Medical Coverage Policy

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Coverage Policy Number..... 0355

Liver and Liver-Kidney Transplantation

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INSTRUCTIONS FOR USE

The following Coverage Policy applies to health benefit plans administered by Cigna Companies. Certain Cigna Companies and/or lines of business only provide utilization review services to clients and do not make coverage determinations. References to standard benefit plan language and coverage determinations do not apply to those clients. Coverage Policies are intended to provide guidance in interpreting certain standard benefit plans administered by Cigna Companies. Please note, the terms of a customer's particular benefit plan document [Group Service Agreement, Evidence of Coverage, Certificate of Coverage, Summary Plan Description (SPD) or similar plan document] may differ significantly from the standard benefit plans upon which these Coverage Policies are based. For example, a customer's benefit plan document may contain a specific exclusion related to a topic addressed in a Coverage Policy. In the event of a conflict, a customer's benefit plan document always supersedes the information in the Coverage Policies. In the absence of a controlling federal or state coverage mandate, benefits are ultimately determined by the terms of the applicable benefit plan document. Coverage determinations in each specific instance require consideration of 1) the terms of the applicable benefit plan document in effect on the date of service; 2) any applicable laws/regulations; 3) any relevant collateral source materials including Coverage Policies and; 4) the specific facts of the particular situation. Each coverage request should be reviewed on its own merits. Medical directors are expected to exercise clinical judgment where appropriate and have discretion in making individual coverage determinations. Where coverage for care or services does not depend on specific circumstances, reimbursement will only be provided if a requested service(s) is submitted in accordance with the relevant criteria outlined in the applicable Coverage Policy, including covered diagnosis and/or procedure code(s). Reimbursement is not allowed for services when billed for conditions or diagnoses that are not covered under this Coverage Policy (see "Coding Information" below). When billing, providers must use the most appropriate codes as of the effective date of the submission. Claims submitted for services that are not accompanied by covered code(s) under the applicable Coverage Policy

will be denied as not covered. Coverage Policies relate exclusively to the administration of health benefit plans. Coverage Policies are not recommendations for treatment and should never be used as treatment guidelines. In certain markets, delegated vendor guidelines may be used to support medical necessity and other coverage determinations.

Overview

This Coverage Policy addresses liver transplantation and simultaneous liver-kidney (SLK) transplantation.

Cigna Omnibus Reimbursement Policy R24 addresses donor organ procurement and transport.

Coverage Policy

Transplant wait listing (including model for end-stage liver disease [MELD] exceptions) for liver oncology diagnoses must meet 2/27/2025 National Liver Review Board (NLRB) Adult Transplant Oncology Review Board guidelines.

Liver transplantation is considered medically necessary for an individual with ANY of the following indications:

- end-stage liver failure
- hepatocellular carcinoma and ONE of the following:
  - presented with stage T2 (LI-RADS 5 or biopsy proven; one lesion >2 cm and <5 cm in size, two or three lesions >1 cm and <3 cm in size) which was treated by locoregional therapy or resected but developed T1 or T2 (LI-RADS 5 or biopsy proven) recurrence
  - downstaged to T2 and no evidence of metastasis outside the liver, or macrovascular invasion, or AFP >1,000
- hepatoblastoma which is confined to the liver
- metabolic disease (urea cycle disorder or organic acidemia)
- unresectable perihilar or hilar cholangiocarcinoma and BOTH of the following:
  - administration of neoadjuvant therapy before transplantation
  - absence of regional hepatic lymph node metastases, intrahepatic metastases, or extrahepatic disease
- unresectable solitary intrahepatic cholangiocarcinoma (iCCA) or mixed hepatocellular carcinoma/intrahepatic cholangiocarcinoma (mixed HCC-iCCA) and BOTH of the following:
  - less than or equal to 3 cm
  - 6 months of tumor stability after locoregional or systemic therapy
- neuroendocrine tumors (NET) of gastro-entero-pancreatic (GEP) origin and BOTH of the following:
  - resection of primary malignancy and extra-hepatic disease without any evidence of recurrence for at least six months
  - neuroendocrine liver metastasis (NLM) limited to the liver, bi-lobar, not amenable to resection
- colorectal cancer metastatic to the liver and ALL of the following:
  - primary colorectal cancer was resected with negative resection margins and there is no evidence of local recurrence by colonoscopy within 12 months prior to time of initial exception request
  - no extrahepatic disease or local recurrence, based on CT/MRI (chest, abdomen and pelvis) and PET scan within one month of initial model for end-stage liver disease (MELD) exception request

