*any* of the following)

1. Intractable heart failure and / or low cardiac output not amenable to medical or surgical interventions; or
2. Complex congenital heart disease not amenable to surgical repair or palliation or when surgical procedure carries a higher risk of mortality than transplantation; or
3. Heart disease with reactive pulmonary hypertension and a potential for developing fixed, irreversible increased pulmonary vascular resistance (PVR) that would preclude a future orthotopic heart transplantation; or
4. Heart disease associated with near sudden death; or
5. Life threatening arrythmias untreatable with medications or an implantable defibrillator.

Contraindications: (*any* of the following)

1. Irreversible pulmonary HTN with irreversible pulmonary vascular resistance (PVR) > 3 wood units (> 240 dynes-sec/cm5, normal is ≤ 1.5 wood units [120 dynes-sec/cm5]); or
2. Combined heart / lung transplantations are reserved for candidates in whom either a heart transplant or lung transplant alone will not improve the individual's condition and chances of survival.

Appendix B

Liver Transplant

A liver transplant consists of replacing and end-stage diseased liver with a healthy one. The liver is obtained from either a deceased or living donor (a living donor gives only a segment of his / her liver to the recipient). In an orthotopic liver transplantation, the donor liver is placed in its correct anatomic location. A heterotopic liver transplantation refers to placement of the donor liver in a different location, typically with the native liver remaining in situ. The overwhelming majority of liver transplantations are orthotopic.

Split liver transplantation refers to dividing a donor liver into two grafts that can be used for two recipients. Generally, a pediatric recipient receives the left lobe, and an adult recipient receives the right lobe.

Living-related donor transplantation of the left lateral segment primarily benefits children and is usually performed between parent and child. Adult-to-adult living donor transplantation uses the right lobe of the liver from a related or unrelated donor. Living donation allows the procedure to be scheduled electively, shortens the preservation time for the donor liver and allows time to optimize the recipient's condition pre-transplant.

Indications: (*either* of the following)

1. End-stage liver failure with no other available treatment options and life expectancy of less than 12 months without transplant surgery; or
2. Irreversible, end-stage liver damage (MELD or PELD score ≥ 15) caused by any of the following conditions:
   ***__**Note**: Exceptions may be considered to MELD/PELD scores for certain conditions when recommended by UNOS guidelines:__ www.unos.org

   A. Cholestatic liver diseases:
      - Primary biliary cirrhosis
      - Biliary atresia
      - Caroli's disease

- Familial cholestasis
- Arteriohepatic dysplasia (Alagille's syndrome)
- Cystic fibrosis

B. Hepatocellular injury:
- Viral induced – hepatitis
- Drug induced – acetaminophen, or associated with halothane, gold, disulfam or others.
- Alcohol induced (cirrhosis, hepatitis)
- Cryptogenic cirrhosis
- Toxin exposure: fulminant hepatic failure due to mushroom poisoning
- Autoimmune hepatitis
- Trauma

C. Inborn errors of metabolism:
- Wilson's disease
- Organic acidurias
- Alpha-1 antitrypsin deficiency
- Homozygous type II hyperlipoproteinemia
- Crigler-Najjar Syndrome type I
- Protoporphyria
- Some urea cycle deficiencies
- Glycogen storage disease types I and IV
- Tyrosine deficiency
- Citrullinemia
- Ornithine transcarboxylase deficiency
- Familial amyloid polyneuropathy (requires transplantation – polyneuropathy and cardiac amyloidosis development due to the production of a variant transthyretin molecule by the liver)
- Oxalosis (primary)

D. Mass Occupying Lesions:
- Polycystic disease of the liver (requiring transplantation due to the anatomic complications of a hugely enlarged liver)

E. Malignancies:
- Primary hepatocellular carcinoma confined to the liver when the following criteria are met:
  - Member is not a candidate for subtotal liver resection; and
  - Member meets UNOS criteria for tumor size and number; and
  - There is no identifiable extra-hepatic spread of tumor to surrounding lymph nodes, abdominal organs, bone, or other sites; and
  - There is no macrovascular involvement; or
- Hepatoblastomas in children when all of the following criteria are met:
  - Member is not a candidate for subtotal liver resection; and
- Member meets UNOS criteria for tumor size and number (one lesion ≤ 5 cm or up to three lesions each ≤ 3 cm without metastatic spread); and
- There is no identifiable extra-hepatic spread of tumor to surrounding lungs, abdominal organs, bone, or other sites (Note: spread of hepatoblastoma to veins and lymph nodes does not disqualify a member for coverage of a liver transplant); or
- Epithelioid hemangioendotheliomas; or

- Intra-hepatic / extra-hepatic cholangiocarcinomas, if it meets UNOS criteria for a liver transplant (deemed unresectable due to parenchymal liver disease or anatomical location); or
- Large, unresectable fibrolamellar HCC's; or
- Metastatic neuroendocrine tumors (carcinoid tumors, apudomas, gastrinomas, glucoganomas) in persons with severe symptoms and with metastases restricted to the liver, who are unresponsive to adjuvant therapy after aggressive surgical resection including excision of the primary lesion and reduction of hepatic metastases.
  ***Note:** these criteria are intended to be consistent with UNOS guidelines for selection of liver transplant candidates for hepato-cellular carcinoma (HCC).

