

Improve Regional Management of Non-Alcohol Fatty Liver Disease

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Disclosures

- None

Objectives

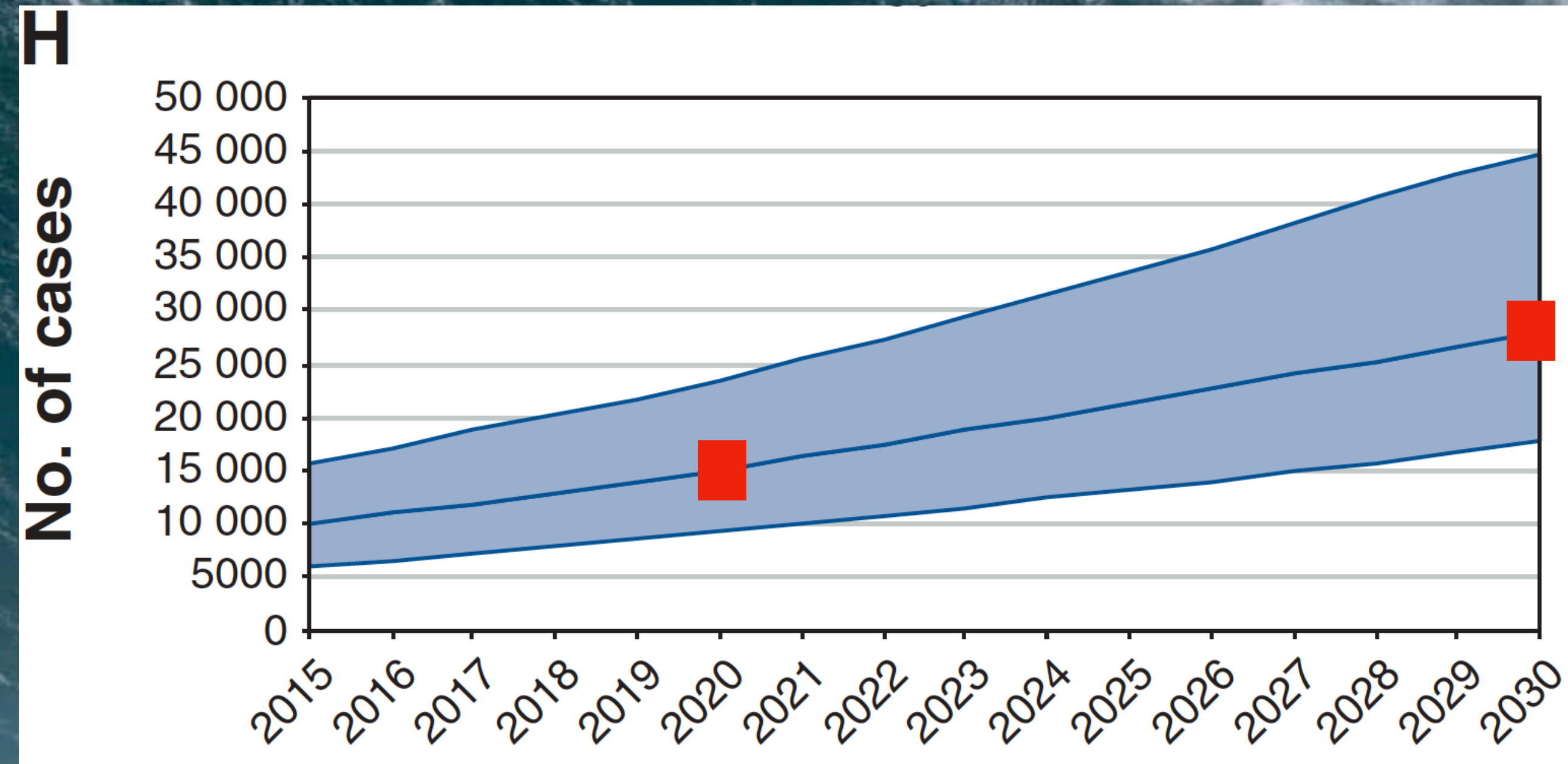
- Identify NAFLD in your practice, when appropriate
- Incorporate new tools for assessment of NAFLD
- Initiate treatment alongside other metabolic conditions

Summary

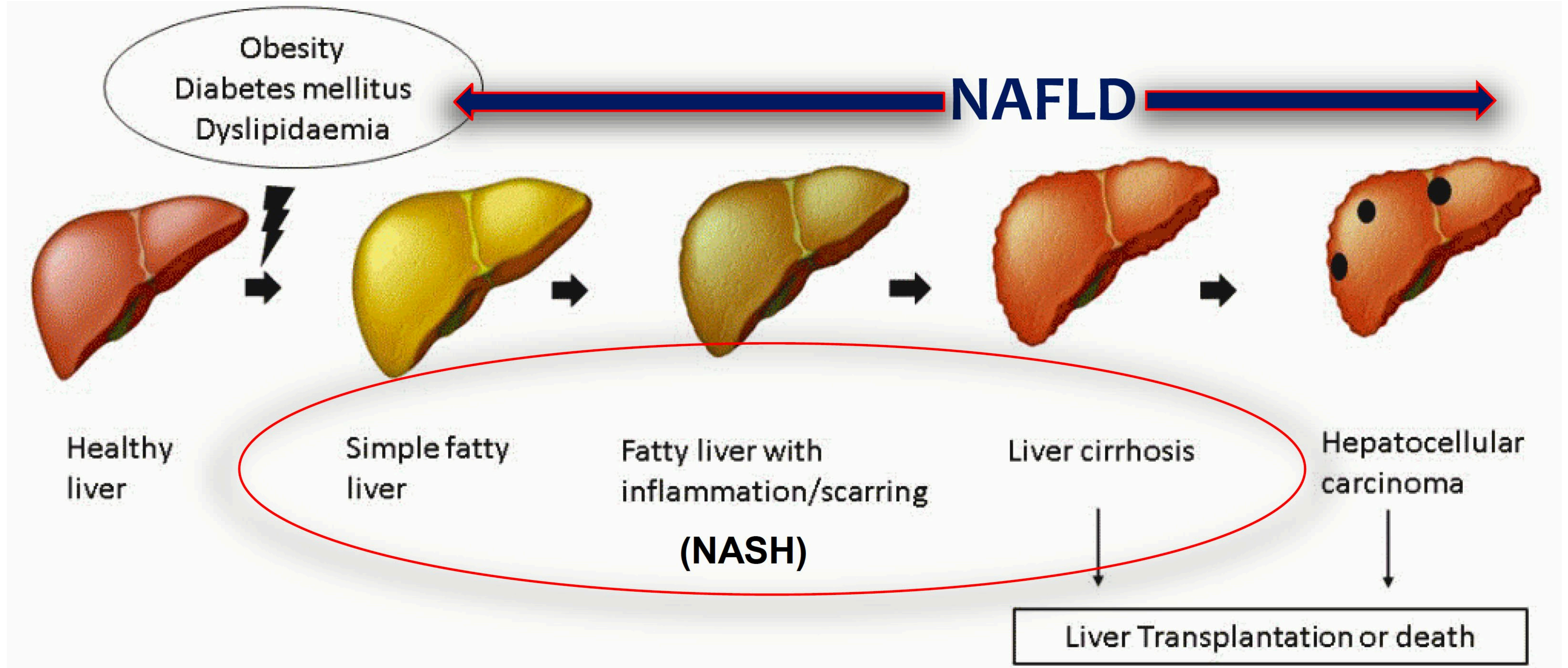
- We have to screen for NAFLD if we want to find it early enough to change the course of disease.
- FIB-4 is an easy to use tool to rule out significant fibrosis of the liver
- Shearwave elastography will further stratify those with possible liver disease
- Treatment for NAFLD can be started immediately

