DISCLAIMER

This Molina Clinical Policy (MCP) is intended to facilitate the Utilization Management process. It expresses Molina’s determination as to whether certain services or supplies are medically necessary, experimental, investigational, or cosmetic for purposes of determining appropriateness of payment. The conclusion that a particular service or supply is medically necessary does not constitute a representation or warranty that this service or supply is covered (i.e., will be paid for by Molina) for a particular member. The member’s benefit plan determines coverage. Each benefit plan defines which services are covered, which are excluded, and which are subject to dollar caps or other limits. Members and their providers will need to consult the member's benefit plan to determine if there are any exclusion(s) or other benefit limitations applicable to this service or supply. If there is a discrepancy between this policy and a member's plan of benefits, the benefits plan will govern. In addition, coverage may be mandated by applicable legal requirements of a State, the Federal government or CMS for Medicare and Medicaid members. CMS’s Coverage Database can be found on the CMS website. The coverage directive(s) and criteria from an existing National Coverage Determination (NCD) or Local Coverage Determination (LCD) will supersede the contents of this Molina Clinical Policy (MCP) document and provide the directive for all Medicare members.¹

RECOMMENDATION

All transplants require prior authorization from the Corporate Transplant Department. Solid organ transplant requests will be reviewed by the Corporate Senior Medical Director or qualified clinical designee. All other transplants will be by the Corporate Senior Medical Director or covering Medical Director. If the criteria are met using appropriate NCD and/or LCD guidelines, state regulations and/or MCP policies the Corporate Senior Medical Director’s designee can approve the requested transplant.

Members must meet the United Network Organ Sharing (UNOS) guidelines for MELD and PELD scores and the diagnosis of liver disease must be made by a Hepatologist and/or Transplant Surgeon.

Pre-Transplant Evaluation:

Criteria for transplant evaluation include all of the following:

- History and physical examination
- Psychosocial evaluation and clearance:
  - No behavioral health disorder by history or psychosocial issues:
  - If history of behavioral health disorder, no severe psychosis or personality disorder
  - Mood/anxiety disorder must be excluded or treated
  - Member has understanding of surgical risk and post procedure compliance and follow-up required
  - Adequate family and social support
- EKG
- Chest x-ray
Cardiac clearance in the presence of any of the following:
  - chronic smokers
  - > 50 years age
  - those with a clinical or family history of heart disease or diabetes

Pulmonary clearance if evidence of pulmonary artery hypertension (PAH) or chronic pulmonary disease

Lab studies:
  - *Complete blood count, Kidney profile (blood urea nitrogen, creatinine), electrolytes, calcium, phosphorous, albumin, liver function tests, Coagulation profile (prothrombin time, and partial thromboplastin time)
  - *Serologic screening for HIV, Epstein Barr virus (EBV), Hepatitis virus B (HBV), and Hepatitis C(HCV), cytomegalovirus (CMV), RPR and/or FTA:
    - If HIV positive all of the following are met:
      - CD4 count >200 cells/mm-3 for >6 months
      - HIV-1 RNA undetectable
      - On stable anti-retroviral therapy >3 months
      - No other complications from AIDS (e.g., opportunistic infection, including aspergillus, tuberculosis, coccidioides mycosis, resistant fungal infections, Kaposi’s sarcoma, or other neoplasm)
    - If abnormal serology need physician plan to address and/or treatment as indicated
  - Antinuclear antibody, smooth muscle antibody, antimitochondrial antibody
  - Ceruloplasmin, α1-antitrypsin phenotype
  - Alpha-fetoprotein
  - UDS (urine drug screen) if patient is current or gives a history of past drug abuse

Colonoscopy (if indicated or if patient is 50 ≥ older should have had an initial screening colonoscopy, after initial negative screening requires follow up colonoscopy every ten years) with complete workup and treatment of abnormal results as indicated

GYN examination with Pap smear for women >21 to ≤ 65 years of age or indicated (not indicated in women who have had a TAH or TVH) with in the last three year with complete workup and treatment of abnormal results as indicated

Within the last 12 months:

- Dental examination or oral exam showing good dentition and oral care or no abnormality on panorex or plan for treatment of problems pre or post-transplant
- *Mammogram (if indicated or > age 40) with complete workup and treatment of abnormal results as indicated
- *PSA if history of prostate cancer or previously elevated PSA with complete workup and treatment of abnormal results as indicated