  - received or receiving first-line chemotherapy/immunotherapy
  - relapse of liver metastases after liver resection or liver metastases not eligible for curative resection
  - no hepatic lesion should be greater than 10 cm before start of treatment
  - must have stability or regression of disease with systemic and/or locoregional therapy for at least 6 months
- unresectable hepatic epithelioid hemangioendothelioma (HEHE)
- hepatic adenomas (HA) and ONE of the following:
  - adenoma in the presence of glycogen storage disease
  - unresectable β Catenin (+) adenoma
  - adenoma(s) and ALL of the following:
    - unresponsive to medical management
    - unresectable
    - progressive or with complication such as hemorrhage or malignant transformation
- cystic fibrosis and BOTH of the following:
  - diagnosis has been confirmed by genetic analysis
  - a forced expiratory volume at one second (FEV1) below 40 percent of predicted FEV1 within 30 days prior to submission of the initial MELD exception request
- familial amyloid polyneuropathy (FAP) and ALL of the following:
  - registered and active on the waiting list for a heart transplant at that transplant hospital, OR has an echocardiogram performed within 30 days prior to submission of the initial MELD exception request showing the candidate has an ejection fraction greater than 40%
  - can walk without assistance.
  - a transthyretin (TTR) gene mutation
  - a biopsy-proven amyloid
- hepatopulmonary syndrome (HPS) and ALL of the following:
  - ascites, varices, splenomegaly, or thrombocytopenia.
  - a shunt, shown by either contrast echocardiogram or lung scan.
  - PaO2 less than 60 mmHg on room air within 30 days prior to submission of the initial MELD exception request
  - no clinically significant underlying primary pulmonary disease
- portopulmonary hypertension and ALL of the following:
  - document via heart catheterization initial mean pulmonary arterial pressure (MPAP) level greater than or equal to 35 mmHg and initial pulmonary vascular resistance (PVR) level greater than or equal to 240 dynes*sec/cm5 (or greater than or equal to 3 Wood units (WU)). These values must be from the same test date.
  - other causes of pulmonary hypertension have been assessed and determined to not be a significant contributing factor
  - initial transpulmonary gradient to correct for volume overload
  - documentation of treatment
  - document via heart catheterization within 90 days prior to submission of the initial exception either of the following:
    - post-treatment MPAP less than 35 mmHg and post-treatment PVR less than 400 dynes*sec/cm5 (or less than 5 Wood units (WU)). These values must be from the same test date.
    - post-treatment MPAP greater than or equal to 35 mmHg and less than 45 mmHg and post-treatment PVR less than 240 dynes*sec/cm5 (or less than 3 Wood units (WU)). These values must be from the same test date.
  - documentation of portal hypertension at the time of initial exception
- primary hyperoxaluria and ALL of the following:
  - on the waiting list for a kidney transplant at that transplant hospital

- alanine glyoxylate aminotransferase (AGT) deficiency proven by liver biopsy using sample analysis or genetic analysis
- glomerular filtration rate (GFR) less than or equal to 25 mL/min on 2 occasions at least 42 days apart

Liver retransplantation is considered medically necessary for an individual considered to have a significant chance of success and who still meet eligibility criteria for primary transplantation for ANY of the following indications:

- primary graft failure
- severe rejection
- recurrence of the disease which prompted the initial liver transplantation
- adult hepatic artery thrombosis (HAT) within 7 days of transplant, with AST greater than or equal to 3,000 U/L and at least ONE of the following:
  - INR greater than or equal to 2.5
  - Arterial pH less than or equal to 7.30
  - Venous pH less than or equal to 7.25
  - Lactate greater than or equal to 4 mmol/L
- adult hepatic artery thrombosis within 14 days of transplant but does not meet criteria for status 1A
- pediatric hepatic artery thrombosis within 14 days of transplant