NAFLD is coming for us

- Obesity + diabetes, + aging population = rapid growth of NAFLD
- NAFLD progresses silently = late diagnosis = reduced survival, long hospitalizations
- 2020 Canadian data estimates *doubling* of deaths due to NAFLD



NAFLD is a spectrum



NAFLD = Non-alcohol Fatty Liver Disease

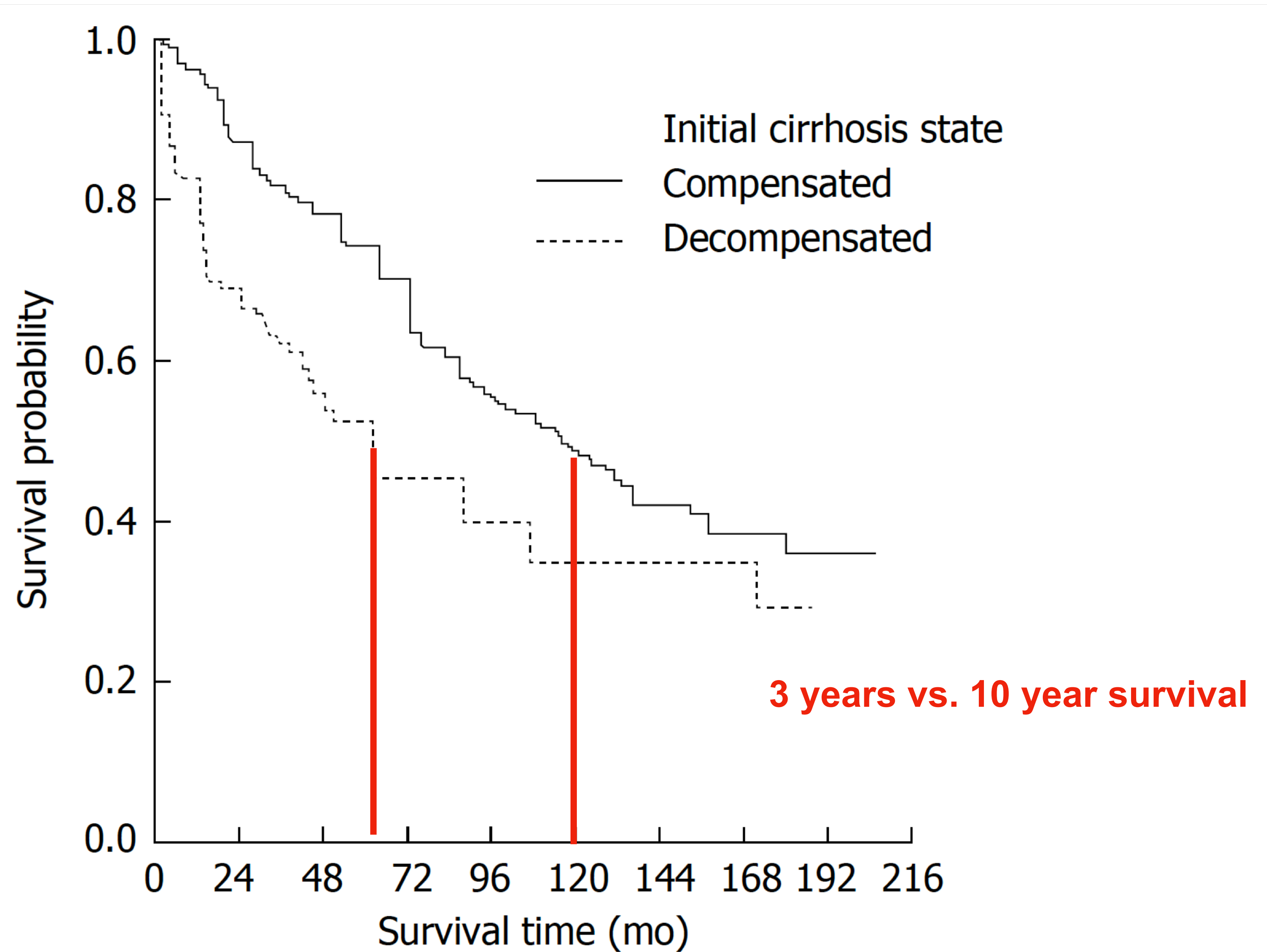
Is it NAFLD, or Alcohol?

Observational Study

> [J Hepatol.](#) 2022 Oct;77(4):918-930. doi: 10.1016/j.jhep.2022.04.040.

Epub 2022 May 20.