For diagnosis of HCC:
  - Presence of nodule confirmed by testing within the last 3 months done in the following order:
    - Abdominal ultrasound
      - If nodule is < 1 cm:
        - liver biopsy to confirm HCC diagnosis
      - If nodule > 1 cm on ultrasound:
        - test with 4-phase multidetector computed tomography (CT) scan
        - and if inconclusive test with contrast enhanced magnetic resonance imaging (MRI)

*Participating Centers of Excellence may waive these criteria

**Adult Criteria for Transplantation:**

Molina Healthcare considers cadaver or live donor liver transplantation medically necessary in adults over the age of 18 years when ALL of the following criteria are met:
Documentation that all medical, pharmacological and surgical alternatives to liver transplant have been utilized that include but are not limited to:

- ablation or surgical resection of tumors in patients who have **hepatocellular carcinoma**
- biliary reconstruction procedures such as biliary tract diversion and/or dilatation by endoscopic retrograde cholangiopancreatography (ERCP) in patients with **primary sclerosing cholangitis**
- immunosuppressive and corticosteroid therapy for patients who have **severe autoimmune hepatitis**
- chelation therapy for patients with severe chronic **Wilson's disease**
- antiviral therapy for patients with decompensated cirrhosis secondary to **chronic hepatitis B**
- vasoactive agents, sclerotherapy and band ligation, transjugular intrahepatic portosystemic shunt (TIPS), in patients who have had **variceal bleeding**
- low sodium diet, aldosterone antagonists [e.g., spironolactone], loop diuretics [furosemide], and paracentesis in patients who have **ascites**
- vasoconstrictor agents, α-adrenergic agonists, TIPS in patients with **hepatic encephalopathy**
- hepatopancreatobiliary portoenterostomy (Kasai procedure or anastomosis of bile duct remnants in the porta hepatis to a loop of bowel) in patients with **biliary atresia**
- special formulas, antihistamines in patients with **Alagille syndrome**
- specialized diets in patients with **metabolic disorders**
- anticoagulation, portal venous decompression in patients with **Budd-Chiari syndrome**

Must have either of the following:

- End-Stage Liver Disease (ESLD); **OR**
  - Model of End-stage Liver Disease (MELD used for age > 12 years) score ≥15*; **OR**
  - Child-Turcotte-Pugh (CTP) Classification score > 7 (Child's class B or C)**
- Hepatocellular Carcinoma (HCC) that meets the Milan criteria:
  - Tumor diameter ≤5 cm; or
  - Multiple tumors: maximum number 3, largest tumor ≤3.0 cm; and
  - Not a candidate for subtotal hepatic resection; and
  - No macrovascular involvement; and
  - No identifiable extra-hepatic spread of tumor to surrounding lymph nodes, lungs, abdominal organs or bone
  - Presence of nodule confirmed by testing done within the last 3 months in the following order
    - Abdominal ultrasound
    - If nodule is < 1 cm:
      - liver biopsy to confirm HCC diagnosis
    - If nodule > 1 cm on ultrasound:
      - with 4-phase multidetector computed tomography (CT) scan and if inconclusive
      - test with contrast enhanced magnetic resonance imaging (MRI)

AND

- Presence of any life-threatening complications interfering with quality of life:
  - Intractable ascites
  - Progressive hepatic encephalopathy (with or without bacterial peritonitis)
  - Recurrent portal hypertension bleeding
- Hepato-pulmonary syndrome requiring oxygen therapy
- Hepatic hydrothorax requiring recurrent thoracentesis
  - All pre-transplant criteria are meet

The requesting transplant recipient should not have any of the following **absolute contraindications**:
- Cardiac, pulmonary, and nervous system disease that cannot be corrected and is a prohibitive risk for surgery
- Malignant neoplasm with a high risk for reoccurrence, non-curable malignancy (excluding localized skin cancer)
- Systemic and/or uncontrolled infection
- AIDS (CD4 count < 200 cells/mm³)
- Unwilling or unable to follow post-transplant regimen
  - Documented history of non-compliance
- Inability to follow through with medication adherence or office follow-up
- Chronic illness with one year or less life expectancy
- Limited, irreversible rehabilitation potential
- Active untreated substance abuse issues, requires documentation supporting free from addiction for minimally 6 months if previous addiction was present
- No adequate social/family support