F. Vascular disease:
- Budd-Chiari Syndrome
- Veno-occlusive disease

Appendix C

Lung Transplant

Lung transplantation (LTX) has become a viable treatment option for carefully selected patients with end-stage pulmonary disease (ESPD). Single, double, and lobar-lung transplantation have all been performed successfully for a variety of diseases. Single-LTX appears to be most effective for patients with end-stage pulmonary fibrosis, while double-LTX is most effective for patients with end-stage chronic obstructive pulmonary disease (COPD) and cystic fibrosis (CF) in whom cardiac function has been preserved. Lobar-LTX (from living donors or cadaver donors) is usually reserved for children or adolescents who are appropriate candidates for LTX and will not survive waiting for cadaver lungs. Indications for LTX in pediatric patients include pulmonary vascular disease, bronchiolitis obliterans, broncho-pulmonary dysplasia, graft failure due to viral pneumonitis, and CF.

Indications: (*any* of the following)

1. Restrictive lung disease, examples of which include, but are not limited to:
   - Idiopathic pulmonary fibrosis (IPF)
   - Interstitial pulmonary fibrosis
   - Scleroderma
   - Sarcoidosis
   - Extrinsic allergic alveolitis
   - Post chemotherapy disease
   - Asbestosis
   - Collagen vascular disease
2. Chronic lung disease, examples of which include, but are not limited to:
   - Alpha-1 antitrypsin deficiency
   - Eosinophilic granuloma (Langerhans cell histiocytosis or histiocytosis X)
   - Chronic obstructive pulmonary disease (COPD emphysema, chronic bronchitis)
   - Bronchiolitis obliterans
   - Bronchiopulmonary dysplasia
   - Recurrent pulmonary embolus
   - Lymphangiomyomatosis (LAM)
3. Pulmonary hypertension, examples of which include, but are not limited to:
   - Primary pulmonary hypertension

- Pulmonary hypertension due to cardiac diseases and interstitial pulmonary fibrosis
- Eisenmenger's syndrome
- Fibrosing mediastinitis

4. Septic lung disease, examples of which include, but are not limited to:
    - Cystic fibrosis
    - Bronchiectasis

Contraindications: (*any* of the following)

1. Significant chest wall / spinal deformity expected to cause severe restriction after transplantation; or
2. Combined heart / lung transplantations are reserved for candidates in whom either a heart transplant or lung transplant alone will not improve the individual's condition and chances of survival.

Appendix D

Pancreas Transplant

There are three variations of pancreas transplants. Pancreas transplant alone (PTA), pancreas after kidney (PAK), and simultaneous pancreas-kidney transplant (SPK).

Pancreas Transplant Alone (PTA):
Pancreas transplantation is performed to induce an insulin-dependent, euglycemic state in diabetic patients. The procedure is generally limited to those patients with severe secondary complications of diabetes, including kidney failure. However, pancreas transplantation is sometimes performed on patients with labile diabetes and hypoglycemic unawareness. Pancreas transplantation involves the surgical removal of a segmental pancreas from a living donor or a whole pancreas from a deceased donor, and the implantation of the pancreas into a recipient. Pancreas transplantation has been used in an attempt to restore endogenous insulin secretion and normal glucose metabolism for individuals with Type 1 or Type 2 insulin-dependent diabetes.

Pancreas after Kidney (PAK):
Data from the International Pancreas Transplant Registry provides sufficient evidence to support the efficacy of PAK in carefully selected diabetics who have previously received a successful kidney transplant. The one-year graft survival rate (defined as total freedom from insulin therapy, normal fasting blood glucose concentrations, and normal or only slightly elevated HbA1C) is 77.5%. Evidence has established that SPK is effective in normalizing insulin production and kidney function, may improve quality of life, and halts, slows or reverses the progression of secondary diabetic complications.

Simultaneous Cadaver-Donor Pancreas and Living-Donor Kidney Transplant (SPLK):
The evidence from the peer-reviewed literature supports the efficacy and use of a well-matched living-donor kidney. Such transplants offer the potential benefits of shorter waiting time, expansion of the organ donor pool, and improved short-term and long-term renal graft function. SPLK has the advantage of being a single procedure in contrast to the standard living-donor kidney transplant followed by PAK; in addition, SPLK in general leads to better early and long-term renal graft function.