Ethyl glucuronide in hair detects a high rate of harmful alcohol consumption in presumed non-alcoholic fatty liver disease

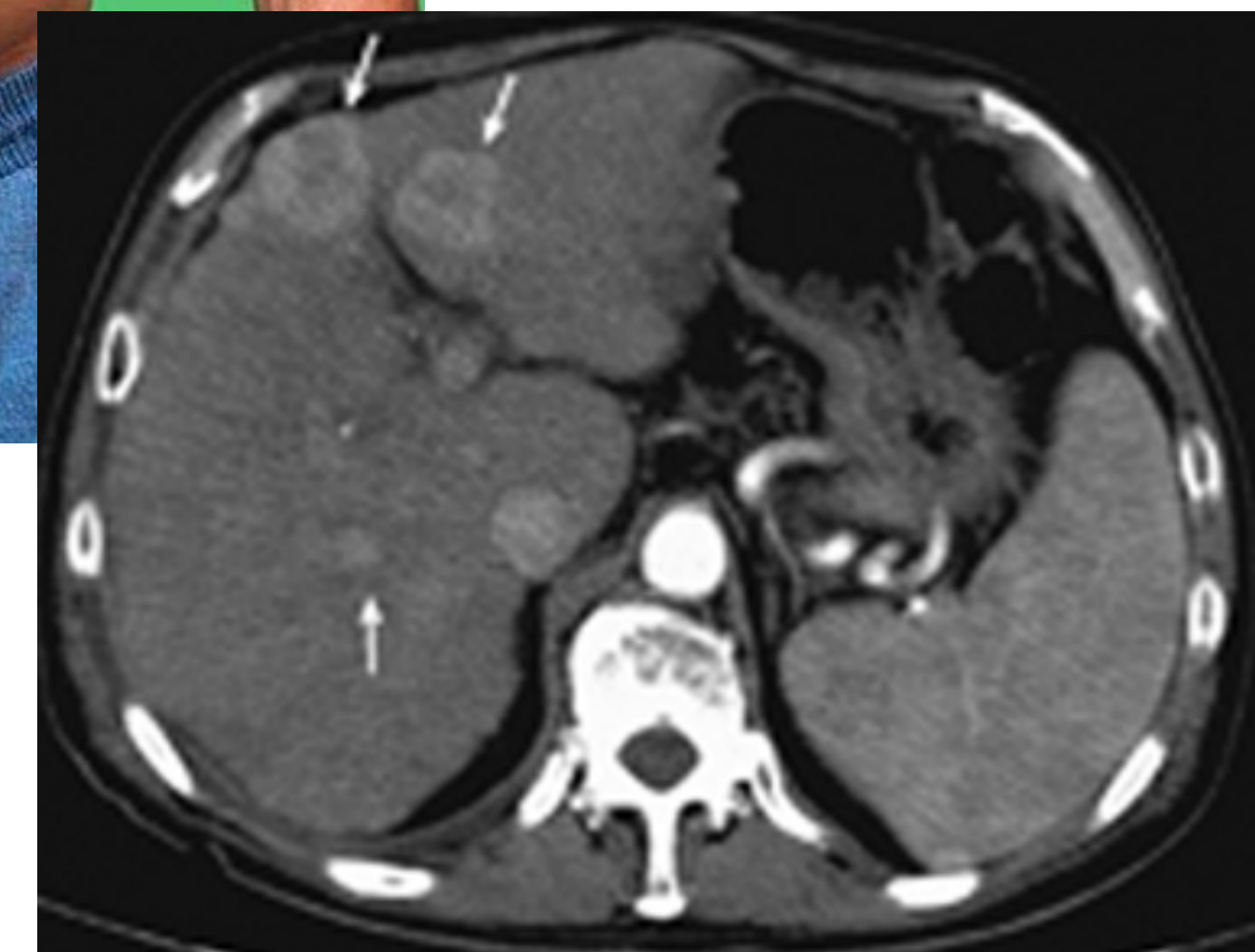
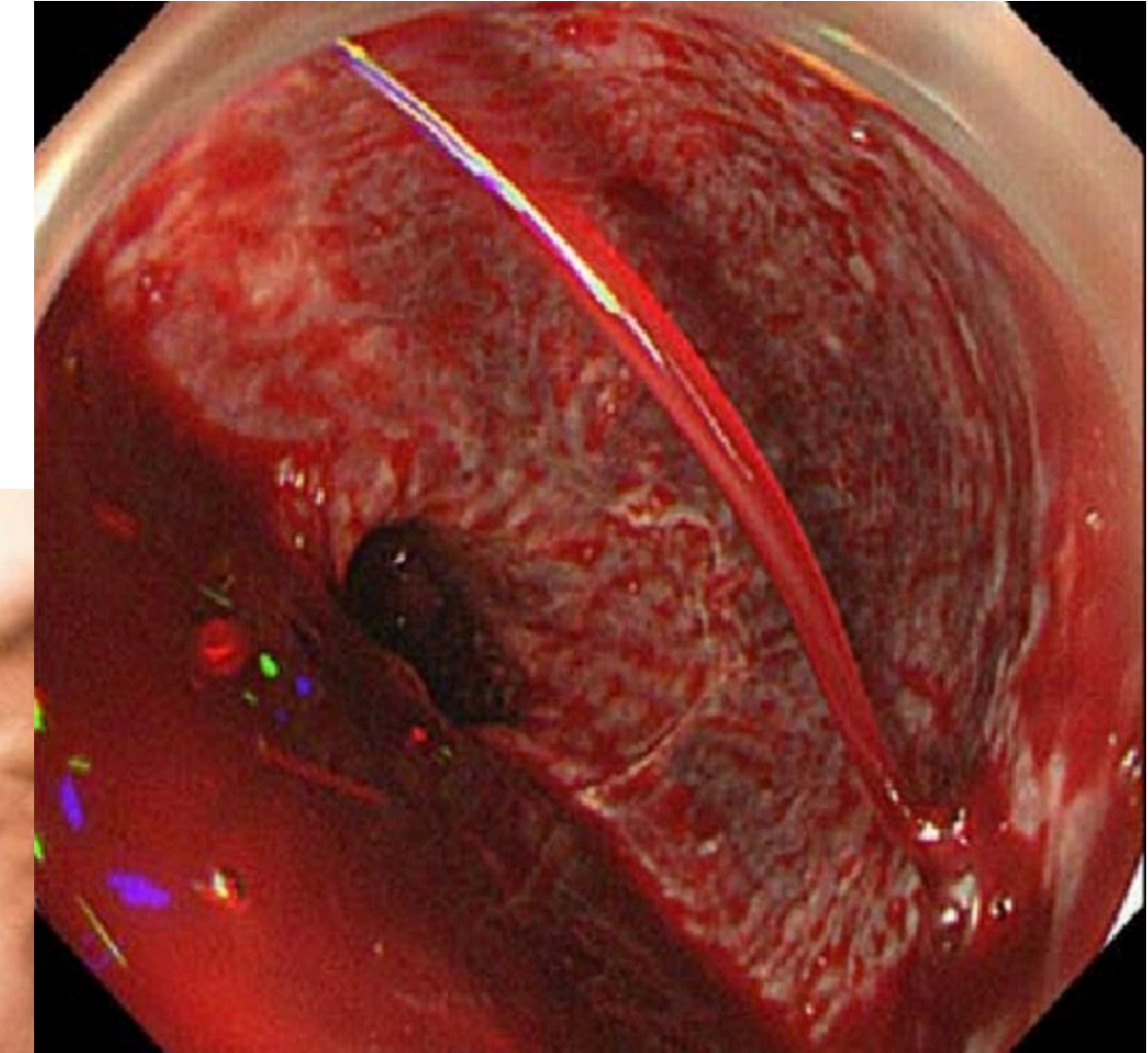
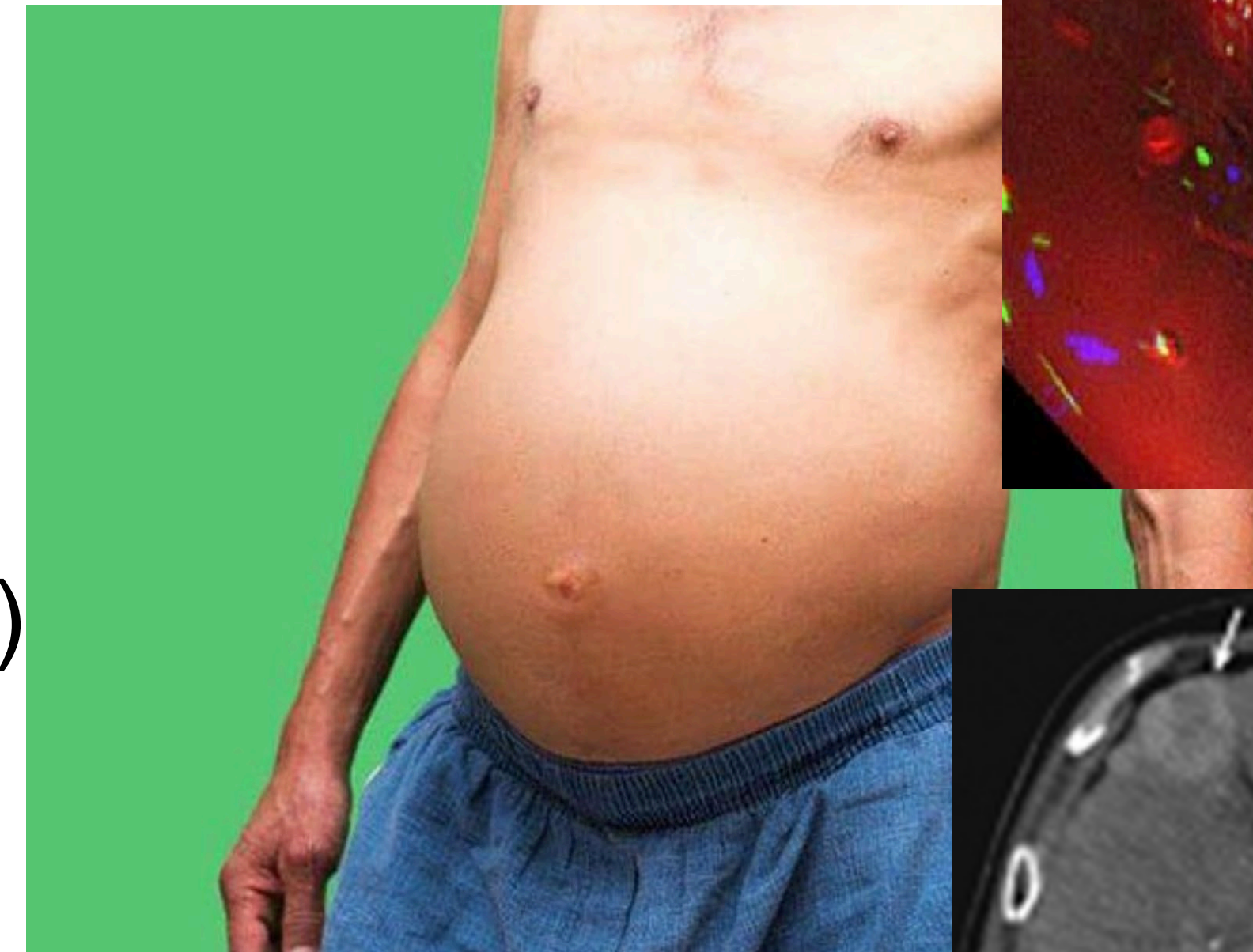