The requesting transplant recipient should be evaluated carefully and potentially treated if the following **relative contraindications** are present:
- Irreversible lung disease patients require consultation and clearance by a Pulmonologist prior to consideration of transplantation, this includes the following:
  - Smoking, documentation supporting free from smoking for 6 months
  - Active peptic ulcer disease
  - Active gastroesophageal reflux disease
  - CVA with long term impairment that is not amendable to rehabilitation or a patient with CVA/transient ischemic attack within past 6 months
  - Obesity with body mass index of >30 kg/m² may increase surgical risk
  - Gall bladder disease requires ultrasound of the gall bladder with treatment prior to transplantation

**Pediatric Criteria for Transplantation:**

1. Molina Healthcare considers cadaver or live donor liver transplantation medically necessary in **infants and children** between the ages of < one month to 18 years when ALL of the following criteria are met:
   - Documentation that all appropriate medical and surgical alternatives to liver transplant have been utilized that includes but is not limited to the following:
     - biliary reconstruction procedures such as biliary tract diversion and/or dilatation by endoscopic retrograde cholangiopancreatography (ERCP) in patients with **primary sclerosing cholangitis**
     - Immunosuppressive and corticosteroid therapy for patients who have severe **autoimmune hepatitis**
     - Chelation therapy for patients with severe chronic **Wilson's disease**
     - Antiviral therapy for patients with decompensated cirrhosis secondary to **chronic hepatitis B**
     - Vasoactive agents, sclerotherapy and band ligation, transjugular intrahepatic portosystemic shunt (TIPS), in patients who have had **variceal bleeding**
     - Low sodium diet, aldosterone antagonists [e.g., spironolactone], loop diuretics [furosemide], and paracentesis in patients who have **ascites**
     - Vasoconstrictor agents, α-adrenergic agonists, TIPS in patients with **hepatic encephalopathy**
     - Hepatoperoenterostomy (Kasai procedure or anastomosis of bile duct remnants in the porta hepatitis to a loop of bowel) in patients with **biliary atresia** (usually done prior to 3 months of age)
     - Special formulas, antihistamines in patients with **Alagille syndrome**
     - Specialized diets in patients with **metabolic disorders**
     - Anticoagulation, portal venous decompression in patients with **Budd-Chiari syndrome**
Life expectancy < than 18 months because of liver disease due to:
  o Severe hepatic dysfunction:
    ▪ Model of End-stage Liver Disease (MELD (used for age > 12 years or PELD used for age < 12 years) score ≥ 15*; or
    ▪ Child-Turcotte-Pugh (CTP) Classification score > 7 (Child's class B or C)**; or
  o Primary Hepatoblastoma that meets all of the following criteria: [ALL]
    ▪ not a candidate for subtotal liver resection; and
    ▪ meets UNOS criteria for tumor size and number; and
    ▪ no identifiable extra-hepatic spread of tumor to surrounding lungs, abdominal organs, bone or other sites

The requesting transplant recipient should not have any of the following absolute contraindications:

  o Cardiac, pulmonary, and nervous system disease that cannot be corrected and is a prohibitive risk for surgery
  o Malignant neoplasm with a high risk for reoccurrence, non-curable malignancy (excluding localized skin cancer)
  o Systemic and/or uncontrolled infection
  o AIDS (CD4 count < 200 cells/mm3)
  o Unwilling or unable to follow post-transplant regimen
    ▪ Documented history of non-compliance
    ▪ Inability to follow through with medication adherence or office follow-up
  o Chronic illness with one year or less life expectancy
  o Severe irreversible extra renal disease
  o Limited, irreversible rehabilitation potential
  o Active untreated substance abuse issues, requires documentation supporting free from addiction for minimally 6 months if previous addiction was present
  o No adequate social/family support

The requesting transplant recipient should be evaluated carefully and potentially treated if the following relative contraindications are present:

  o Irreversible lung disease patients require consultation and clearance by a Pulmonologist prior to consideration of transplantation, this includes the following:
  o Gall bladder disease requires ultrasound of the gall bladder with treatment prior to transplantation

Re-transplantation for Adult and Pediatric: When re-transplantation is being considered, a number of factors need to be considered that include the timing and indication for re-transplant, the presence of other comorbidities, immunosuppressive management, infection prophylaxis, and the likelihood of success.

