UT Southwestern Medical Center

Indications for Liver Transplant

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Acute Liver Failure

In the last 26 weeks:

- INR > 1.5
- Encephalopathy
- No pre-existing liver disease

Acute Liver Failure Prognostic 4+
Prognostic Model Scoring
Tung Tree LLC
Designed for iPad
★★★★★ 5.0 • 1 Rating
Free

Only on the Apple App Store

Cancer in the Liver

- Hepatocellular carcinoma
- Hilar cholangiocarcinoma
- Epithelioid hemangioendothelioma

Emerging:

- Unresectable colon cancer metastases

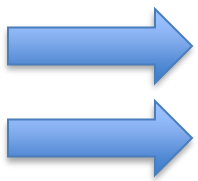
Cirrhosis and Associated Complications

The main decompensations

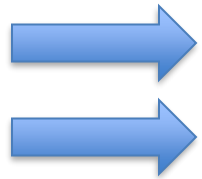
- Refractory ascites
- Refractory hepatic encephalopathy
- Refractory variceal hemorrhage
- Chronic blood loss from portal hypertensive gastropathy

Other rare conditions

- Hepatopulmonary syndrome
- Portopulmonary hypertension
- Intractable pruritus in cholestatic patients
- Hepatic hydrothorax



Shortness of breath in a cirrhotic patient? Check an echo with bubbles



Elevated RVSP, RH Strain

+ Bubbles after 5-6 beats

Metabolic Disorders

- Familial amyloid polyneuropathy
- Primary hyperoxaluria
- Glycogen storage diseases type I and IV
- Tyrosinemia
- Acute intermittent porphyria

Four main categories of LT indications:

- **Acute liver failure.**
- **Cirrhosis and associated complications.**
- **Cancer in the liver.**
- **Metabolic disorders.**

Objectives

- When is liver transplant beneficial in chronic liver disease?
- Alcohol related liver disease and liver transplant
- Liver transplant oncology

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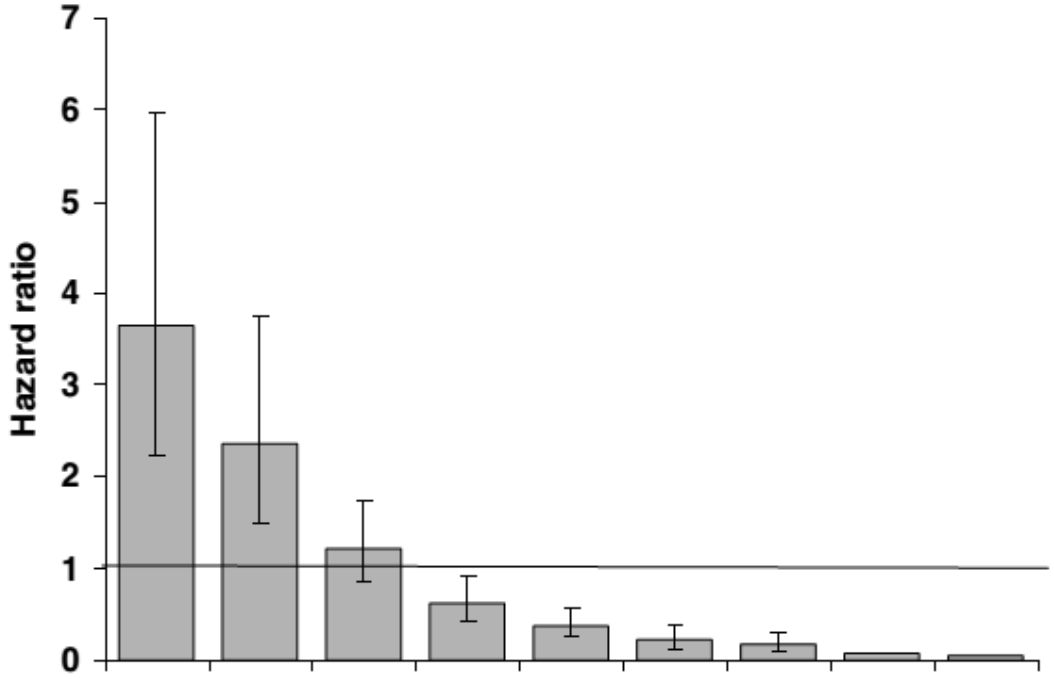
When in the course of chronic liver disease should patients be referred for transplant?

MELD Greater Than …



MELD	6-11	12-14	15-17	18-20	21-23	24-26	27-29	30-39	≥40
Hazard Ratio	3.64	2.35	1.21	0.62	0.38	0.22	0.18	0.07	0.04
p-values	<0.001	<0.001	0.41	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001

Merion et al, Am J Transplant, 2004

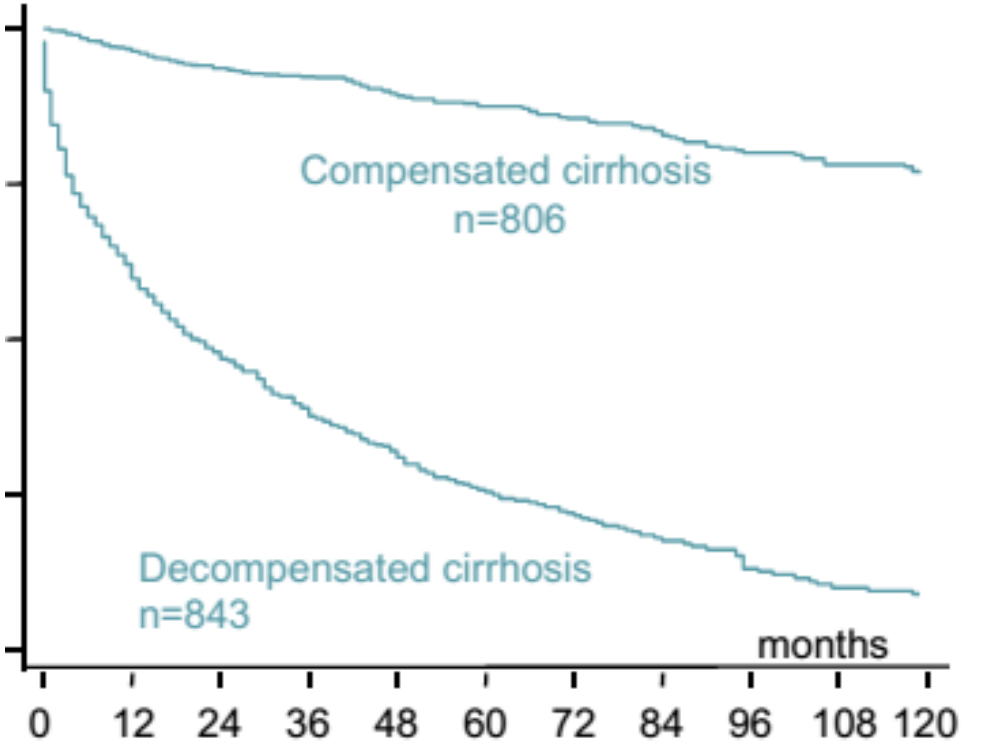
Share 15 Rule (2005)

- Organs must first be offered to patient with a MELD score of 15 or greater locally and then regionally before making organs available to local patients with a MELD score under 15.

