End stage liver disease

CCHCS Care Guide: End Stage Liver Disease

**DIAGNOSTIC CRITERIA/EVALUATION**

- **Cirrhosis**: The following laboratory findings suggest advanced parenchymal disease:
  - Serum albumin <2 g/dL
  - INR >1.5
  - Platelet count >75,000/L (less than 100,000/L usually precedes other manifestations of cirrhosis)

- **Decompensated Cirrhosis defined by the presence of:**
  - Ascites
  - Gastrointestinal bleeding
  - Hepatic encephalopathy
  - Hepatorenal syndrome
  - Ongoing jaundice with bilirubin >3 mg/dL for greater than 3 days

**DEVELOPMENTAL HISTORY INCLUDING:**

- **Symptoms:** Abdominal pain, nausea, fatigue, weight change, jaundice, itch, hemorrhagic manifestations, hemorrhoids, sexual dysfunction, edema, or ascites

- **Medication:** Including history of controlled therapy for hepatitis C

- **Physical examination:** Including degree of ascites, weight and temperature, abnormal hair, cardiac disease, abdominal masses, neurologic exam, skin and extremity edema

- **Labor:** SGOT, SGPT, and PT/INR normal range, and Hb if not done previously

- **Liver biopsy:** in selected patients

**TREATMENT OPTIONS**

**Pharmacologic therapy, psychosocial, and management of complications (all follow care plan), September 1, 2016**

- **Comprehensive care**
  - Patients with advanced cirrhosis will benefit from advanced liver disease treatment, if appropriate: TIPS, transjugular intrahepatic portal systemic shunt (TIPS), or liver transplantation

- **Pharmacologic and nonpharmacologic interventions**
  - 

- **Protein, fluid, and electrolyte**
  - Cautiously: Protein intake: 1.2-1.5 g/kg/day, fluid intake 1.5-2 L/day

- **Supportive care**
  - Regular hospital visits, IV fluids, diuretics, nutritional counseling, management of complications, and treat associated infections

**MONITORING**

- **If patient has achieved treatment goals:**
  - Regular monitoring of the patient's progress

**PROGNOSIS**

- **Factors affecting prognosis:**
  - Degree of liver function impairment
  - Presence of complications
  - Age, sex, race, and underlying disease

**ADDITIONAL RESOURCES**

- Internet resources: [www.cchcs.org](http://www.cchcs.org)
Philosophy …

- Sick enough to really need a transplantation
- Not too sick in order to still warrant a transplantation
- (Min. 50 % survival chance at 5 years)
Cirrhosis - MELD score

- \[ R = \{0.957 \times \log_e(\text{creatinine mg/dl}) + 0.378 \times \log_e(\text{tot. Bilirubin mg/dl}) + 1.120 \times \log_e(\text{INR}) + 0.643\} \times 10 \]
- Predicts risk of mortality without transplantation
- "Break even point" ~ MELD 15
Selectie transplant kandidaat

MELDNa Score Predicts Death in Patients with Cirrhosis

**MELD = Model for End Stage Liver Disease**
**MELDNa = MELD Sodium Score (NA)**

Equation that Includes INR, Bilirubin, Sodium and Creatinine

![MELD Score Diagram](image)

MELD Score: 15
3 Month Mortality: 6.0%

Wiesner, et al
Alcoholic liver cirrhosis

- Primary cause or co-factor?
- Psychological evaluation: low risk of recidivism
- Abstinence period of 6 months
  - Exclude recuperation of liver
  - Increase chances of compliance
Fulminant Liver Failure

Sub Fulminant Liver Failure
Hepatitis B, C

Hepatitis B
- Thanks to HBIG and oral antivirals no contraindication

Hepatitis C
- Both primary and retransplantation accepted despite nearly 100% recurrence
- HCV pos donor acceptable
HBV and HCV

• Chronic HBV infection accounts for ≅1 million deaths/year worldwide

• Outcome is accelerated if there is:
  – heavy alcohol intake
  – co-infection with HIV, HCV, or HDV

• Liver transplantation is needed if:
  – fulminant hepatitis
  – HBV-related cirrhosis
  – HBV-related HCC

main issues:

- HBV re-infection
- rapid progression of HBV-related liver lesions
Natural history of fatty liver disease: Definitions of NAFLD, NAFL and NASH

NAFLD
- Excessive hepatic fat accumulation with IR
- Steatosis in >5% of hepatocytes
- Exclusion of secondary causes and AFLD