Simultaneous liver-kidney (SLK) transplantation is considered medically necessary for an individual 18 years or older who meets medical necessity criteria for liver transplantation with ANY of the following indications:

- chronic kidney disease (CKD) with a measured or calculated glomerular filtration rate (GFR) ≤ 60 mL/min for more than 90 consecutive days and ANY of the following:
  - receiving regularly administered dialysis as an end-stage renal disease (ESRD) patient in a hospital based, independent non-hospital based, or home setting
  - at the time of registration on the kidney waiting list, the individual's most recent measured or calculated creatinine clearance (CrCl) or GFR is ≤ 30 mL/min
  - on a date after registration on the kidney waiting list, the individual's measured or calculated CrCl or GFR is ≤ 30 mL/min
- sustained acute kidney injury and at least ONE of the following for the previous 6 weeks:
  - receiving dialysis at least once every 7 days
  - individual has a measured or calculated CrCl or GFR that is consistently ≤ 25 mL/min
- a diagnosis of ANY of the following:
  - hyperoxaluria
  - atypical hemolytic uremic syndrome (HUS) from mutations in factor H or factor I
  - familial non-neuropathic systemic amyloidosis
  - methylmalonic aciduria

Liver transplantation is considered not medically necessary for an individual with ANY of the following contraindications to transplant surgery:

- ongoing alcohol abuse
- active extrahepatic malignancy that is expected to significantly limit future survival
- persistent, recurrent or unsuccessfully treated major or systemic infections
- systemic illness or comorbidities that would be expected to substantially negatively impact the successful completion and/or outcome of transplant surgery
- a pattern of demonstrated noncompliance which would place a transplanted organ at serious risk of failure

- human immunodeficiency virus (HIV) disease unless ALL of the following are noted:
  - cluster determinant (CD)4 count >100 cells/mm^3
  - HIV-1 ribonucleic acid (RNA) undetectable
  - stable antiretroviral therapy for more than three months
  - absence of serious complications associated with HIV disease (e.g., opportunistic infection, including aspergillus, tuberculosis, coccidioidomycosis; or resistant fungal infections; or Kaposi's sarcoma or other neoplasm)
- donor with:
  - ongoing alcohol abuse
  - active malignancy, with the exception of non-melanotic skin cancer
  - persistent, recurrent or unsuccessfully treated infections, including hepatitis A, B or C or HIV
  - active systemic illness or serious comorbidities that would be expected to substantially negatively impact the successful completion and/or outcome of transplant surgery
  - active systemic illness that is likely to negatively affect survival

Health Equity Considerations

Health equity is the highest level of health for all people; health inequity is the avoidable difference in health status or distribution of health resources due to the social conditions in which people are born, grow, live, work, and age.

Social determinants of health are the conditions in the environment that affect a wide range of health, functioning, and quality of life outcomes and risks. Examples include safe housing, transportation, and neighborhoods; racism, discrimination and violence; education, job opportunities and income; access to nutritious foods and physical activity opportunities; access to clean air and water; and language and literacy skills.

Liver transplants in the United States in 2024:

	11,458 All races/ethnicities
65.8%	7,542 White, Non-Hispanic
19.3%	2,216 Hispanic/Latino
6.3%	730 Black, Non-Hispanic
3.6%	420 Asian, Non-Hispanic

Disparities exist in referral and access to the liver transplant (LT) waitlist, and social determinants of health (SDOH) such as income, lack of private insurance and education are increasingly recognized as important factors driving health inequities, including in liver and liver-kidney transplantation. These disparities manifest in the field of liver transplantation via differences in waitlist mortality, transplantation rate, and outcomes after transplantation.