Classification	Candidates with a MELD or PELD score of at least	And registered at a transplant hospital that is at or within this distance from a donor hospital	Donor blood type	Candidate blood type
37	15	Nation	O	O
38	15	Nation	Non-O	Any
39	Any	150NM	O	O
40	Any	150NM	Non-O	Any

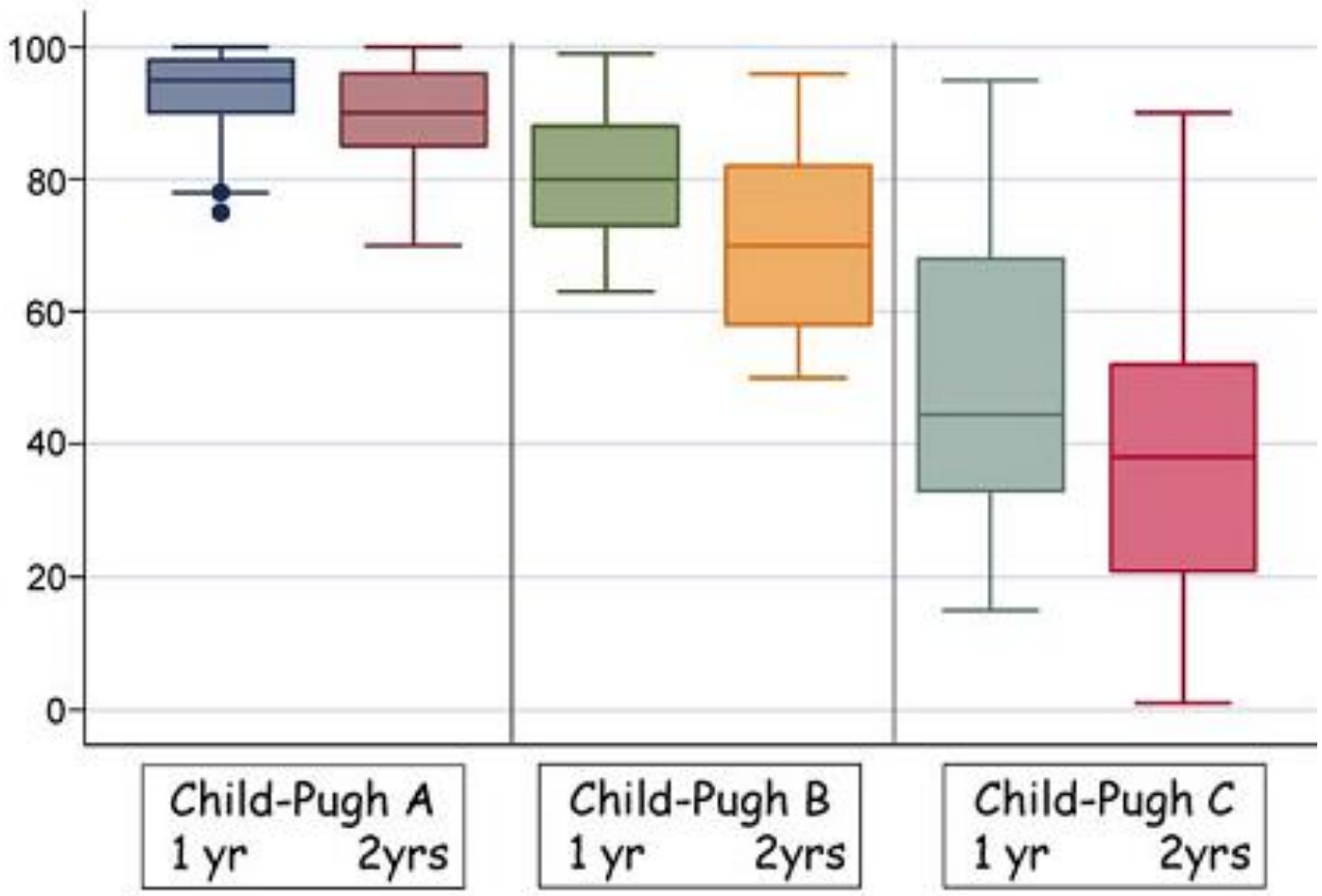
Current liver allocation policy, OPTN, 9/2022

