

**SUBJECT: LIVER TRANSPLANTATION**

**EFFECTIVE DATE: 07/02/99**

**REVISED DATE: 12/21/00, 02/21/02, 05/21/03, 07/15/04,  
06/16/05, 08/17/06, 07/19/07, 10/23/08,  
08/20/09, 10/28/10, 10/20/11, 10/18/12,  
01/16/14**

**POLICY NUMBER: 7.02.07**

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**CATEGORY: Transplant**

- *If the member's subscriber contract excludes coverage for a specific service it is not covered under that contract. In such cases, medical policy criteria are not applied.*
- *Medical policies apply to commercial and Medicaid products only when a contract benefit for the specific service exists.*
- *Medical policies only apply to Medicare products when a contract benefit exists and where there are no National or Local Medicare coverage decisions for the specific service.*

## **POLICY STATEMENT:**

- I. Based upon our criteria and review of the peer-reviewed literature, liver transplantation for selected individuals with end-stage liver disease has been medically proven to be effective and therefore **medically appropriate** for the following indications:
  - A. Hepatocellular diseases:
    1. Alcoholic cirrhosis;
    2. Viral hepatitis;
    3. Autoimmune hepatitis;
    4. Alpha-1 antitrypsin deficiency;
    5. Hemochromatosis;
    6. Non-alcoholic steatohepatitis cirrhosis;
    7. Protoporphyrina; or
    8. Wilson's disease.
  - B. Cholestatic liver diseases:
    1. Primary biliary cirrhosis;
    2. Primary sclerosing cholangitis with development of secondary biliary cirrhosis; or
    3. Biliary atresia.
  - C. Vascular disease: Budd-Chiari syndrome.
  - D. Primary hepatocellular carcinoma when:
    1. Disease is organ confined, AND
    2. The patient is not a candidate for subtotal liver resection.
  - E. Inborn errors of metabolism.
  - F. Trauma and toxic reactions.
  - G. Nonresectable hilar cholangiocarcinoma and as part of a neoadjuvant chemoradiation protocol when:
    1. Absence of metastatic disease, and
    2. For localized hilar tumors Stage I or II, and
    3. No prior attempts at resection.
  - H. Nonresectable intrahepatic cholangiocarcinoma when:
    1. Absence of metastatic disease confirmed by a staging laparoscopy or laparotomy;
    2. No prior attempts at resection; and
    3. When combined with neoadjuvant chemoradiation.
  - I. Miscellaneous:
    1. Polycystic disease of the liver; or
    2. Familial amyloid polyneuropathy.

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## II. Recipient Selection Guidelines

### A. Cadaver Liver Recipient:

1. MELD score equal to or greater than 9 (UNOS adjusts the MELD score for patients with hepatocellular cancer by adding points to their scores).
2. Patients with polycystic disease of the liver do not always develop progressive liver failure but may require transplantation due to the anatomic complications of a hugely enlarged liver. The MELD/PELD score may not apply to these cases. One of the following complications should be present:
  - a. Enlargement of liver impinging on respiratory function;
  - b. Extremely painful enlargement of liver; or
  - c. Enlargement of liver significantly compressing and interfering with function of other abdominal organs.
3. The MELD/PELD score may apply to patients with amyloid polyneuropathy. Candidacy for liver transplant is an individual consideration based on the morbidity of the polyneuropathy. Many patients may not be candidates for liver transplant alone due to coexisting cardiac disease.

### B. Living Donor Recipient (The New York State Transplant Committee Report on Quality Improvement in Living Liver Donation recommendations):

1. MELD score equal to or greater than 9 and less than or equal to 25; and
2. Listed on the cadaveric liver transplant waiting list; and
3. Has suffered at least one significant complication related to his or her liver disease (e.g., variceal hemorrhage, spontaneous bacterial peritonitis, encephalopathy, or severe impairment to his or her quality of life due to, for example, fatigue, pruritis).