Studies suggest that socioeconomic factors at time of transplant may also impact long-term post-transplant survival. Lower socioeconomic status and minority race and ethnicity have been associated with poorer health outcomes, likely related to unequal distribution of and access to healthcare resources. In some studies, documentation status, unstable housing, unemployment and having public insurance increased the risk of waitlisting and waitlist removal and mortality and negatively influenced post-LT patient survival and graft. Lack of college education also proved to have a detrimental impact on both patient survival and graft survival (Mansour et al., 2022; Haung et al., 2021; Yilma et al., 2023).

General Background

Liver transplantation (LT) is a complex operation requiring vascular reconstruction of the hepatic artery, the portal vein, and the hepatic venous system. Surgical techniques, which continue to evolve, include the orthotopic approach, involving replacement of the recipient liver with the donor liver, and the heterotopic approach in which the recipient liver is left in place and the donor liver is transplanted to an ectopic site. The whole liver, a reduced liver, or a liver segment may be transplanted depending on whether the donor is deceased or living.

Living-donor liver transplantation was introduced as an alternative to deceased donor transplantation in response to the shortage of available deceased donor organs and is used for both adults and children. The graft from a living donor is more commonly from a relative of the recipient. The success of this type of transplantation is based on the ability of the liver to regenerate in both the donor and the recipient. The graft must be of adequate size in order to function in the recipient. The risks and benefits of using a living-donor graft must be considered as there are surgical risks to both the recipient and the donor. Benefits to the recipient include a reduced chance of mortality related to waiting for a deceased donor organ, a reduced likelihood of primary non-function of the graft, and a potential decrease in the chance of graft rejection and the need for immunosuppression. Ethical concerns regarding living donor liver transplantation (LDLT) are related to the potential for donor morbidity and mortality. Opponents argue that it is unacceptable to place a healthy donor at risk of long-term debility or death. Donation of the left lateral segment or left lobe, used primarily in pediatric transplantation, is associated with a 5 to 10 percent chance of surgical complications and a mortality rate of less than 1 percent. The estimated mortality for right lobe donation, used in adult-to-adult LDLT, is around 0.5 percent.

In 2024, 94.7% of liver transplants were from deceased donors and 5.3% were from living donors; 5% were pediatric transplants, 95% adult. There were 785 simultaneous liver-kidney transplants in 2024.

Indications for Liver Transplantation
The major indications for liver transplantation are irreversible hepatic failure or liver cancer**.** Each liver transplant candidate is assigned a score that reflects the probability of death within a 3-month period as determined by the Model for End-Stage Liver Disease (MELD) scoring system or the Pediatric End Stage Liver Disease (PELD) scoring system. Liver candidates can also be assigned a priority status if the candidate meets the requirements for that status. If a candidate's transplant program believes that a candidate's current MELD or PELD score does not appropriately reflect the candidate's medical urgency for transplant, the transplant program may submit a MELD or PELD score exception request to the National Liver Review Board (NLRB).

A liver distribution system based on acuity circles went into effect in February 2020. Since implementation of this policy change, waiting times have decreased for patients with a MELD score of ≥29, while waiting times have increased for those patients with a MELD score of ≤28. This has placed pressure on transplant programs to increasingly pursue DCD and other "marginal" livers for patients listed with a MELD score of ≤28. HCC patients no longer have a "ladder" model of increasing exception scores over time. This has significantly reduced access to standard criteria livers for patients with HCC. As a result, the utilization of DCD livers for patients with HCC has significantly increased.

Donor Health
The health of the donor is also an important factor in liver transplantation outcomes. Hepatitis C virus (HCV) infection in the donor can affect the health of the donor liver, making individuals with persistent, recurrent, or untreated HCV infection unacceptable donors. Likewise, donor candidates

who are hepatitis B surface antigen- (HbsAg) positive are also generally excluded from living-donor liver transplant donation to prevent transmission of disease to recipients. Factors which may negatively affect recipient outcomes after liver transplantation including ongoing alcohol abuse, active systemic illness, and malignancy, are also considered contraindications to donation.