Decompensated patients do poorly, regardless of MELD



D'Amico et al, J Hepatol 2006

The degree of decompensation matters: CP Score



D'Amico et al, J Hepatol 2006

Survival after liver transplant

	UTSW
1 year survival	95.8%
3 year survival	87.6%

SRTR Data, 1/2020-12/2021

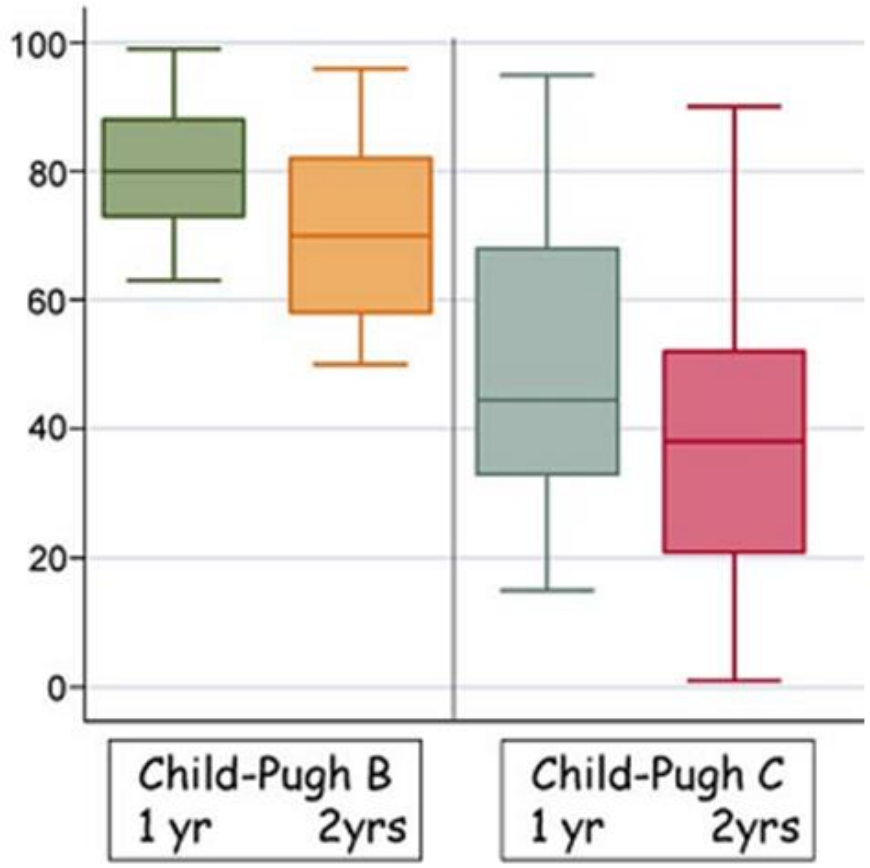
Wait or evaluate?

	UTSW
1 year survival	95.8%
3 year survival	87.6%

Transplant

Where would you take your chances?

Wait

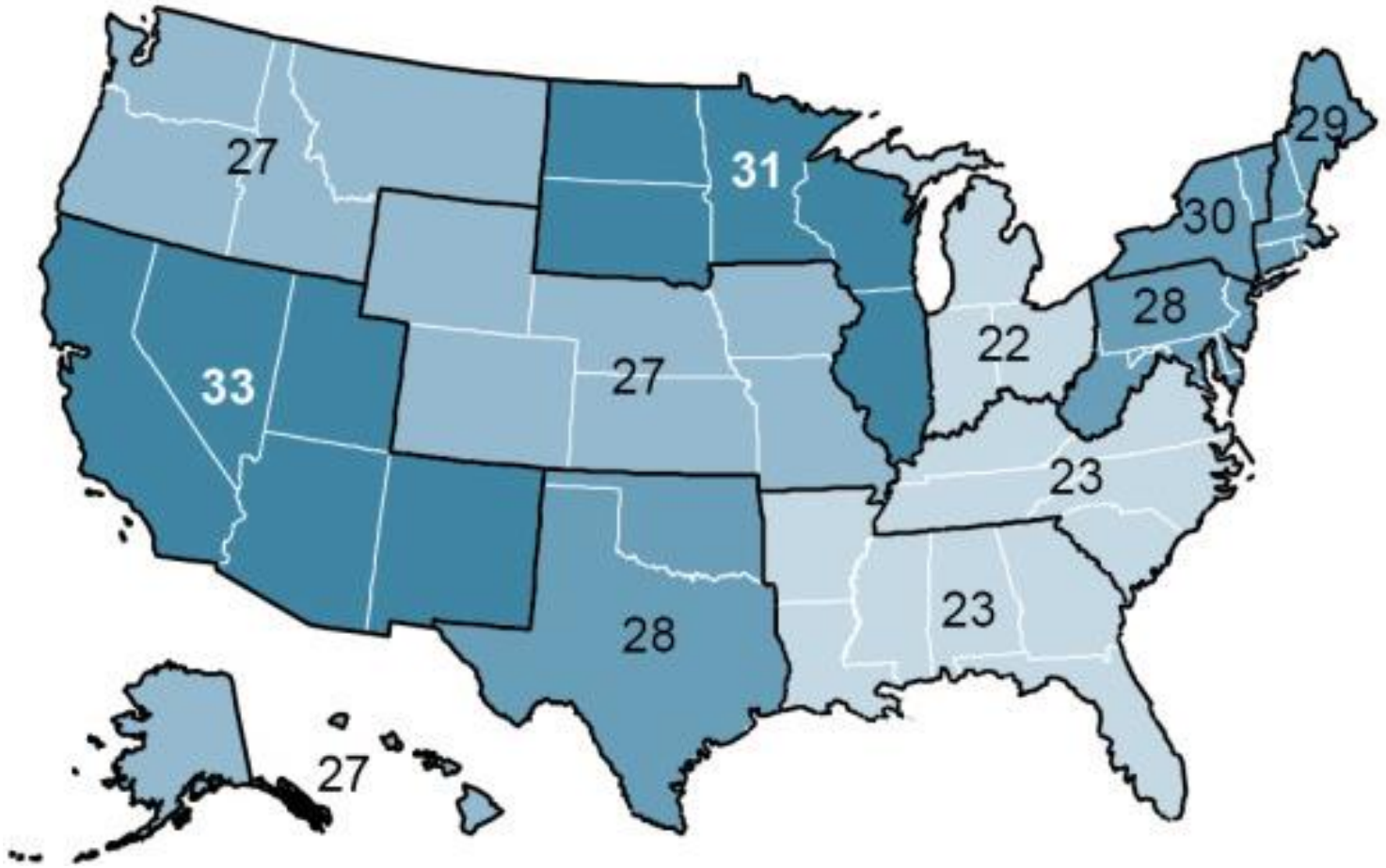


But how do we actually get a liver?

- Deceased donor
  - Traditionally, donation after brain death
  - Allocated by MELD score
- Living donor
  - Donation based on donor wishes