  The member must meet all of the other requirements for transplantation outlined above AND have:
    o Intractable, acute, or chronic rejection
    o Re-transplantation is not covered for the following conditions because of high mortality and poor outcomes:
      ▪ recurrent hepatitis C in members who have not been successfully treated and achieved sustained virologic response (SVR) after the initial transplant
      ▪ fibrosing cholestatic hepatitis (FCH)
      ▪ recurrent hepatocellular carcinoma (HCC)
      ▪ chronic rejection associated with non-compliance with medical regime
      ▪ cirrhosis in members with relapsing alcoholism
Requests for a third or subsequent liver transplant are not covered

Simultaneous Liver-Kidney Transplantation: Molina Healthcare considers a simultaneous liver and kidney transplant medically necessary when any of the following criteria are met:

- End stage renal disease (ESRD) with cirrhosis and symptomatic portal hypertension or hepatic vein wedge pressure gradient ≥0 mmHg
- Hepatic failure and GFR ≤30 mL/min due to chronic kidney disease
- Acute kidney injury (AKI) or hepatorenal syndrome with serum creatinine ≥2 mg/dL (177 µmol/L) and dialysis ≥8 weeks
- Hepatic failure and chronic kidney disease with a kidney biopsy showing >30 percent glomerulosclerosis or >30 percent fibrosis

CONTINUATION OF THERAPY

When extension of a previously approved transplant authorization is requested, review using updated clinical information is appropriate.

- If Molina Healthcare has authorized prior requests for transplantation, the following information is required for medical review: [ALL]
  - Presence of no absolute contraindications as listed above;
  - History and physical within the last 12 months;
  - Liver chemistries within the last 12 months;
  - Stress test within the last 2 years (< 50 years of age);
  - Psychosocial evaluation or update within the last 12 months;
  - Per initial and updated history and physical, any other clinically indicated tests and/or scans as determined by transplant center physician or Molina Medical Director.

- If authorized prior requests for transplantation were obtained from another insurer, the following information is required for medical review: [ALL]
  - Authorization letter/documentation from previous insurer;
  - Presence of no absolute contraindications as listed above;
  - History and physical within the last 12 months;
  - Liver chemistries within the last 12 months;
  - Stress test within the last 2 years (< 50 years of age);
  - Psychosocial evaluation or update within the last 12 months;
  - Per initial and updated history and physical, any other clinically indicated tests and/or scans as determined by transplant center physician or Molina Medical Director.

COVERAGE EXCLUSIONS

Absolute contraindications to liver transplantation include any of the following:

- Cardiac, pulmonary, and nervous system disease that cannot be corrected and is a prohibitive risk for surgery
- Malignancy outside of the liver within 5 years of the evaluation not including skin cancers
Relative contraindications to liver transplantation include any of the following:

- Cholangiocarcinoma
- Moderate pulmonary hypertension defined as mean pulmonary artery pressure >35 mm Hg

**DESCRIPTION OF PROCEDURE/SERVICE/PHARMACEUTICAL**

Liver transplantation is performed to replace a diseased liver in patients with end-stage liver disease with a healthy liver graft from a donor. The engrafted liver may be all or part of a liver removed from a brain-dead donor (cadaveric) or a portion of a liver from a healthy living donor. Liver transplantation is performed as a treatment of last resort for patients with end-stage liver disease. Patients are prioritized for transplant according to length of time on the waiting list and severity of illness criteria developed by the United Network of Organ Sharing (UNOS) referred to as MELD (model for end-stage liver disease) for adults and PELD (pediatric end-stage liver disease) for children under age 12 years. 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 score incorporates bilirubin, prothrombin time (i.e., INR) and creatinine into an equation, producing a number that ranges from 1 to 40. The PELD score incorporates albumin, bilirubin, INR growth failure, and age at listing. Aside from Status 1, donor livers are prioritized to those with the highest MELD or PELD number; waiting time is only used to break ties among patients with the same MELD or PELD score and blood type compatibility. In the previous system, waiting time was often a key determinant of liver allocation, and yet waiting time was found to be a poor predictor of the urgency of liver transplant, since some patients were listed early in the course of their disease, while others were listed only when they became sicker. In the new MELD/PELD allocation system, patients with higher MELD/PELD scores will always be considered before those with lower scores, even if some patients with lower scores have waited longer. The only priority exceptions to MELD are the categories known as Status 1A and 1B. Status 1A patients have acute (sudden and severe onset) liver failure and a life expectancy of hours to a few days without a transplant. Status 1B is reserved for very sick, chronically ill pediatric patients (age less than 18). All other liver candidates age 12 and older are prioritized by the MELD system.