Samonakis DN et al . 2014. WJG

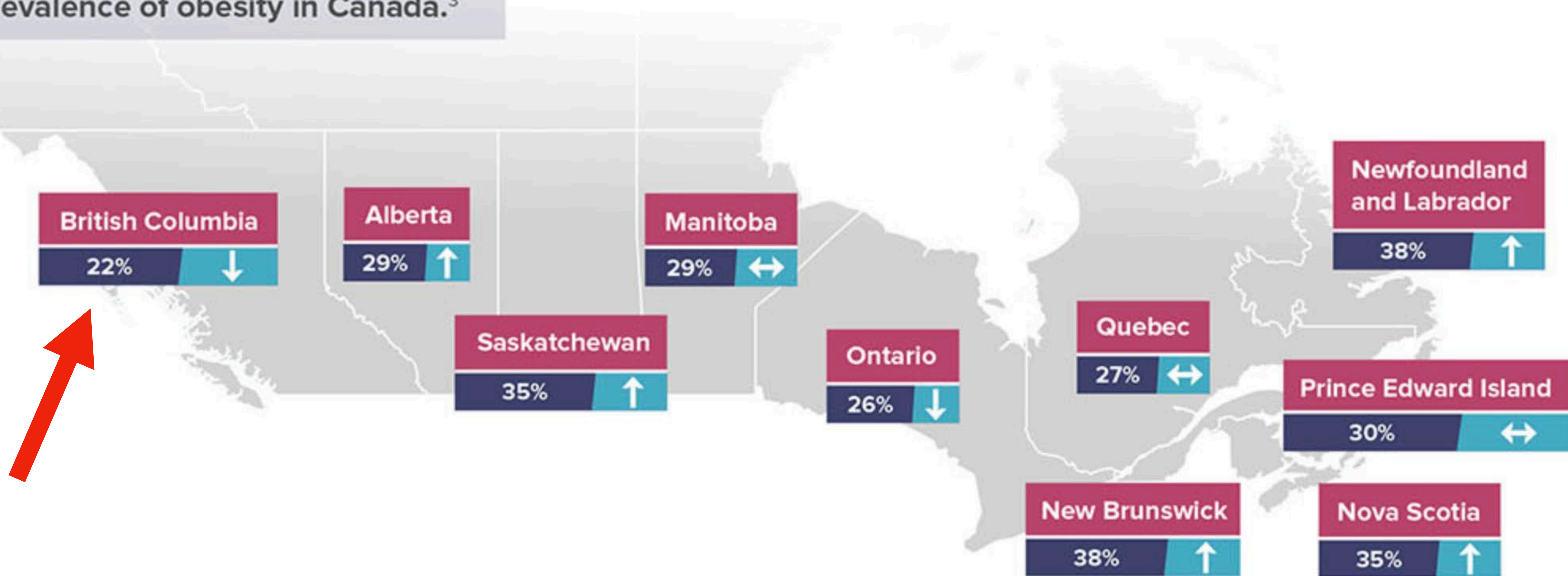
Figure 2 Survival curves in compensated and decompensated cirrhosis.