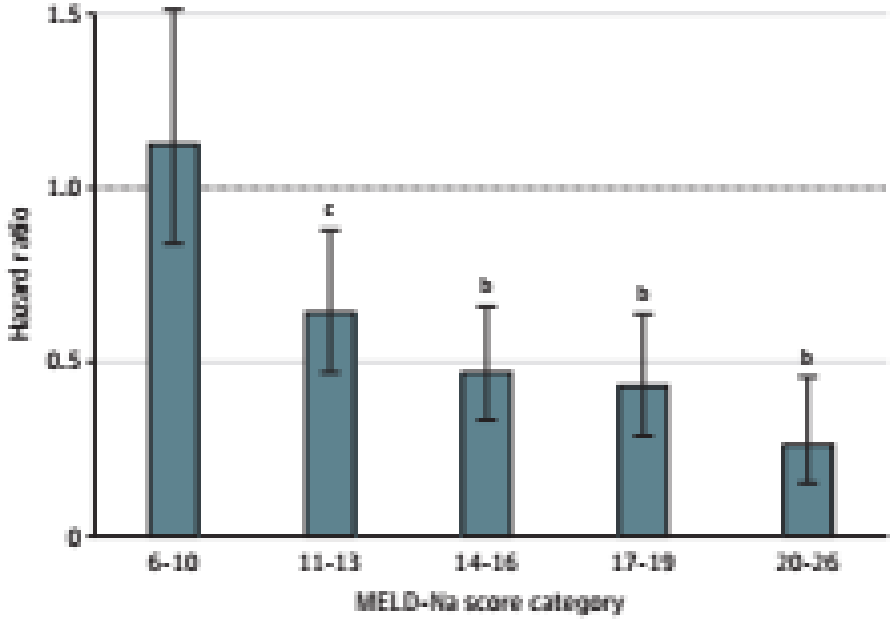
UNOS data from 2013

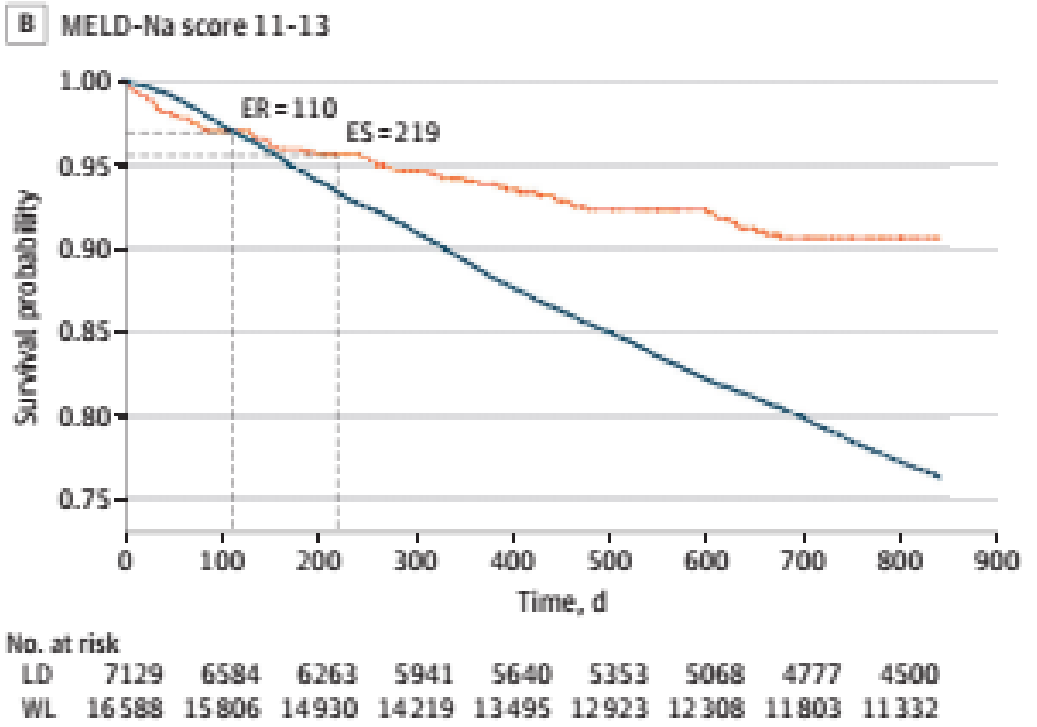
Earlier deceased donor may not always be possible



UNOS data from 2013

Living donor can “fast track” liver transplant

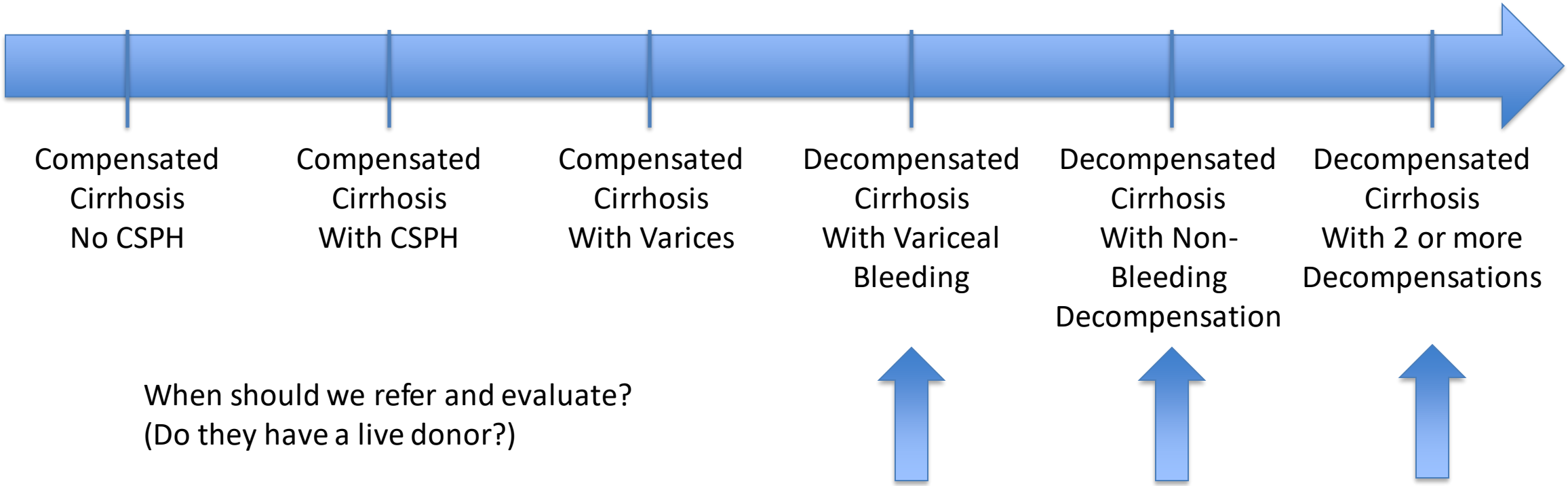




Survival benefit may be seen down to MELD of 10-11

Jackson et al. JAMA Surgery 2022.

As decompensation unfolds, start considering LT



As decompensation unfolds, start considering LT

Patients with cirrhosis should be referred for transplantation when they develop evidence of **hepatic dysfunction** (CTP>7 and MELD>10) or when they experience their **first major complication** (ascites, variceal bleeding, or hepatic encephalopathy) (II-3).