NAFL
- Pure steatosis
- Steatosis and mild lobular inflammation

NASH

HCC

Early F0/F1 fibrosis
Fibrotic ≥F2 to ≥F3 fibrosis
Cirrhotic F4 fibrosis

Definitive diagnosis of NASH requires a liver biopsy
The clinical challenge

• Old(er) age, high(er) body-mass index
• Many comorbidities (diabetes, kidney, cardiovascular…)
• Substantial proportion unaware of their liver condition
• High(er) rate of malignancies
Nutritional Cirrhosis (post-gastric bypass)

Recurrence of HCV cirrhosis
HCC on Post-HCV Cirrhosis

Primary Sclerosing Cholangitis
Polycystic Liver

Budd-Chiari Syndrome
Transplantatie (immunosuppressie)

Maligniteit
Liver Transplantation for HCC: Milan Criteria (Stage 1 and 2)

- Single tumor, not > 5 cm
- Up to 3 tumors, none > 3 cm
- Absence of macroscopic vascular invasion
- Absence of extrahepatic spread

- 5-yr survival with transplantation: ~ 70%
- 5-yr recurrent rates: < 15%

Liver Transplantation for Nonresectable Liver Metastases From Colorectal Cancer
Barcelona Clinic Liver Cancer Staging

BCLC Staging and Treatment Strategy

- **Very early stage (0)**
  - Single < 2 cm
  - Carcinoma in situ
- **Early stage (A)**
  - Single or 3 nodules < 3 cm, PS 0
- **Intermediate stage (B)**
  - Multinodular, PS 0
- **Advanced stage (C)**
  - Portal invasion, N1, M1, PS 1-2
- **Terminal stage (D)**
  - Okuda 3, PS > 2, Child-Pugh C

- **HCC**
  - Okuda 1-2, PS 0-2, Child-Pugh A-B

**Treatment Options**

- **Resection**
  - Curative treatments (30%); 5-yr survival: 40%-70%
- **Liver transplantation**
- **RFA/PEI**
- **TACE**
  - RCTs (50%); 3-yr survival: 10%-40%
- **Sorafenib**
  - Symptomatic (20%); survival < 3 mos
Indicaties levertransplantatie

- Alcohol
- HCV
- HBV
- NASH
Contraindications

- Psychosocial
  - Predictable non-compliance

- Cardiopulmonary
  - General
  - Advanced hepatopulmonary syndrome

- Infectious

- Extrahepatic tumor disease

- Technical
Uitwerking transplant kandidaat

- Leeftijd
- Co-morbiditeiten
- Maligniteit in de voorgeschiedenis
- Compliance
- Alcohol- en rookstop
Donor

- Leeftijd < 70
- BMI < 30 kg/m2
- Steatosis < 30%
- Normale leverset
Some words on expanding the donor pool
• Due to organ shortage, the waiting list time has grown longer
• Alternatives to cadaveric ‘standard’ liver transplantation at present available:

1. Domino transplantation (amyloidosis)
2. Non-heart-beating donors
3. Marginal donors (HBsAg+, HCV+, Fatty/old grafts)
4. Split livers
5. Living donor liver transplantation
PHASES

 PROCUREMENT
 PREANHEPATIC PHASE
 ANHEPATIC PHASE
 REPERFUSION PHASE
 POSTANHEPATIC PHASE
PREANHEPATIC PHASE
TECHNIQUES
Technische procedure
Fig. 129.13  The hilar dissection in the liver recipient.
EXCISION OF VENA CAVA

PRESERVATION OF CAVAL VEIN
EXCISION OF VENA CAVA
venovenous bypass
EXCISION OF VENA CAVA
CAVAL PRESERVATION
REPERFUSION:

- IVC – PV – reperfusion - artery
- IVC - PV – artery - reperfusion
Figure 16-12. The recipient patch is created using the common hepatic artery, gastroduodenal artery, and hepatic artery proper. Both ends are oriented as needed to perform the anastomosis.
Flow measurement
Postoperatief herstel

- Algemene toestand patiënt
- Kwaliteit donor lever

- Vroegtijdige problemen:
  - Bloeding
  - Gallekkage
  - Arteriële thrombose
Opvolging

- Triple immunsuppressie: calcineurin inhibitor (FK-506), steroids, MMF
  - Rejectie
  - Opportunistische infecties
  - Maligniteit
- Biliaire aandoeningen (Non-heart beating donors)
- Compliance
- Recidief alcohol inname (10-20%)
- Graft- and patient survival (> 80-85%)