Case: Mr. Joe

- Presented to EKRH with variceal bleed, airlifted to Calgary, survived and transferred back
- Diagnosed with decompensated liver cirrhosis - a surprise! Consulted by me
- Entered into ultrasound surveillance program to watch for liver cancer (HCC)
- Developed HCC and unfortunately was not a candidate for treatment or liver transplant due to cardiac disease
- Palliative principled care ensued...



British Columbia had the lowest prevalence of obesity in Canada.³



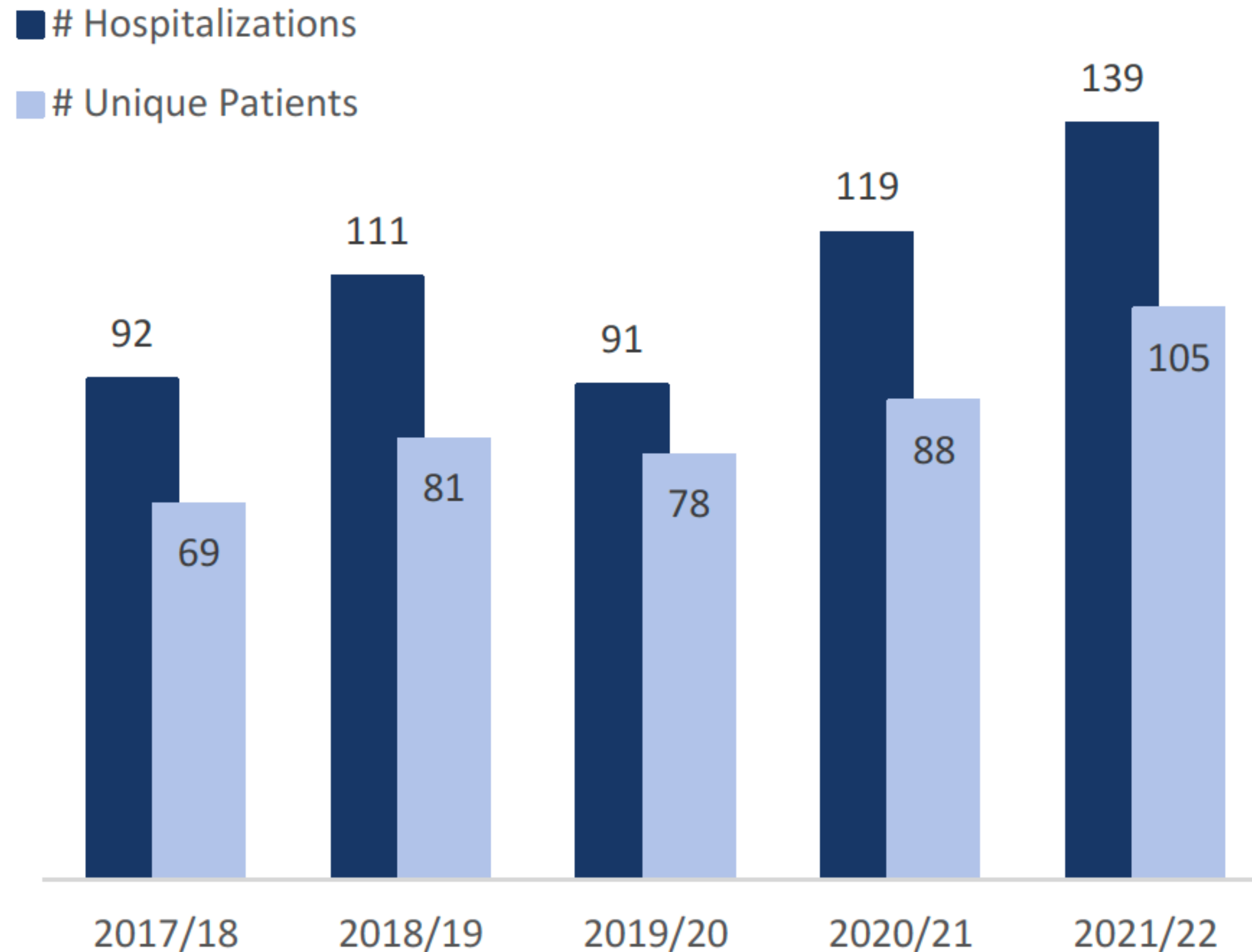
Sources

¹ Statistics Canada, 2016 and 2017. Canadian Health Measures Survey. Ottawa.