Let us sort how to get an organ.


AASLD PRACTICE GUIDELINE

AASLD Practice Guidelines: Evaluation of the Patient for Liver Transplantation

Karen F. Murray and Robert L. Carithers, Jr.

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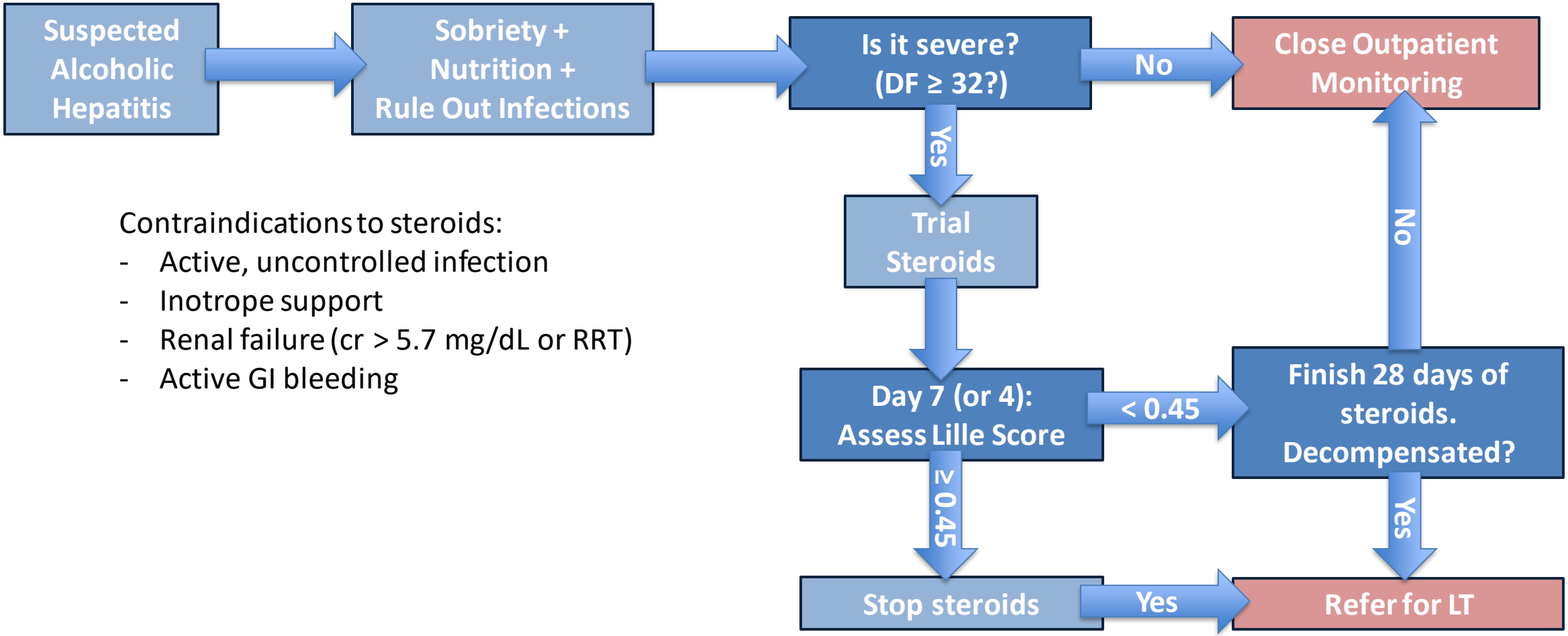
Liver transplant for Alcohol Related Liver Disease

Alcoholic Hepatitis: Who needs LT?



Contraindications to steroids:

- Active, uncontrolled infection
- Inotrope support
- Renal failure (cr > 5.7 mg/dL or RRT)
- Active GI bleeding

Louvet et al. Hepatology 2007: 45: 1348-54.