Retransplantation of the Liver
Retransplantation may be appropriate for carefully selected patients experiencing graft loss if an improvement in survival is expected; however, liver retransplantation should be used with discretion in the emergency setting and avoided in patients with little chance of success. In adults, the most common condition resulting in the need for retransplantation of the liver is recurrent infection with hepatitis C virus (HCV). Retransplantation in patients with HCV is controversial due to concerns of aggressive disease recurrence post retransplantation, and decreased patient and graft survival. Several retrospective cohort studies have examined the outcomes of patients retransplanted for recurrent HCV demonstrating lower patient and graft survival in some studies.

Professional Societies/Organizations

Organ Procurement & Transplantation Network (OPTN)
The National Liver Review Board (NLRB) released 'Updates Related to Transplant Oncology' (2/27/25) available at https://optn.transplant.hrsa.gov/policies-bylaws/policies/.

- The purpose of the National Liver Review Board (NLRB) is to provide equitable access to transplant for liver transplant candidates whose calculated model for end-stage liver disease (MELD) score or pediatric end-stage liver disease (PELD) score does not accurately reflect the candidate's medical urgency for transplant.

- The 2/27/25 'Updates Related to Transplant Oncology' is not OPTN Policy. It is not an official guideline for clinical practice, nor is it intended to be clinically prescriptive or to define a standard of care. It is intended to provide guidance to transplant programs and the review board.

- Some of the changes in the Update include:
  - The addition of OPTN guidance specific to colorectal liver metastases and intrahepatic cholangiocarcinoma (iCCA) for the NLRB:
    - Individuals with colorectal liver metastasis (CRLM) may be considered for MELD exception points according to MELD Exception Criteria and MELD Exception Extension Criteria detailed in the Update document.
    - Individuals with intrahepatic cholangiocarcinoma (iCCA) or mixed hepatocellular carcinoma/ intrahepatic cholangiocarcinoma (mixed HCC-iCCA) may be considered for MELD exception points according to MELD Exception Criteria and MELD Exception Extension Criteria detailed in the Update document.
  - Expanding the purview of the Adult HCC Review Board to review non-standard exception cases related to liver cancers and tumors. The Adult HCC Review Board will now be broadened and renamed the Adult Transplant Oncology Review Board.
  - The proposed Adult Transplant Oncology guidance document includes guidance for HCC, iCCA, neuroendocrine tumors, colorectal liver metastases, hepatic epithelioid hemangioendothelioma, and hepatic adenomas. The Adult Transplant Oncology Review Board will review non-standard exception cases for these diagnoses as well as any non-standard exception requests for CCA, and any other liver cancer or tumor-related request.

- The Update document summarizes available evidence to assist clinical reviewers in approving candidates for MELD exceptions in the specific setting of hepatic neoplasms. It

contains guidance for specific clinical situations for use by the review board to evaluate common exception case requests for adult candidates with the following diagnoses:

- Hepatocellular Carcinoma (HCC)
- Hepatic Epithelioid Hemangioendothelioma (HEHE)
- Hepatic Adenomas
- Neuroendocrine Tumors (NET)
- Colorectal Liver Metastases (CRLM)
- Intrahepatic Cholangiocarcinoma (iCCA) (OPTN/NLRB, 2025).

The OPTN Policies document (OPTN, 2/27/25) addresses Allocation of Livers and Liver-Intestines in Policy 9. Sections within the Policy address many topics related to liver transplant including Requirements for Hepatocellular Carcinoma (HCC) MELD or PELD Score Exceptions.

OPTN Policy 9.5 Specific Standardized MELD or PELD Score Exceptions

Candidates are eligible for MELD or PELD score exceptions or extensions that do not require evaluation by the NLRB if they meet any of the following requirements for a specific diagnosis of any of the following:

- Hilar Cholangiocarcinoma (CCA)
- Cystic fibrosis
- Familial amyloid polyneuropathy
- Hepatic artery thrombosis
- Hepatopulmonary syndrome
- Metabolic disease
- Portopulmonary hypertension
- Primary hyperoxaluria
- Hepatocellular carcinoma

OPTN Policy 9.5.I.ii Requirements for Hepatocellular Carcinoma (HCC) MELD or PELD Score Exceptions / Eligible Candidates Definition of T2 Lesions

Candidates with T2 HCC lesions are eligible for a standardized MELD or PELD exception if they have an alpha-fetoprotein (AFP) level less than or equal to 1000 ng/mL. T2 stage is defined as candidates with either of the following:

- One class 5 lesion greater than or equal to 2 cm and less than or equal to 5 cm in size.
- Two or three class 5 lesions each greater than or equal to 1 cm and less than or equal to 3 cm in size.