Notes

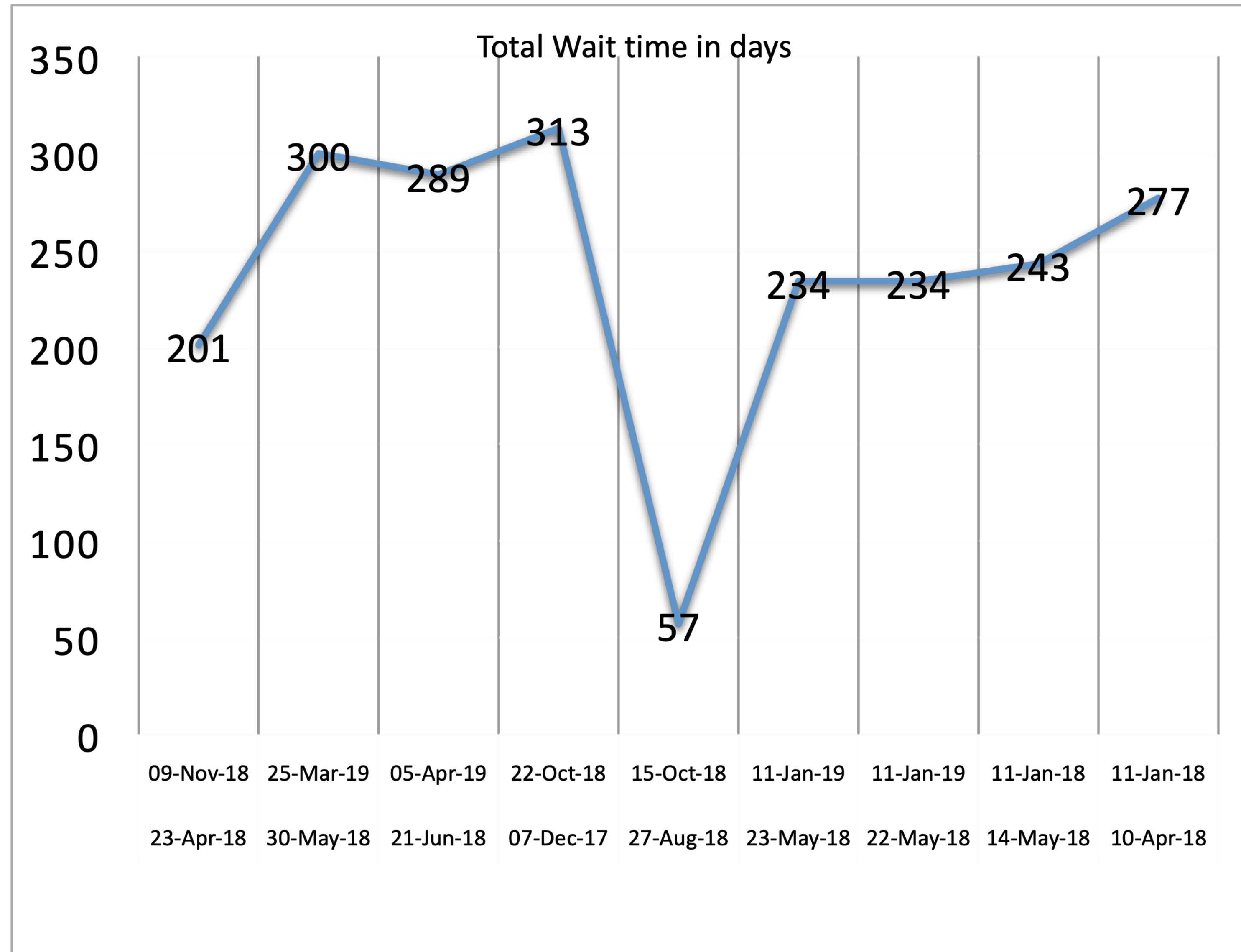
* Underweight and normal weight categories were combined.

Figure 2. EKRH & EVH Number of Hospitalizations and Unique Patients Hospitalized for Chronic Liver Disease, by Indicator, 2017/18 to 2021/22



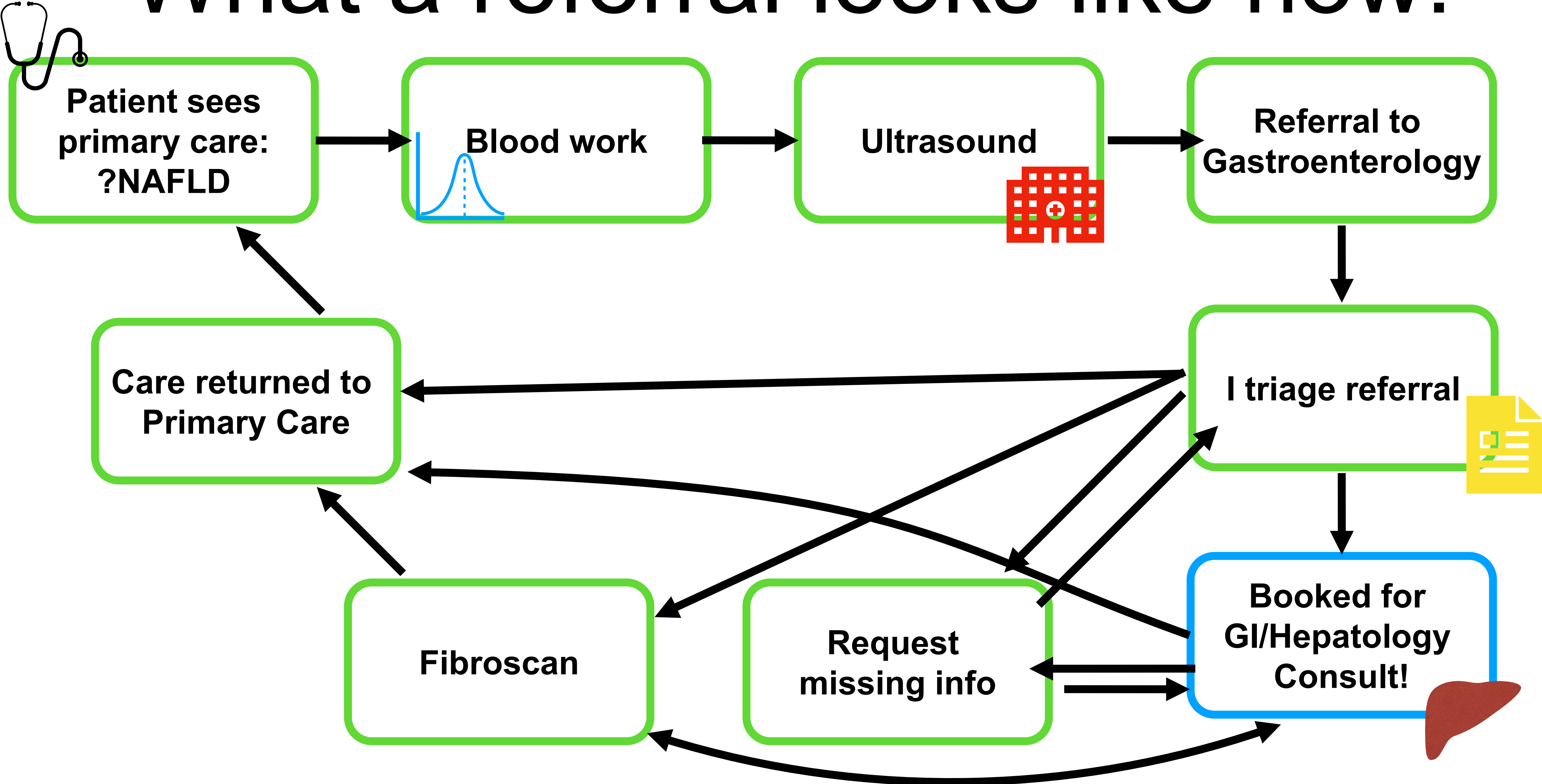
2021/22: the highest number of CLD hospitalizations (139) in 2 sites

CLD hospitalizations increased 17% relative to the previous fiscal year and 53% relative to two years prior.