Indications:

1. Pancreas alone (PTA)
    - T1DM - with one or both of the following:

- Labile diabetes with documented life-threatening hypoglycemia unawareness and / or frequent hypoglycemic episodes despite optimal medical management; and / or
- Inability to tolerate exogenous insulin.

- T2DM - with one of the following:
  - Labile diabetes with documented life-threatening hypoglycemic unawareness despite optimal medical management; or
  - Severe physical or psychological impairment that make it impossible to administer exogenous insulin safely.

2. Simultaneous Pancreas with Kidney (SPK) and Pancreas after Kidney (PAK)
   - T1DM and end-stage renal disease who have had or plan to have a kidney transplant and are candidates for pancreas transplant.

Other Considerations:

1. Autologous pancreatic islet cell transplantation is considered medically necessary as an adjunct to a total or near total pancreatectomy.
2. Pancreas re-transplantation after 2 or more failed pancreas transplants is considered investigational and is not reimbursable.

Appendix E

Stem Cell Transplant (including bone marrow and cord blood)

Hematopoietic stem cell transplantation (HSCT) is a process in which stem cells are harvested from bone marrow, peripheral blood, or umbilical cord blood and then prepared for intravenous infusion. Stem cell transplantation is used as a treatment following toxic doses of chemotherapy or radiation used to treat various malignancies and other diseases. HSCT is a method of replacing immature blood-forming cells in the bone marrow that have been destroyed. It may be autologous (using a person's own blood cells) or allogenic (using stem cells donated by someone else – ideally a sibling or someone with a similar genetic makeup). Allogenic stem cell transplant may also be used to restore function in patients having an inherited or acquired deficiency or defect.

Indications of Coverage:

1. Allo-HSCT is covered for patients with any of the following:
   - Leukemias (including but not limited to):
     - Acute Myeloid Leukemia (AML)
     - Acute Lymphoblastic Leukemia (ALL)
     - Chronic Lymphocytic Leukemia (CLL)
     - Chronic Myeloid Leukemia (CML)
     - Juvenile Myelomonocytic Leukemia (JMML)
     - Acute Promyelocytic Leukemia
     - Any leukemia in remission when it is reasonable and necessary.
   - Myelodysplastic Syndromes (MDS)
   - Non-Hodgkin's Lymphoma – HSCT is used for refractory, relapsed, or other high-risk disease. Allogenic HSCT is usually preferred but there are some situations when autologous HSCT might be appropriate. Sequential myeloablative autologous HSCT followed by reduced intensity allogenic HSCT is sometimes used for patients with very high-risk disease.
   - Hodgkin Lymphoma — HSCT is used for refractory, relapsed, or other high-risk disease. Autologous HSCT is usually the preferred treatment for patients in second

remission although allogeneic HSCT is sometimes needed. If patients relapse after an autologous HSCT, the preferred treatment in most cases is an allogeneic HSCT. Infrequently, patients with very high-risk disease are treated with sequential myeloablative autologous HSCT followed by reduced intensity allogeneic HSCT.

- Myelofibrosis and Myeloproliferative diseases
- Severe aplastic anemia — newly diagnosed, relapsed, or refractory.
- Fanconi anemia
- Sickle cell anemia (children and young adults)
- Thalassemia major (children and young adults)
- Wiskott-Aldrich syndrome
- Severe combined immunodeficiency disease (SCID)
- Severe immune deficiencies:
    - Hyper-IgM immune deficiency
    - Leukocyte adhesion deficiency
    - Omenn syndrome
    - Chediak-Higashi syndrome
    - X-linked lymphoproliferative disease
    - Job syndrome
    - Kostmann syndrome (and other congenital neutropenia)
- Platelet disorders (including but not limited to):
    - Glanzmann thromboasthenia
    - Bernard-Soulier syndrome
- Hemophagocytic lymphohistiocytosis — treatment with HSCT is for patients with relapsed or refractory disease and those with an underlying genetic condition.
- Mucopolysaccharidoses and lysosomal storage disorders — Indicated in all MPS I (Hurler syndrome) and most MPS II (Hunter syndrome) patients. May also be indicated in patients with other mucopolysaccharidoses and lysosomal storage disorders that are severely affected.
- Epidermolysis bullosa — severe disease not controlled by medical management.
- Adrenoleukodystrophy and similar peroxisomal disorders
- Pearson syndrome and other mitochondrial disorders with associated bone marrow failure
- Systemic mastocytosis and other life-threatening mast cell disease
- Inherited metabolic disorders:
    - Alpha mannosidosis
    - Aspartyllucosaminuria
    - Cerebral X-linked adrenoleukodystrophy
    - Farber disease
    - Fucosidosis
    - Gaucher disease types 1 & 3
    - Krabbe disease (Globoid leukodystrophy, GLD)
    - Metachromatic leukodystrophy (MLD)
    - Maroteaux-Lamy syndrome (MPS-VI)
    - Sly syndrome (MPS VII)
    - Wolman disease
    - Sanfilippo disease (MPS-III)
    - Niemann-Pick disease type B

2. Auto-HSCT is covered for patients with <u>any</u> of the following:

- Acute leukemia in remission who have a high probability of relapse and who have no human leucocyte antigens (HLA)-matched donors.