2011: Liver Transplant for SAH

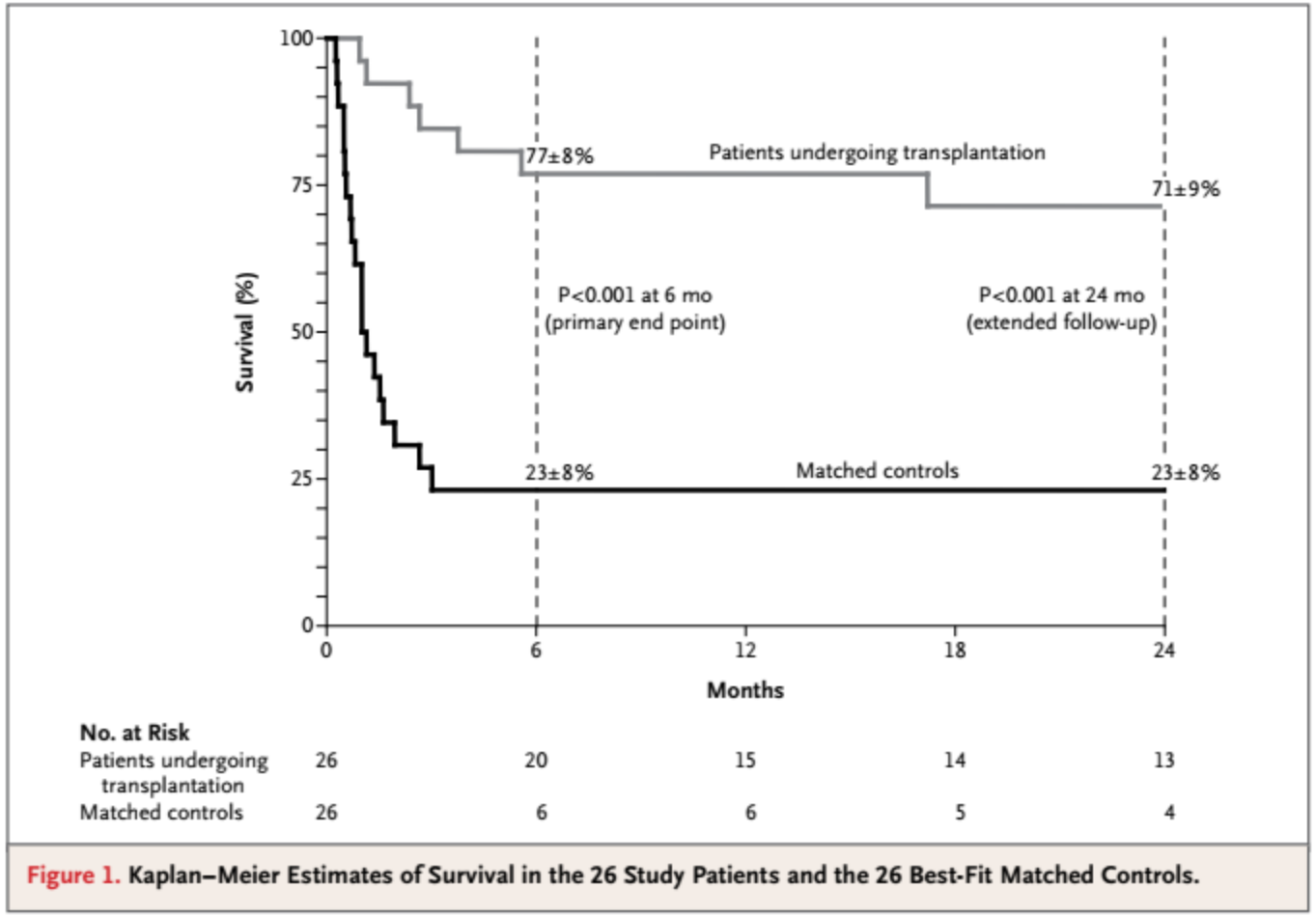


Figure 1. Kaplan–Meier Estimates of Survival in the 26 Study Patients and the 26 Best-Fit Matched Controls.

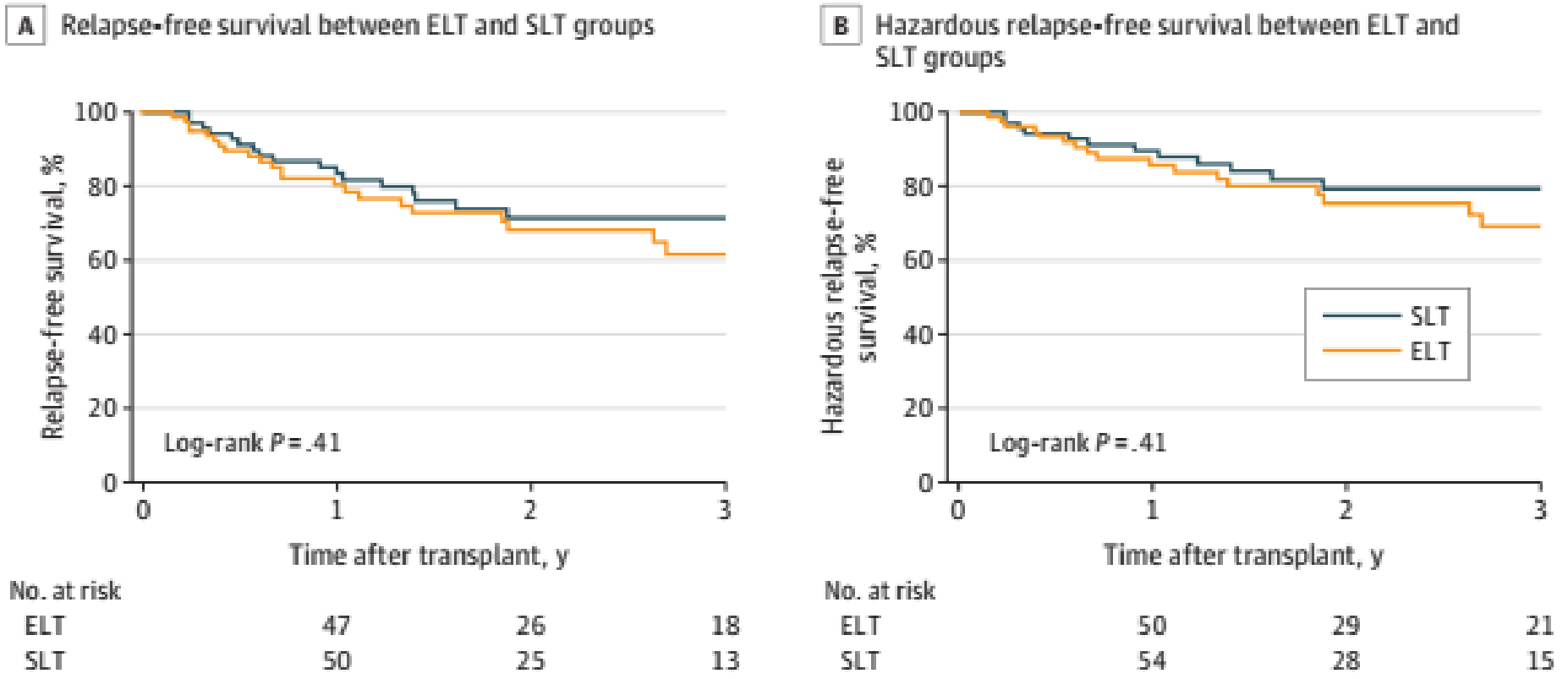
Mathurin et al. NEJM 2011; 365: 1790-1800.

But don’t they all just relapse?

Is the rate of relapse higher than those transplanted with a more prolonged duration of sobriety?

The answer to both is No.

Rates of relapse are not different



Herrick-Reynolds et al. JAMA Surg. 2021; 156: 1026-1034.

Not all relapses are the same

- **Sips:** Alcohol consumption < 100 days that does not meet criteria for frequent or binge drinking