## III. Contraindications to transplantation:

### A. Cadaveric organ recipient:

1. Relative contraindications:
  - a. Major co-morbid illnesses such as ischemic heart disease, severe peripheral vascular disease, congestive cardiomyopathy, moderately severe COPD;
  - b. HIV infection unless ALL of the following criteria are met:
    - i. CD4 count greater than 100 cells/mm<sup>3</sup> for non-hepatitis C patients, greater than 200 cells/mm<sup>3</sup> for patients with hepatitis C;
    - ii. HIV-1RNA undetectable;
    - iii. On stable anti-retroviral therapy greater than 3 months;
    - iv. No other complications from AIDS (e.g., opportunistic infection, including aspergillus, tuberculosis, coccidioidomycosis; resistant fungal infections, Kaposi's sarcoma, or other neoplasm); and
    - v. Meets all other criteria for transplantation.
  - c. Presence of malignancy within 5 years of transplantation (other than non-melanoma skin cancers), or unless malignancy has been completely resected, or unless (upon medical review) it is determined that malignancy has been treated with small likelihood of recurrence and acceptable future risks;
  - d. Ongoing or recurring infections that are not effectively treated;
2. Absolute contraindications: uncontrolled behavioral health disorder that manifests in behaviors that interfere with the patient's capacity to comply with surgical and follow-up management including but not limited to alcohol or substance abuse and major thought disorder.

### B. Living donor organ recipient (The New York State Transplant Committee Report on Quality Improvement in living Liver Donation recommendations):

1. MELD score greater than 25;
2. Adult fulminant hepatic failure;
3. Cholangiocarcinoma;
4. Hepatocellular carcinoma if:
  - a. There is evidence of metastatic disease;

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- b. Comorbidities exist;
- c. The recipient can expect less than a one-year disease-free outcome;
- 5. Retransplantation for hepatitis C;
- 6. Need for dialysis;
- 7. Simultaneous combined liver/kidney transplantation (however, in cases involving hyperoxalosis or other specific metabolic disorders, special consideration should be given to allowing simultaneous liver/kidney transplantation from two different donors); or
- 8. Acute alcoholic hepatitis.

#### IV. Living Donation Guidelines:

- A. Any person who gives consent to be a live organ donor should be competent, willing to donate, free from coercion, medically and psychologically suitable, fully informed of the risks and benefits as a donor, and fully informed of the risks, benefits, and alternative treatment available to the recipient. The benefits to both donor and recipient must outweigh the risks associated with the donation and transplantation for the living donor organ.
- B. Donor selection must be consistent with the New York State Committee on Quality Improvement in Living Liver Donation recommendation to the New York State Department of Health, updates to that report, and relevant regulatory requirements.
- C. Donor must be "Emotionally-related" to recipient (e.g., relative, previous known or current acquaintance).

#### **POLICY GUIDELINES:**

- I. Prior authorization is contract dependent. Approvals for all transplants, including arrangements with an approved transplant center, may be required.
- II. Pre-transplant evaluation documentation could include the following clinical information. If testing is unable to be performed, the rationale for not performing the testing should be included in the documentation:
  - A. Clinical Evaluation:
    - 1. Confirmation of diagnosis;
    - 2. Identification of comorbidities;
    - 3. Treatment of co-morbidities;
    - 4. Current assessment of co-morbidities;
    - 5. Consult notes (if applicable).
  - B. Psycho-Social Evaluation:
    - 1. Karnofsky performance score;
    - 2. Identification of stressors (family support, noncompliance issues, motivational issues, alcohol or substance abuse).
  - C. Dental Evaluation.
  - D. Lab Tests:
    - 1. CBC, metabolic profile;
    - 2. Serologies: CMV,
    - 3. Hepatitis B and C;
    - 4. HIV Testing.
  - E. Cardiac Assessment:
    - 1. 12 Lead EKG;
    - 2. Stress echo or MUGA Scan.
  - F. Pulmonary Assessment:
    - 1. Chest x-ray;

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2. Pulmonary function tests (PFTs);
3. Low dose screening CT for individuals considered high-risk for lung cancer (e.g., 20-30 pack history of smoking).

G. Age Appropriate Screening Tests:

1. Age greater than or equal to 50 years:
  - a. Colonoscopy (within 10 years); or
  - b. Flexible sigmoidoscopy (within 5 years); or
  - c. Guaiac stool testing (within 1 year); or
  - d. Rationale of contraindication to testing (if applicable).
2. Women age 21-70 years:
  - a. Pap smear (within 3 years).
3. Women age greater than or equal to 40 years:
  - a. Mammogram (within 2 years).

III. Candidates who have end stage disease related to or impacted by alcohol consumption, including viral hepatitis, must demonstrate a period of abstinence through clinical treatment records (e.g., PCP, alcohol treatment programs). In general, at least six months of abstinence is required. The 'six month rule' has been associated with better post-transplant outcomes (e.g., lower risk of relapse, less harmful drinking, and potential improved liver function prior to transplant). If the patient has been abstinent less than six months, medical director consultation with the transplant center behavioral health team is required which includes an assessment by a trained Alcohol and Addiction Professional. The assessment should include history of addiction, harmful drinking patterns, awareness of harmful drinking by the patient, social environment along with family support, any identifiable psychiatric issues, and post-transplantation rehabilitation planning.