2019 Patient mapping: median time to be seen = 261 days

What a referral looks like now:



How it could be

- Routine visit... patient has DM, obesity, HTN, elev cholesterol
 - Send usual labs including AST, ALT, INR, bill, ALP
 - Send complete liver work up if concern about other liver diseases
 - Calculate a FIB-4 score
 - And then what?!

FIB-4 Score



Calc app on smartphone

1.5 = rules **out** advanced fibrosis with 90% accuracy

- >3.25 rules **in** advanced fibrosis with 65% accuracy
- Limitations: underestimates fibrosis in young, overestimates in the elderly

$$\text{FIB-4} = \frac{\text{Age (years)} \times \text{AST Level (U/L)}}{\text{Platelet Count (10}^9\text{/L)} \times \sqrt{\text{ALT (U/L)}}} = \text{Result}$$

The diagram illustrates the FIB-4 score calculation using a calculator interface. The numerator consists of 'Age (years)' multiplied by 'AST Level (U/L)'. The denominator consists of 'Platelet Count (10⁹/L)' multiplied by the square root of 'ALT (U/L)'. The result is shown in a yellow oval on the right. A 'Enter a Value' button is positioned above the ALT input field.

The future looks brighter

- **First:** FIB-4 score easily stratifies patients at ruling out fibrosis
- **Second:** Shearwave elastography technology added on to an ultrasound exam, can FURTHER delineate degree of liver disease. (like fibroscan...)
- Shearwave elastography (SWE) is validated in NAFLD
- It is now installed at EKRH and EVH

$$\text{FIB-4} = \frac{\text{Age (years)} \times \text{AST (U/L)}}{\text{Platelet Count (10}^9\text{/L)} \times \sqrt{\text{ALT (U/L)}}}$$



Patient Height

Patient Weight

Pregnant?

Yes No

Ambulatory

PRIORITY LEVEL

Wheelchair

P1 Emergent (Physician must speak with radiologist)

Mechanical lift

P2 Urgent

P3 Semi-urgent

P4 Non-urgent

P5 Date Specific DD-MMM-YYYY

Radiologist Protocol / Instructions:

Radiography Exam Requested

Ultrasound Exam Requested (provide details of pregnancy test, where appropriate)

Abdomen

Obstetrical LMP:

Breast R L Axilla

Renal / Bladder

Carotid

Thyroid

Pelvis / Lower Abdomen

Peripheral Venous

Scrotal

Aorta

Arm Leg Right Left

Other (specify): _____

Nuclear Medicine Exam Requested

Diabetic

Vascular Access Device Type of VAD

Shearwave Elastography

Reason:

FIB-4 score > 1.35
 Elevated AST or ALT

Other: _____

Pertinent History / Reason for Exam (Required)

Eg. "Please arrange SWE in addition to abdo US in this patient with obesity (BMI 30), diabetes and a FIB-4 score of 2.0"

Exams Requiring IV Contrast – Creatinine level and estimated GFR required within 90 days of exam for ALL:

