Liver Transplantation for Metastatic Colorectal Cancer Protocol
University of Cincinnati

Inclusion Criteria
Patients can be considered for liver transplantation for metastatic colorectal cancer (mCRC) if the following criteria are met:

Patient specific factors
- Good performance status, ECOG 0 or 1
- Meet standard liver transplant inclusion criteria (cardiopulmonary, financial, psychosocial)

Primary diagnosis
- Histological diagnosis of colon/rectal adenocarcinoma
- BRAF and KRAS wild type, MSI stable
- At least one year from time of CRC diagnosis to time of listing for liver transplantation

Treatment of primary CRC
- Standard surgical resection procedure of primary tumor with adequate resection margins, including circumferential resection margins (CRM) of at least >= 2 mm for rectal primary (R0 resection)
- No evidence of local recurrence by colonoscopy within 12 months of listing

Evaluation of extrahepatic disease
- No signs of extrahepatic disease or local recurrence, based on CT/MRI (chest, abdomen and pelvis) and/or PET scan within one month of listing. (Addition of PET scan at discretion of treating oncologist).

Evaluation of hepatic disease and prior systemic/liver directed treatment
- Received first-line chemotherapy
- Relapse of liver metastases after second liver resection or liver metastases not eligible for curative resection
- No hepatic lesion should be greater than 10 cm before start of chemotherapy
- Must have stability or regression of disease with systemic and/or locoregional therapy

Management of Synchronous Disease
- Must meet all above criteria for consideration with the exception of treatment of primary CRC
- Patient evaluated by multidisciplinary team to ensure candidacy for transplant
- Colectomy performed >6 months after initial diagnosis
- Hold chemotherapy for 4 weeks prior to colectomy, consider loop ileostomy for mid to low rectal cancers.
- Resume chemotherapy 4 to 8 weeks after colectomy, once cleared by colorectal surgeon/treating oncologist
- Consider local regional therapy to PET avid hepatic lesions following colectomy during chemotherapy holiday
- Minimum of 4 months of chemotherapy after colectomy before listing for transplant

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**Exclusion Criteria**
Patients will not be considered for liver transplantation for metastatic colorectal cancer (mCRC) if the following criteria are met:

**Patient specific factors**
- Weight loss >10% in last 6 months
- Other malignancies
- Known hypersensitivity to rapamycin
- Women who are pregnant or breast feeding
- Patients with hereditary CRC syndromes (FAP or Lynch Syndrome)

**Primary and mCRC specific factors**
- Palliative resection of primary CRC tumor
- Prior extra-hepatic disease
- Local relapse
- Patients who had not received standard pre-operative, peri-operative or post-operative treatment for primary CRC
- Rising CEA level without radiographic evidence of disease progression or new lesion

**Waitlist surveillance**
- CT/MRI (chest, abdomen and pelvis) and/or PET scan with CEA every three months from listing until transplant or one of the following occurs:
  1. Progression of hepatic disease
  2. Development of extrahepatic disease

**Transplant**
- Conventional liver transplant operation, with allocation based on candidates native MELD score.
- Only utilize extended criteria liver allografts (elderly (>70), steatotic (>30% macro), split livers, HBV/HCV NAT +, DCD, national shares, or regional open offers) if candidate native MELD < 15. Living donor allografts can be utilized once program established.

**Immunosuppression**
- Standard immunosuppression regimen with conversion to mTOR inhibitor from calcineurin inhibitor at one-month post-transplant.

**Post-transplant surveillance**
- CT/MRI (chest, abdomen and pelvis) with CEA every three months for the first 2 years then every 6 months for up to 10 years.
- Colonoscopy – if advanced adenoma (villous polyp, polyp > 1cm or high-grade dysplasia) on pre-transplant colonoscopy, repeat in one year from last colonoscopy, otherwise repeat in three years from last colonoscopy then every five years.