According to the American Association for the Study of Liver Diseases (AASLD) common indications for liver transplantation include any of the following:

- **Acute Liver Failure** caused by: acute hepatitis A, acute hepatitis B, drug/toxin hepatotoxicity.
- **Chronic noncholestatic & cholestatic disorders** caused by: Alagille syndrome, alcoholic liver disease, autoimmune hepatitis, biliary atresia, chronic hepatitis B & C virus infection, cystic fibrosis, primary biliary cirrhosis, primary sclerosing cholangitis, progressive familiar intrahepatic cholestasis and secondary biliary cirrhosis.
- **Metabolic disorders** caused by: Alpha-1 antitrypsin deficiency, amyloidosis if the amyloid protein is produced by the liver, branch chain, amino acid disorders, familial homozygous hypercholesterolemia, glycogen-storage.
disorders, hereditary hemochromatosis, neonatal hemochromatosis, nonalcoholic steatohepatitis (NASH), Type 1 hyperoxaluria, tyrosinemia, urea cycle defects, fulminant liver failure secondary to Wilson's disease

- Malignancy caused by hepatocellular carcinoma (HCC)
- Miscellaneous conditions such as Budd-Chiari syndrome, neuroendocrine tumors, polycystic liver disease and trauma

Indications for liver transplantation in infants and children include acute liver failure (ALF), chronic liver failure with pruritus, complications of cholestasis and hepatoblastoma. In young children, the most common liver disease leading to transplantation is biliary atresia. 50 percent of all liver transplants in children are for biliary atresia which is characterized by the failure of the bile ducts to develop normally and drain bile from the liver. Acute liver failure from hemochromatosis, leading to a histologic diagnosis of giant-cell hepatitis, is the primary indication for liver transplantation in the neonatal population. Other disease states that progress to end-stage liver disease among pediatric patients and require liver transplantation include metabolic disorders and progressive intrahepatic cholestasis.

The goal of the pretransplant evaluation is to assess the ability of a patient to tolerate the surgery, post-operative immunosuppression, and transplant care. An extensive cardiopulmonary evaluation, screening for occult infection or cancer, and psychosocial evaluation is standard. Specific testing varies depending upon the patient's age, medical history, and transplant center practice. In addition, while a certain battery of tests may initiate the work up, more testing may be indicated depending upon the condition of the patient or the initial test results. The cardiopulmonary evaluation is intended to evaluate for any significant coronary artery or valvular disease, cardiomyopathy, obstructive or restrictive lung disease, and pulmonary hypertension. Some positive results during initial testing may permanently preclude transplant, whereas others may need to be corrected or simply noted prior to surgery. In patients with coronary artery disease or those with severe hypoxemia and elevated mean pulmonary artery pressure measurements morbidity and mortality of liver transplantation are increased. Although neither are absolute contraindications for transplant a detailed evaluation for both is critical. The ideal evaluation of coronary artery disease prior to liver transplantation remains controversial. The reported sensitivity of dobutamine stress echocardiography and myocardial perfusion scintigraphy varies. The limitations of the studies in this population are potentially related to minimal coronary artery reserve, low resting systolic blood pressure, and the use of beta blockers. The current American Association for the Study of Liver Disease practice guidelines recommend that dobutamine stress echocardiography is an effective initial screening tool but that abnormal results should be followed with angiography. Some cardiologists recommend that in patients with known coronary artery disease, diabetes mellitus, or more than two cardiovascular risk factors; coronary angiography is preferred to assess the extent and severity of coronary artery disease. Therefore, ideal testing is still under investigation, and transplant centers vary in their approach. In addition to a standard medical evaluation the initial assessment should include a psychological and social support evaluation to identify issues that may impair a successful outcome after transplantation. These include a lack of information about the nature of the transplant procedure and post-transplant care, drug or alcohol dependence, compliance with complex medical and behavior regimens. The assessment includes education of the family and the support network of the patient because compliance with complex medical and behavior treatment is critical after any organ transplant procedure. Recipients must be able to incorporate complicated medications, follow-up appointments, and frequent laboratory visits into their schedules. Having an adequate support network aware of these requirements will encourage patient compliance and long-term success.