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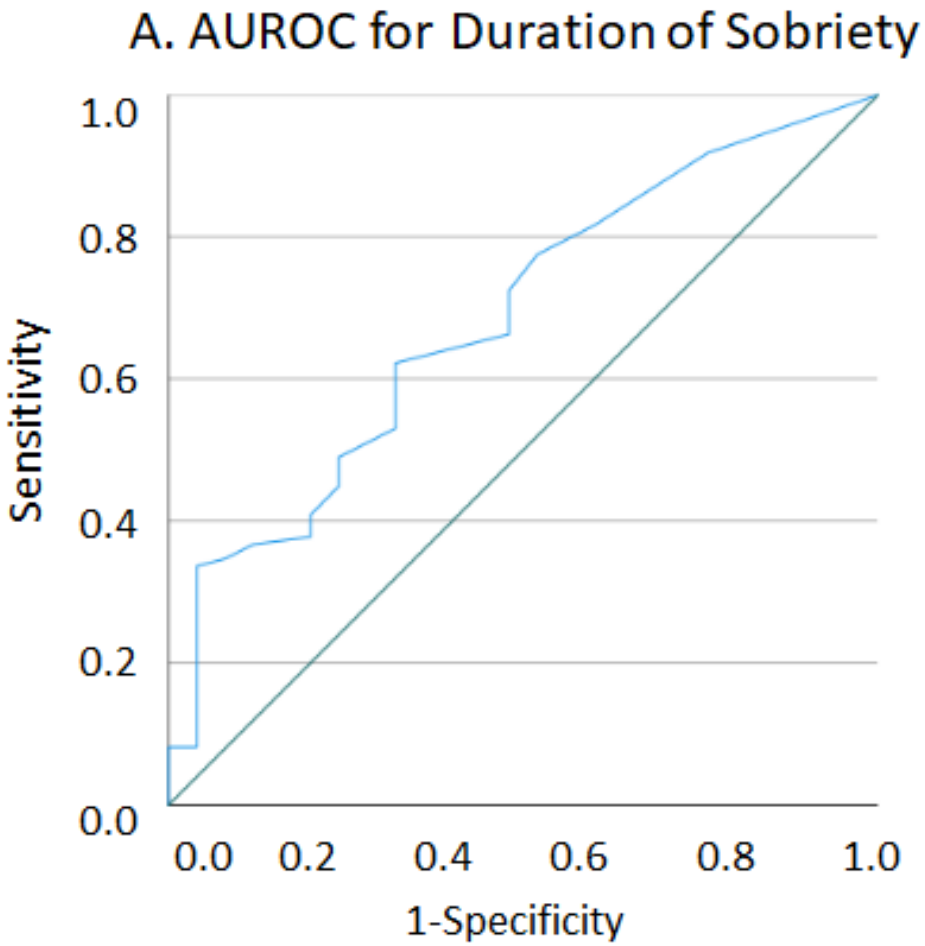
- **Prolonged:** Any consumption of alcohol for greater than 100 days
- **Frequent:** Any consumption of alcohol for four or more days per week for at least one month
- **Binge:** Consumption of ≥ 6 standard drinks per day (men) or of ≥ 4 standard drinks per day (women)

How predictive is 6 months anyway?



C statistic 0.68
(95% CI 0.57-0.8)

What things do we consider for LT?

- Inclusion:
  - Good insight: Does the patient recognize alcohol as the cause of liver disease?
  - Willingness to engage in sobriety activities (addiction psychiatry, AA, SMART recovery, etc)
  - No prescribed duration of sobriety
- Exclusion:
  - Relapse after initial diagnosis of alcohol related liver disease or liver decompensations
  - Relapse after other significant alcohol related issues, including alcohol related health problems (recurrent pancreatitis) or legal issues (multiple DUIs)
  - Relapse after attending an intensive outpatient program or partial hospital program
  - Severe, uncontrolled psychiatric disorders
  - Comorbid substance use issues (excluding marijuana)
  - Absence of social support

Two portraits

Acceptable Candidate:

- 35-year-old patient
- Drank 4-6 beers daily for 20 years
- Now MELD 40 with jaundice, coagulopathy, starting CRRT for HRS
- No prior DUI, steady job, family at bedside
- Willing to go to AA, engages with psych eval

Poor Candidate:

- 35-year-old patient
- Drank 4-6 beers daily for 20 years
- Now MELD 40 with jaundice, coagulopathy, starting CRRT for HRS
- Was admitted with alcoholic hepatitis 3 times before
- Had a variceal bleed
- Lost his drivers license due to recurrent DUI
- No family support

Grey area

Candidate:

- 35-year-old patient
- Drank 4-6 beers daily for 20 years
- Now MELD 40 with jaundice, coagulopathy, starting CRRT for HRS
- One prior DUI, steady job, family at bedside
- Willing to go to AA, engages with psych eval

Candidate:

- 35-year-old patient
- Drank 4-6 beers daily for 20 years
- Now MELD 30 with jaundice, coagulopathy, creatinine of 2.0 but steady
- Two prior DUIs, steady job, family at bedside
- Attended AA a few times 5 years ago
- Willing to go to AA, engages with psych eval