Note: The NLRB 'Updates Related to Transplant Oncology' (2/27/25) document states Patients who presented with stage T2 HCC (LI-RADS 5 or biopsy proven; one lesion >2 cm and <5 cm in size, two or three lesions >1 cm and <3 cm in size) which was treated by locoregional therapy or resected but developed T1 or T2 HCC (LI-RADS 5 or biopsy proven) recurrence and the transplant program is requesting an initial HCC exception more than 6 months but less than 60 months following initial treatment or resection are eligible for a MELD score exception without a six month delay period" (NLRB/ 2025).

A candidate who has previously had an AFP level greater than 1000 ng/mL at any time must qualify for a standardized MELD or PELD exception according to Policy 9.5.I.iv: Candidates with Alpha-fetoprotein (AFP) Levels Greater than 1000.

OPTN Policy 9.5.I.iii Lesions Eligible for Downstaging Protocols

Candidates are eligible for a standardized MELD or PELD exception if, before completing local-regional therapy, they have lesions that meet *one* of the following criteria:

- One class 5 lesion greater than 5 cm and less than or equal to 8 cm
- Two or three class 5 lesions that meet all of the following:
  - at least one lesion greater than 3 cm
  - each lesion less than or equal to 5 cm, and
  - a total diameter of all lesions less than or equal to 8 cm
- Four or five class 5 lesions each less than 3 cm, and a total diameter of all lesions less than or equal to 8 cm

For candidates who meet the downstaging criteria above and then complete local-regional therapy, their viable lesions must subsequently meet the requirements for T2 stage according to Policy 9.5.I.ii: Eligible Candidates Definition of T2 Lesions to be eligible for a standardized MELD or PELD exception. Downstaging to meet eligibility requirements for T2 stage must be demonstrated by dynamic-contrast enhanced CT or MRI performed after local-regional therapy. Candidates with lesions that do not initially meet the downstaging protocol inclusion criteria who are later downstaged and then meet eligibility for T2 stage are not automatically eligible for a standardized MELD or PELD exception and must be referred to the NLRB for consideration of a MELD or PELD exception.

OPTN Policy 9.5.I.iv Candidates with Alpha-fetoprotein (AFP) Levels Greater than 1000
Candidates with lesions meeting T2 stage according to Policy 9.5.I.ii Eligible Candidates Definition of T2 Lesions but with an alpha-fetoprotein (AFP) level greater than 1000 ng/mL may be treated with local-regional therapy. If the candidate's AFP level falls below 500 ng/mL after treatment, the candidate is eligible for a standardized MELD or PELD exception as long as the candidate's AFP level remains below 500 ng/mL. Candidates with an AFP level greater than or equal to 500 ng/mL following local-regional therapy at any time must be referred to the NLRB for consideration of a MELD or PELD exception.

OPTN Table 9-17: Medical Eligibility Criteria for **Liver-Kidney Allocation** (2/27/25) OPTN Policy)

If the candidate's transplant nephrologist confirms a diagnosis of:	Then the transplant program must report to the OPTN and document in the candidate's medical record:
Chronic kidney disease (CKD) with a measured or calculated glomerular filtration rate (GFR) less than or equal to 60 mL/min for greater than 90 consecutive days	At least *one* of the following: • That the candidate has begun regularly administered dialysis as an end-stage renal disease (ESRD) patient in a hospital based, independent non-hospital based, or home setting. • At the time of registration on the kidney waiting list, that the candidate's most recent measured or calculated creatinine clearance (CrCl) or GFR is less than or equal to 30 mL/min. • On a date after registration on the kidney waiting list, that the candidate's measured or calculated CrCl or GFR is less than or equal to 30 mL/min.
Sustained acute kidney injury	At least *one* of the following, or a combination of *both* of the following, for the last 6 weeks: • That the candidate has been on dialysis at least once every 7 days. • That the candidate has a measured or calculated CrCl or GFR less than or equal to 25 mL/min at least once every 7 days.