Cadaveric Donor Selection and Operation: In a standard cadaveric liver transplantation, the diseased liver is surgically replaced with a healthy, whole liver. The donor organ is harvested from a brain-dead donor who has been sustained on cardiopulmonary ventilation. To minimize trauma, the donor liver is manipulated as little as possible during removal. The donor’s iliac artery and vein are removed for possible reconstruction of the recipient’s hepatic vessels and portal vein.
Preservation time of the liver can be extended up to 30 hours, but preferably no more than 15 hours, using the University of Wisconsin (UW) cold preservation solution. The potential for bleeding problems is great due to coagulation abnormalities common in patients with liver disease. It takes approximately 2 hours to prepare the donor liver in the operating room; this usually takes place while a different surgical team prepares the recipient’s body. Cadaver liver donors should meet the following criteria:

- Established brain death
- ABO compatibility of donor and recipient. Although ABO incompatibility may not be of disadvantage in children, it may be in adults. Significantly fewer graft failures were observed in adults who received ABO identical grafts when compared with those who received ABO incompatible or no identical grafts.
- Donor size comparable with recipient size
- Normal liver function tests
- Prothrombin time normal or correcting.
- No active or ongoing disseminated intravascular coagulopathy

Standard Recipient Procedure: Hepatectomy is performed in the recipient by isolating the liver from blood circulation. A veno-venous bypass, in which blood from the portal vein and the inferior vena cava flows through an extracorporeal bypass into the superior vena cava system, may be used to reduce bowel congestion and renal function impairment during the anhepatic phase. Incisions are made in the axilla and left groin for placement of cannulas for the bypass. The cadaveric allograft is implanted by vascular anastomoses and cholangioenterostomy, which involves anastomosis of the common bile duct and the jejunum, or end-to-end anastomosis of the common bile ducts. The procedure can take from 3 to 12 hours.

Split Liver Transplantation: In split liver transplantation an adult cadaver liver is split into two grafts; each lobe maintains its vascular and biliary pedicles, which are transplanted along with the graft. Generally, the left lobe is given to a pediatric recipient and the right lobe to an adult patient. The donor organ harvesting procedure is modified accordingly; more preparation time is required since the process of preparing portions of the liver for transplantation is more complex than the process for transplanting the entire organ into a single recipient.

Living Donor Liver Transplantation: Both left- and right-lobe liver grafts have been used for living donor liver transplantation. The surgical technique is similar to that used for split-liver donations from beating heart donors. Although there is risk to the donor, this procedure allows for optimal preparation of the recipient and an ideally tailored graft.

Management of patients who have end-stage liver failure and who are waiting for a suitable donor depends on the cause of liver disease. General medical management strategies may include the following:

- avoidance of alcohol and hepatotoxic drugs,
- vaccination against hepatitis A and hepatitis B to avoid further liver damage,
- use of beta-blockers to prevent or limit variceal bleeding,
- manipulation of diet to avoid encephalopathy and prevent complications in patients who have ascites,
- prompt recognition and treatment of bacterial peritonitis, and
- ablation or resection of tumors in patients who have hepatocellular carcinoma
**CPT** | **Description**
---|---
47133 | Donor hepatectomy (including cold preservation), from cadaver donor
47135 | Liver allotransplantation; orthotopic, partial or whole, from cadaver or living donor, any age
47140 | Donor hepatectomy (including cold preservation), from living donor; left lateral segment only (segments II and III)
47141 | Donor hepatectomy (including cold preservation), from living donor; total left lobectomy (segments II, III and IV)
47142 | Donor hepatectomy (including cold preservation), from living donor; total right lobectomy (segments V, VI, VII and VIII)
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 | 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; 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 | 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; with lobe split of whole liver graft into two partial liver grafts (ie, left lobe (segments II, III, and IV) and right lobe (segments I and V-VIII))
47146 | Backbench reconstruction of cadaver or living donor liver graft prior to allotransplantation; venous anastomosis, each
47147 | Backbench reconstruction of cadaver or living donor liver graft prior to allotransplantation; arterial anastomosis, each

**HCPCS** | **Description**
---|---
S2152 | Solid organ(s), complete or segmental, single organ or combination of organs; deceased or living donor(s), procurement, transplantation, and related complications; including: drugs; supplies; hospitalization with outpatient follow-up; medical/surgical, diagnostic, emergency, and Rehabilitative services, and the number of days of pre- and post-transplant care in the global definition

**ICD-10** | **Description: [For dates of service on or after 10/01/2015]**
---|---
All Diagnoses

**RESOURCE REFERENCES**

**Government Agency**

   - National Coverage Determination (NCD) for Pediatric Liver Transplantation. 260.2. Effective April, 1991.
Professional Society Guidelines


5. Organ Procurement Transplant Network OPTN:


Peer Reviewed Publications and Institutional Transplant Outcomes


Other Resources
27. UpToDate. [Website]. Waltham, MA. 2017
- Lok A. Liver Transplantation for Chronic Hepatitis B Infections.
- Hepatocellular Carcinoma.
- Pulmonary Artery Hypertension.