- Hodgkin Lymphoma — refractory, primary progressive or recurrent disease
- Multiple Myeloma — after response to primary therapy, refractory to primary therapy with relapse or progressive disease
- Primary Amyloidosis
- POEMS syndrome
- Resistant non-Hodgkin's lymphomas or those presenting with poor prognostic features following an initial response.
- Germ cell tumor — relapsed or refractory
- Ewing's sarcoma — relapsed or progressive
- Neuroblastoma — high risk
- Wilm's tumor — relapsed
- Medulloblastoma — high risk
- Other malignant brain tumors

Appendix F

Intestinal and Multi-visceral

Intestinal and multi-visceral transplantation may be medically necessary for the purpose of restoring intestinal function in patients with irreversible intestinal failure. Intestinal failure is defined as the loss of absorptive capacity of the small bowel secondary to severe primary gastrointestinal disease or surgically induced short bowel syndrome. Multi-visceral transplantation includes organs in the digestive system (stomach, duodenum, pancreas, liver, and intestine). An intestine transplant may involve the whole intestine or an intestine segment. Most of the intestine transplants are whole organ transplants and are performed in conjunction with a liver transplant. Intestine transplants usually involve a cadaveric donor though it is possible for a living donor to donate an intestinal segment.

- A small bowel transplant using cadaveric intestine may be considered medically necessary in patients with intestinal failure (characterized by loss of absorption and the inability to maintain protein-energy, fluid, electrolyte, or micronutrient balance), who have established long-term dependency on total parenteral nutrition (TPN) and are developing or have developed severe complications due to TPN.

- A small bowel transplant using a living donor may be considered medically necessary only when a cadaveric intestine is not available for transplantation in a patient who meets the criteria for a cadaveric intestinal transplant.

- Small bowel / liver transplant or multi-visceral transplant may be considered medically necessary in patients with intestinal failure (characterized by loss of absorption and the inability to maintain protein-energy, fluid, electrolyte, or micronutrient balance), who have been managed with TPN, and have developed evidence of impending end-stage liver failure.

Indications: (*any* of the following conditions)

1. Short gut syndrome with loss of 70% or greater of the native small bowel; or
2. Defective intestinal motility (hollow visceral myopathy, neuropathy, and / or total intestinal aganglionosis); or
3. Impaired enterocyte absorptive capacity (microvillus inclusion disease, selective autoimmune enteropathy, radiation enteritis, extensive inflammatory bowel disease and / or massive intestinal polyposis); or
4. Established TPN dependence for a minimum of two years; or

5. TPN failure as indicated by:
    - Impending or overt liver failure
    - Thrombosis of ≥ 2 central veins
    - Two or more episodes per year of line infections / systemic sepsis, particularly those requiring hospitalization with shock, fungemia and / or acute respiratory distress.
    - Frequent episodes of severe dehydration
    - Inadequate TPN access; or
6. High risk of death; or
7. Severe SBS (gastrotomy, duodenostomy, residual small bowel <10 cm in infants and <20 cm in adults); or
8. Frequent hospitalization, narcotic dependency, or pseudo-obstruction.

Contraindications: (*any* of the following conditions)

1. Ability to ingest oral or enteral nutrition.

Appendix G

Psychosocial Criteria for Transplant

Psychiatrist, Psychologist or Licensed Clinical Social Worker must complete psychosocial evaluation of patient and primary caregiver.

Indications: (*all* of the following)

1. Demonstrated medical compliance; and
2. Adequate neurocognitive function; and
3. Adequate social and family support system, indicating primary caregiver post-transplant; and
4. Adequate financial support system; and
5. Documented absence of substance uses as evidenced by nicotine/cotinine levels (if applicable) and negative drug or UTOX screens and participation in treatment program (if applicable).

Contraindications: (*any* of the following)

1. Consumption of alcohol, illicit drug use, smoking and / or use of tobacco products within the last 6 months as evidenced by laboratory results and / or history. ***If marijuana is used as a prescribed medication pre-transplant, theoretically, this should not contraindicate the transplant; or
2. Refractory psychiatric condition affecting ability to adhere to therapy; or
3. Severe personality disorder; or
4. Suicidal behaviors; or
5. Limited social support; or
6. Limited adaptive ability.

References

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