If the candidate's transplant nephrologist confirms a diagnosis of:	Then the transplant program must report to the OPTN and document in the candidate's medical record:
	If the candidate's eligibility is not confirmed at least once every seven days for the last 6 weeks, the candidate is not eligible to receive a liver and a kidney from the same donor.
Metabolic disease	A diagnosis of at least *one* of the following: • Hyperoxaluria • Atypical hemolytic uremic syndrome (HUS) from mutations in factor H or factor I • Familial non-neuropathic systemic amyloidosis • Methylmalonic aciduria

National Comprehensive Cancer Network Guidelines™ (NCCN Guidelines™)
The NCCN Guidelines (Version 4.2024 — January 10, 2025) for Hepatocellular Carcinoma states the NCCN Guidelines recommend that patients with disease meeting the UNOS criteria be considered for transplantation using either cadaveric or living donation. Patients with tumor characteristics that are marginally outside of the UNOS guidelines may be considered for transplantation at select institutions. For patients with initial tumor characteristics beyond the Milan criteria who have undergone successful downstaging therapy (ie, tumor currently meeting Milan criteria), transplantation can also be considered.

The NCCN Guidelines (Version 6.2024 — January 10, 2025) for Biliary Tract Cancers notes the following:

- Intrahepatic Cholangiocarcinoma: There are clinical trials investigating whether liver transplantation would be beneficial for patients with intrahepatic cholangiocarcinoma (CCA) (NCT02878473 and NCT04195503). Very highly selected candidates may meet the criteria for referral. However, these trials are only available at a small subset of centers.

- Extrahepatic Cholangiocarcinoma: Liver transplantation is a potentially curative option for selected patients with lymph node-negative, non-disseminated, locally advanced hilar CCAs. Liver transplantation should be considered only for highly selected patients (ie, tumor ≤3 cm in radial diameter, no intrahepatic or extrahepatic metastases, no nodal disease) with either unresectable disease with otherwise normal biliary and hepatic function or underlying chronic liver disease precluding surgery. The Panel encourages continuation of clinical research in this area, and referral of patients with unresectable disease to a transplant center with a United Network for Organ Sharing-approved protocol for transplant of CCA should be considered.

The NCCN Guidelines (Version 1.2025 — February 7, 2025) for Colon Cancer does not address liver transplant. Hepatic resection is the treatment of choice for resectable liver metastases from CRC. When hepatic metastatic disease is not optimally resectable based on insufficient remnant liver volume, approaches using preoperative portal vein embolization, staged liver resection, or yttrium-90 radioembolization can be considered (page COL-C).

American Association for the Study of Liver Disease (AASLD)/ American Society of Transplantation (AST): The AASLD and AST have published numerous joint guidelines, including some specific to liver transplantation.

Evaluation for Liver Transplantation in Adults: 2013 Practice Guideline by the AASLD and the American Society of Transplantation (Martin, et al., 2014) states liver transplantation (LT) is indicated for severe acute or advanced chronic liver disease when the limits of medical therapy have been reached. Recognition of cirrhosis per se does not imply a need for LT. Many patients with cirrhosis in the absence of an index complication such as ascites or variceal hemorrhage will not develop hepatic decompensation, although patients with cirrhosis have diminished survival compared to the population as a whole. Acute liver failure complications of cirrhosis include ascites, chronic gastrointestinal blood loss due to portal hypertensive gastropathy, encephalopathy, liver cancer, refractory variceal hemorrhage and synthetic dysfunction.