IV. Candidates may be waitlisted at more than one transplant center. Since waiting time priority is first calculated among candidates at all hospitals within the local donation area, listing at transplant centers in different local allocation areas is recommended. Requirements for multiple-listed candidates may vary among transplant centers. When possible, results of tests used in the evaluation for the transplant at one center should be used at subsequent centers where the patient is listed.

**DESCRIPTION:**

A liver transplant consists of replacing a diseased liver with a healthy liver or a segment of a healthy liver. Transplanted organs are harvested from either a cadaver (brain-dead donor) or from a living donor. In the latter case, a segment of the liver is typically transplanted.

The United Network for Organ Sharing (UNOS) uses the Model for End-stage Liver Disease (MELD) and Pediatric End-stage Liver Disease (PELD) criteria, for patients under age 18 years, to prioritize patients for transplant. MELD and PELD are continuous disease severity scales based entirely on objective laboratory values. These scales have been found to be highly predictive of the risk of dying from liver disease for patients waiting on the transplant list. The MELD and PELD score incorporates bilirubin, prothrombin time (e.g., INR) and creatinine into an equation, producing a number that ranges from 6 to 40. The MELD and PELD score calculators can be found at:

[<http://optn.transplant.hrsa.gov/resources/allocationcalculators.asp>].

Multiple listing for organs is recommended by the Organ Procurement Transplant Network (OPTN). Multiple listing does not guarantee a shorter waiting time for an organ. Waiting time is affected by the type of organ, the number of organs donated that year as well as factors such as body size and blood type. Since some centers will not consider multiple listing of the patient at their center, the requirements for multiple-listed candidates should be investigated prior to an evaluation at the transplant center. Before acceptance into a transplant program an evaluation must be performed. To avoid duplicate testing from listing at more than one transplant center, many transplant centers will accept testing from another transplant center or allow specific tests to be obtained by the patient's in area physician.

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Living Liver Transplant:

Donor morbidity and mortality are prime concerns in adult donors undergoing partial hepatectomy. Subjecting healthy donors to the risks of surgery, especially in light of uncertain long-term outcomes, can be justified only in clinical circumstances in which the potential recipient has a compelling need for a living donor transplant; such as when a liver transplantation is the only therapeutic option and a cadaveric transplantation is impossible or problematic for reasons such as anticipated waiting times.

**RATIONALE:**

Transplantation represents the only curative approach for many patients with end-stage hepatic-disease. The limited availability of liver grafts demands a system that selects the best recipient of a transplant rather than one that selects the best treatment for a patient. To justify organ allocation, candidacy must be restricted to those whose survival is likely to be similar to that of other transplant recipients.

For recipients with alcoholic cirrhosis, usually a 6 month period of abstinence is required prior to the liver transplant evaluation based on UNOS recommendations (1997). The impact of the 6-month rule on abstinence after transplant has been controversial however there is strong consensus for requiring this period of abstinence prior to listing for a liver transplant. During this time, the liver may recover from the acute inflammatory effects of recent alcohol exposure and improve enough that a transplant may no longer be needed. In addition, this period of abstinence may reinforce the patient's commitment to sobriety and allow for preventive strategies against future recidivism to be implemented.

Waiving the 6 month period of abstinence may be based on multiple psycho-social factors such as, patient awareness of the cause of the disease from their alcohol intake and the toxic effects from alcohol dependence, past attempts at abstinence, any anxiety or depression, whether or not the patient is in a stable relationship, any family support, and if the patient has underlying psychiatric issues. Careful evaluation by a trained alcohol and addiction specialist with assessment of harmful drinking patterns, the potential recipient's family support, and insight of the patient regarding his disease. A plan for post- transplant rehabilitation should be included with the assessment and should include any behavior modification or support programs the patient will receive while awaiting transplant and after. The patient should also be monitored for relapse during the evaluation and waiting period.

Due to the scarcity of donor organs and the success of living donation between parent and child, adult-to-adult living donor liver transplantation offers an option for appropriately screened recipients and donors.