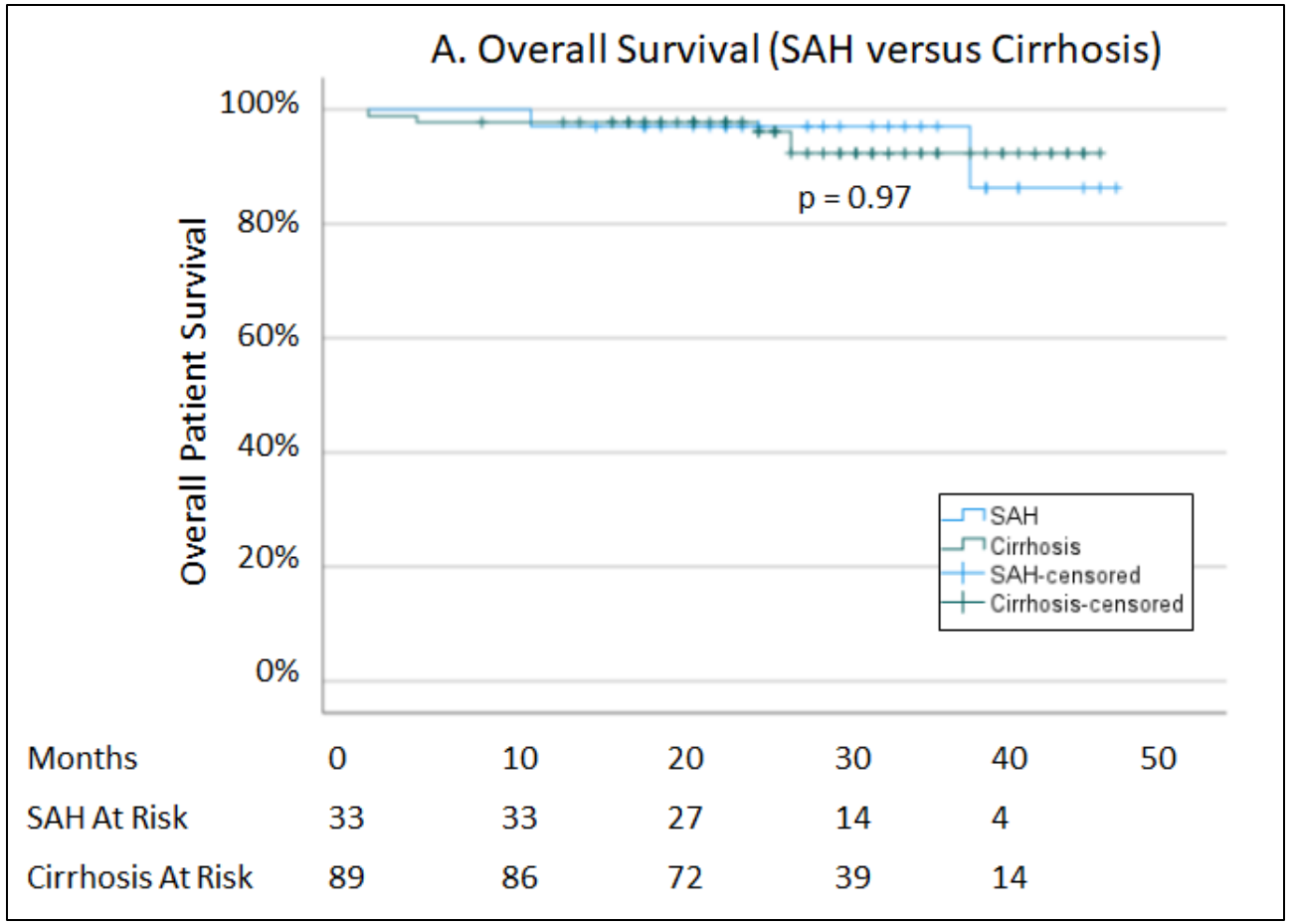
Some patients can become candidates

Candidate:

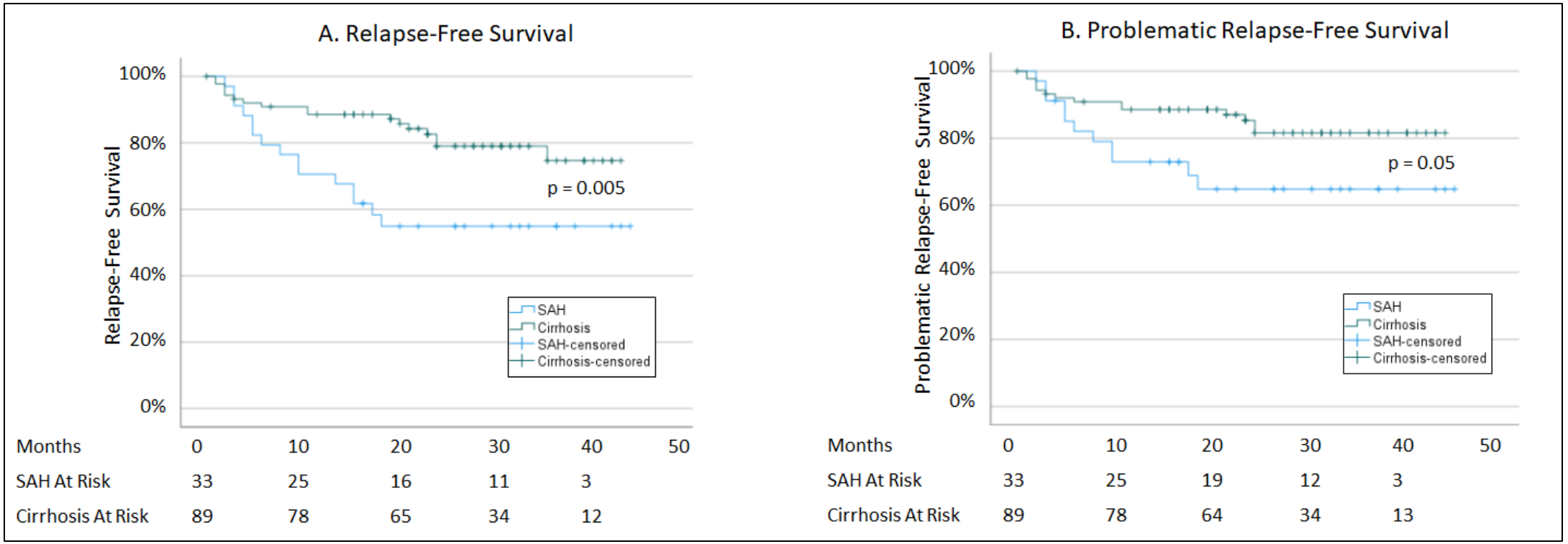
- 35-year-old patient
- Drank 4-6 beers daily for 20 years
- Now MELD 30 with jaundice, coagulopathy, creatinine of 2.0 but steady
- Two prior DUIs, steady job, family at bedside
- Attended AA a few times 5 years ago
- Willing to go to AA, engages with psych eval

- Attend addiction psychiatry regularly
- Attend AA weekly
- Attend all appointments
- Monthly phosphatidylethanol

UTSW Experience: Excellent Survival



UTSW Experience: Relapse Better than Literature



Post-LT relapse is not the end of the story

- Ensure psychiatric needs are met (anxiety, depression, insomnia)
- Connect (again) to addiction psychiatry regularly
- Encourage attendance at AA, SMART recovery, other group
- Consider sobriety supporting medications

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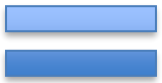
Liver Transplant Oncology

HCC: The lesions are getting larger

- UCSF Criteria
  - 1 lesion greater than 5 cm, less than or equal to 8 cm
  - 2-3 lesions
    - At least one is greater than 3 cm
    - No lesion greater than 5 cm
    - Total tumor diameter less than 8 cm
  - 4-5 lesions
    - All less than 3 cm
    - Total tumor diameter less than 8 cm

Successful downstaging to within Milan Criteria



MMAT–3 at 6 months

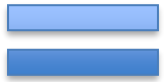
Skip the wait with living donor

Sinha et al. Hepatology 2019; 0:1-12

The lesions are getting larger: Beyond UCSF

- Tumor biology – does the lesion respond to locoregional therapy?
- Does the AFP respond to treatment?

Successful downstaging



Living Donor

Vascular invasion or metastatic disease are still hard stops

Ongoing exploration for

- Intrahepatic cholangiocarcinoma
- Unresectable colon cancer metastases

Conclusions

- Refer patients for liver transplant early. We sort out how to find an organ.
- There is no duration of sobriety required to consider liver transplant. Carefully selected patients do well.
- Liver transplant emerging for select patients with small intrahepatic cholangiocarcinoma, colorectal metastases, and beyond-criteria HCC.