Evaluation of the Pediatric Patient for Liver Transplantation: 2014 Practice Guideline by the American Association for the Study of Liver Diseases, American Society of Transplantation and the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition (Squires, et al., 2014) indications for LT include biliary atresia (32%), metabolic/genetic conditions (22%), acute liver failure (11%), cirrhosis (9%), liver tumor (9%), immune-mediated liver and biliary injury (4%), and other miscellaneous conditions (13%). Within these broad categories rest many rare conditions with myriad presentations.

American Society of Transplantation (AST): The AST has several Key Position Statements, including but not limited to Deceased Organ Donation, Insurance Coverage for Living Donors, and Insurance Coverage for Transplant Recipients, and Living Organ Donation.

Kidney Disease: Improving Global Outcomes (KDIGO): The KDIGO 2020 Clinical Practice Guideline on the Evaluation and Management of Candidates for Kidney Transplantation guideline included recommendations regarding liver-kidney transplantation:

- Hyperoxaluria (oxalosis), primary and secondary 9.16.1: We suggest that candidates with primary hyperoxaluria type 1 be considered for combined or sequential liver-kidney transplantation (2C).
- Hepatitis C virus (HCV) 10.5.2.4.2: We recommend referring patients with HCV and decompensated cirrhosis for combined liver-kidney transplantation (1B) and deferring HCV treatment until after transplantation (1D).
- Liver disease 16.7.3: We recommend that candidates with cirrhosis or suspected cirrhosis be referred to a specialist with expertise in combined liver-kidney transplantation for evaluation (1B).

Description for grading recommendations:
Level 1: "We recommend". Most patients should receive the recommended course of action.
Level 2: "We suggest". Different choices will be appropriate for different patients. Each patient needs help to arrive at a management decision consistent with her or his values and preferences.
A: High Quality of Evidence. We are confident that the true effect lies close to that of the estimate of the effect.
B: Moderate Quality of Evidence. The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
C: Low Quality of Evidence. The true effect may be substantially different from the estimate of the effect.
D: Very low Quality of Evidence. The estimate of effect is very uncertain, and often will be far from the truth (Chadban, et al., 2020).

Medicare Coverage Determinations

	Contractor	Determination Name/Number	Revision Effective Date
NCD		Adult Liver Transplantation (260.1) Pediatric Liver Transplantation (260.2)	9/04/2012 9/01/1991
LCD		No Determination found	

Note: Please review the current Medicare Policy for the most up-to-date information.
(NCD = National Coverage Determination; LCD = Local Coverage Determination)

Coding Information

Notes:

1. This list of codes may not be all-inclusive since the American Medical Association (AMA) and Centers for Medicare & Medicaid Services (CMS) code updates may occur more frequently than policy updates.
2. Deleted codes and codes which are not effective at the time the service is rendered may not be eligible for reimbursement.

Considered Medically Necessary when criteria in the applicable policy statements listed above are met:

CPT®* Codes	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 2 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 2 partial liver grafts (ie, left lobe [segments II, III, and 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	Backbench reconstruction of cadaver or living donor liver

CPT®* Codes	Description
	graft prior to allotransplantation; arterial anastomosis, each

HCPCS Codes	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

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Revision Details

Type of Revision	Summary of Changes	Date
Annual review	• Added a disclaimer statement for transplant wait listing • Added policy statements for: ➢ intrahepatic cholangiocarcinoma ➢ colorectal cancer metastatic to the liver (CRLM) ➢ hepatic epithelioid hemangioendothelioma (HEHE) ➢ hepatic adenomas ➢ cystic fibrosis ➢ familial amyloid polyneuropathy (FAP) ➢ hepatopulmonary syndrome ➢ portopulmonary hypertension ➢ primary hyperoxaluria	4/15/2025

	• Revised policy statements for hepatocellular carcinoma (HCC), metabolic disease, perihilar or hilar cholangiocarcinoma, and neuroendocrine tumors. • Revised the policy statement for liver retransplantation, specific to hepatic artery thrombosis. • Revised the liver transplant contraindications policy statement. • Removed policy statement addressing mechanical preservation machine	
Annual review	• Revised policy statement for liver transplantation • Revised policy statement for mechanical preservation machines	5/15/2024