Liver transplantation for candidates that are HIV positive has been controversial due to the long term prognosis for HIV positivity, the impact of immunosuppression on HIV disease, and the interactions of immunosuppressive therapy with antiretroviral therapy in the setting of a transplanted liver. Additionally, the HIV candidates are frequently co-infected with hepatitis B or C, and viral co-infection can further exacerbate drug related hepatotoxicities. Due to the advent of highly active antiretroviral therapy (HAART), which has markedly changed the natural history of the disease, and the increasing experience with liver transplant in HIV positive patients, HIV positive status is no longer an absolute contraindication. Currently UNOS states that asymptomatic HIV+ patients should not necessarily be excluded from candidacy for organ transplantation, stating, "A potential candidate for organ transplantation whose test for HIV is positive but who is in an asymptomatic state should not necessarily be excluded from candidacy for organ transplantation, but should be advised that he or she may be at increased risk of morbidity and mortality because of immunosuppressive therapy." The 2001 Clinical Practice Committee of the American Society of Transplantation proposed the presence of AIDS could be considered a contraindication to kidney transplant unless certain criteria were present. These criteria are listed in this policy regarding HIV status and liver transplants.

Cholangiocarcinoma is an uncommon, aggressive malignancy of the biliary tract whose incidence and mortality rate has been increasing. Nonsurgical treatment of cholangiocarcinoma results are disappointing with the majority of patients surviving less than 1 year after diagnosis. Surgical resection of the liver provides improved 5-year survival rates of up to 50%. For those patients with nonresectable intrahepatic cholangiocarcinoma, liver transplant was unsatisfactory with poor outcomes. However recently liver transplant combined with neoadjuvant chemoradiation has proven to be a

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promising option. Small studies from the Mayo Clinic have shown 5 year survival rates of up to 82% which is comparable to the overall survival rate for liver transplants.

**CODES:**    Number            Description

*Eligibility for reimbursement is based upon the benefits set forth in the member's subscriber contract.*

**CODES MAY NOT BE COVERED UNDER ALL CIRCUMSTANCES. PLEASE READ THE POLICY AND GUIDELINES STATEMENTS CAREFULLY.**

Codes may not be all inclusive as the AMA and CMS code updates may occur more frequently than policy updates.

<b><u>CPT:</u></b>	44132                    Donor enterectomy (including cold preservation), open; from cadaveric donor 44133                    Donor enterectomy, partial, from living donor 47135                    Liver allotransplantation; orthotopic, partial or whole, from cadaver or living donor, any age 47136                    heterotopic, partial or whole, from cadaver or living donor 47143                    Backbench standard preparation of cadaver donor whole liver graft prior to allotransplantation, including cholecystectomy, if necessary, and dissection and removal of surrounding soft tissues to prepare the vena cava, portal vein, hepatic artery, and common bile duct for implantation; without trisegment or lobe split 47144                    with trisegment split of whole liver graft into two partial liver grafts (ie, left lateral segment (segments ii and iii) and right trisegment (segments I and IV through VIII)) 47145                    with lobe split of whole liver graft into partial liver grafts (ie, left lobe (segments II, III, IV) and right lobe (segments I and V through VIII)) 47146                    Backbench reconstruction of cadaver or living donor liver graft prior to allotransplantation; venous anastomosis, each 47147                    arterial anastomosis, each
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**HCPCS:**    No code(s)

<b><u>ICD9:</u></b>	070.0-070.1            Viral hepatitis A (code range) 070.20- 070.33        Viral hepatitis B (code range) 070.41                Acute or unspecified hepatitis C with hepatic coma 070.44                Chronic hepatitis C with hepatic coma 070.51                Acute or unspecified hepatitis C without mention of hepatic coma 070.54                Chronic hepatitis C without mention of hepatic coma 070.59                Other specified viral hepatitis without mention of hepatic coma 070.9                 Unspecified viral hepatitis without mention of hepatic coma 121.1                Biliary cirrhosis due to Clonorchiasis 121.3                Biliary cirrhosis due to Fascioliasis
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155.0	Malignant neoplasm of the liver
270.0-270.9	Disorders of amino-acid transport and metabolism (code range)
271.0- 270.9	Disorder of carbohydrate transport and metabolism (code range)
272.0- 270.9	Disorders of lipid metabolism (code range)
275.0	Disorders of iron metabolism
275.1	Disorders of copper metabolism
277.1	Disorders of porphyrin metabolism
277.3	Amyloidosis
277.6	Other deficiencies of circulating enzymes
277.9	Unspecified disorders of metabolism
285.0	Sideroblastic anemia
356.0	Hereditary peripheral neuropathy
357.4	Polyneuropathy in other disease classified elsewhere (use with 277.3)
453.0	Budd-Chiari syndrome
459.9	Unspecified circulatory system disorder
571.5	Postnecrotic cirrhosis
571.6	Biliary cirrhosis
573.1	Hepatitis in other viral diseases classified elsewhere (secondary code)
573.2	Hepatitis in other infectious diseases classified elsewhere (secondary code)
573.3	Hepatitis, unspecified
576.1	Cholangitis
576.2	Obstruction of the bile duct
576.8	Other specified disorders of biliary tract
751.61	Biliary atresia
751.62	Congenital cystic disease of the liver
864.00-864.19	Injury to liver
<b>ICD10:</b>	
A5215	Late syphilitic neuropathy
B15.0-B15.9	Acute hepatitis A (code range)
B16.0-B16.9	Acute hepatitis B (code range)
B17.10-B17.11	Acute hepatitis C (code range)
B17.8-B19.9	Other acute viral hepatitis (code range)
B25.1	Cytomegaloviral hepatitis
B66.1	Clonorchiasis

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B66.3	Fascioliasis
C22.0	Liver cell carcinoma
C22.2-C22.8	Malignant neoplasm of liver and intrahepatic bile ducts (code range)
D64.0-D64.3	Other anemias (code range)
D81.810	Biotinidase deficiency
D84.1	Defects in the complement system
E70.0-E71.30	Disorders of aromatic amino-acid metabolism (code range)
E72.00-E73.1	Other disorders of amino-acid metabolism (code range)
E74.39	Other disorders of intestinal carbohydrate absorption (code range)
E74.4-E74.9	Other disorders of carbohydrate metabolism (code range)
E75.21-E75.3	Disorders of sphingolipid metabolism and other lipid storage disorders (code range)
E75.5-E75.6	Lipid storage disorders (code range)
E77.0-E77.9	Disorders of glycoprotein metabolism (code range)
E78.0-E78.9	Pure hypercholesterolemia (code range)
E80.0-E80.29	Disorders of porphyrin and bilirubin metabolism (code range)
E83.00-E83.19	Disorders of mineral metabolism (code range)
E88.89	Other specified metabolic disorders
E88.9	Metabolic disorder, unspecified
G60.0	Hereditary motor and sensory neuropathy
G60.2	Neuropathy in association with hereditary ataxia
G63	Polyneuropathy in diseases classified elsewhere
G65.0-G65.2	Sequelae of inflammatory and toxic polyneuropathies (code range)
G80.1-G80.9	Cerebral palsy (code range)
I82.0	Budd-Chiari syndrome
I99.9	Unspecified disorder of circulatory system
K71.0-K71.9	Toxic liver disease (code range)
K74.0	Hepatic fibrosis
K74.3-K74.69	Fibrosis and cirrhosis of liver (code range)
K75.2-K75.3	Other inflammatory liver diseases (code range)
K75.81-K75.89	Other specified inflammatory liver diseases (code range)
K75.9	Inflammatory liver disease, unspecified
K76.4	Peliosis hepatitis
K77	Liver disorders in diseases classified elsewhere

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K80.30-K80.37	Calculus of bile duct with cholangitis (code range)
K83.0-K83.8	Other diseases of biliary tract (code range)
K87	Disorders of gallbladder, biliary tract and pancreas in diseases classified elsewhere
M34.83	Systemic sclerosis with polyneuropathy
Q44.2-Q44.3	Congenital malformations of gallbladder, bile ducts and liver (code range)
Q44.6	Cystic disease of liver
S31.609A	Unspecified open wound of abdominal wall, unspecified quadrant with penetration into peritoneal cavity, initial encounter
S36.112A	Contusion of liver, initial encounter

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#### **KEY WORDS:**

Hepatic transplant, Liver Transplant, Living donor liver transplant.

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<b>CATEGORY: Transplant</b>	<b>PAGE: 11 OF: 11</b>

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## CMS COVERAGE FOR MEDICARE PRODUCT MEMBERS

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There is currently a National Coverage Determination (NCD) for Adult Liver Transplantation. Please refer to the following NCD website for Medicare Members: <https://www.cms.gov/medicare-coverage-database/details/ncd-details.aspx?NCDId=70&ncdver=2&bc=AgAAgAAAAAAA&>