• Patients 70 years of age and older

• Patients with Renal Disease

• Patients with hypertension or heart disease

• Diabetic Patients

• Patients on chemotherapy

• Others may be specified by Radiologist

IMAGING REQUEST

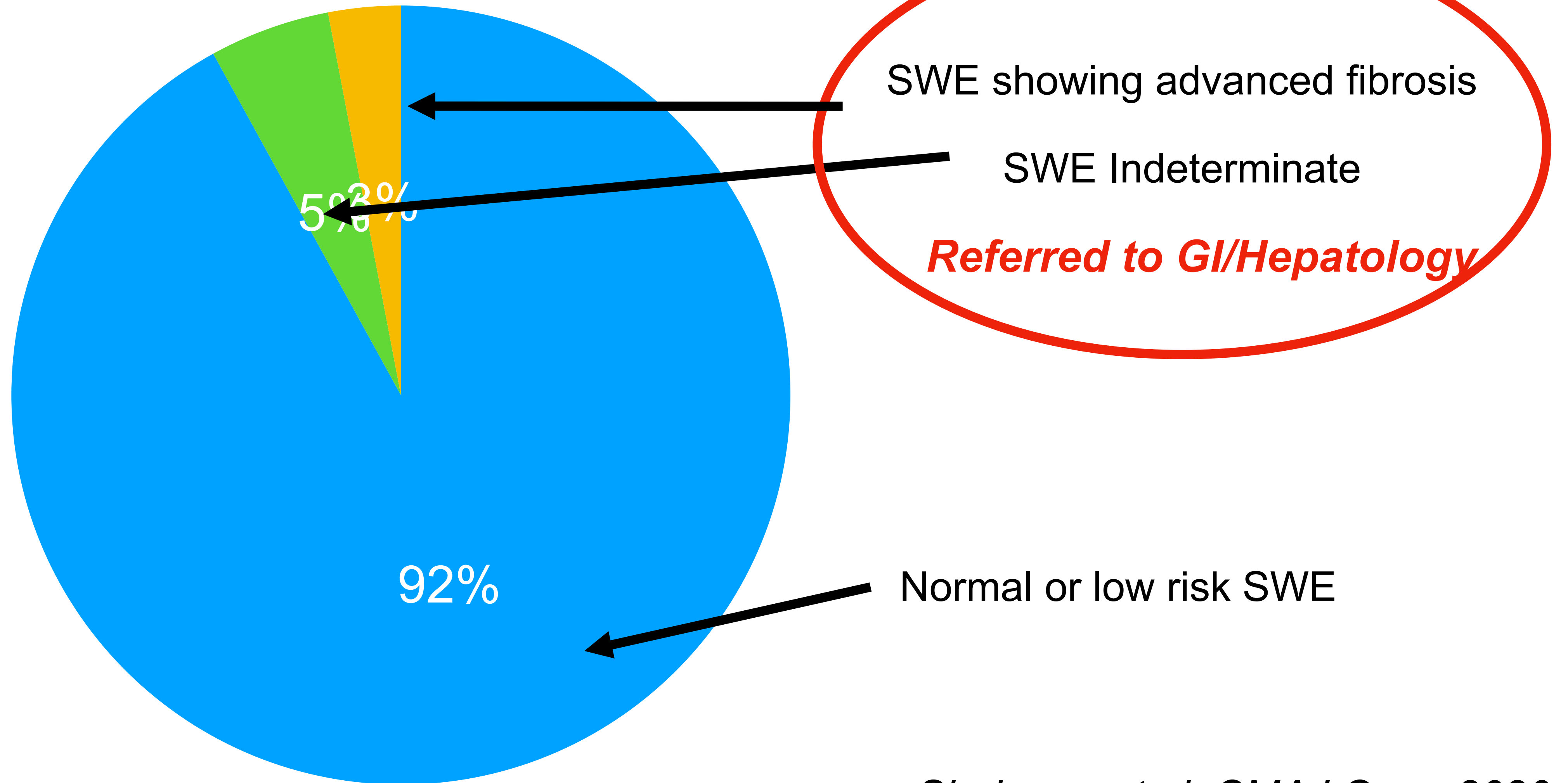
FIB-4 correlates to Shearwave

Table 2: Classification of patients with nonalcoholic fatty liver disease who had available fibrosis-4 index scores according to fibrosis-4 index score and shear wave elastography value

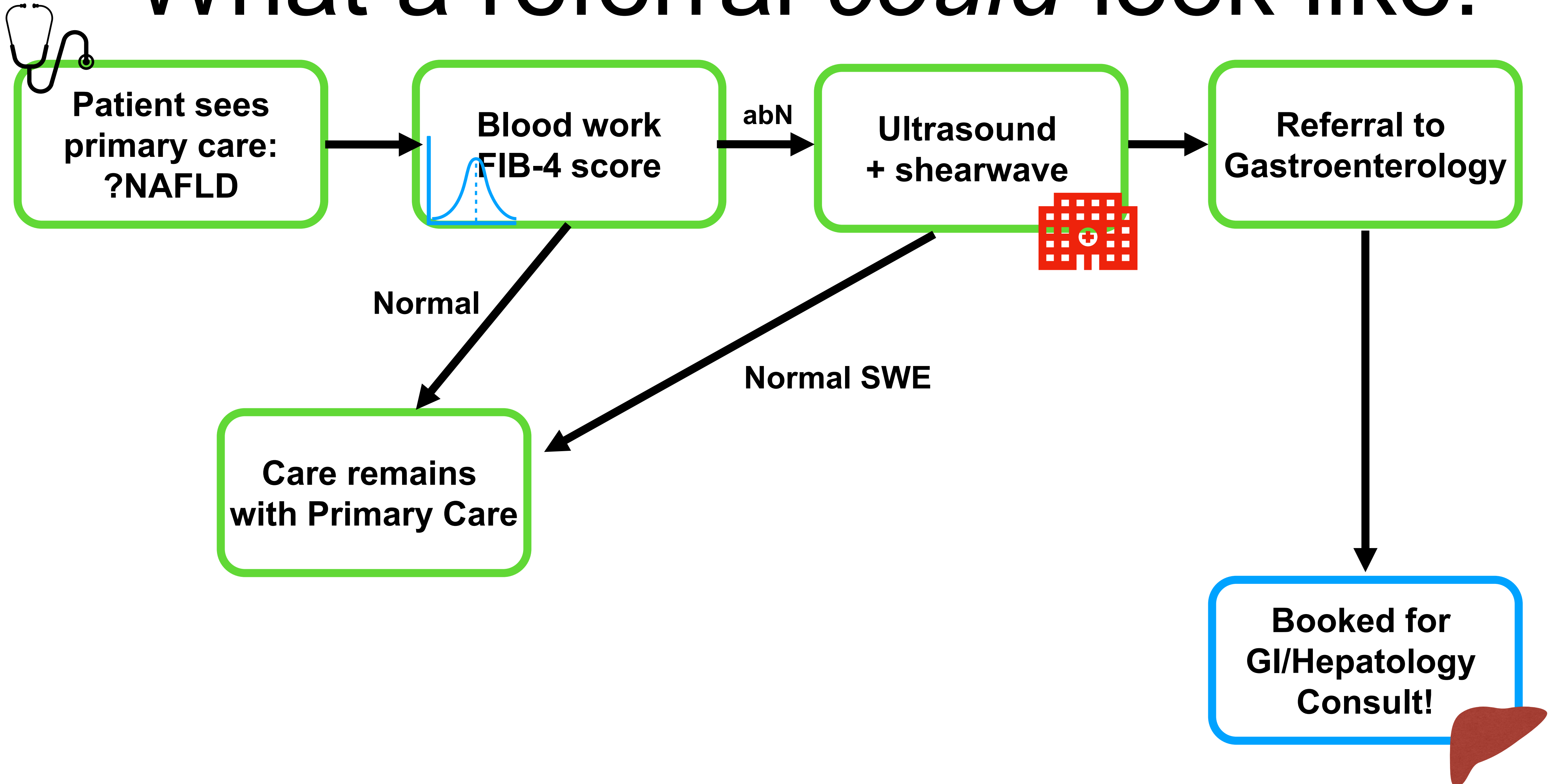
	FIB-4 index score; no. (%) of patients	
	≥ 1.30	< 1.30
SWE value, kPa	$n = 396$	$n = 855$
≥ 8.0	34 (8.6)	21 (2.5)
< 8.0	362 (91.4)	834 (97.5)

Note: FIB-4 = fibrosis-4, SWE = shear wave elastography.

Does this algorithm work?



What a referral *could* look like:



Where we could be!

Shearwave Elastography



NASH therapy?

- Weight loss remains the mainstay of therapy
- Optimize diabetic control and cardiac risk reduction (75% of people with cirrhosis die of cardiac/CVA) disease
- Statins are okay as long as not Child-Pugh C cirrhosis (encephalopathy, ascites, varices)
- The rest?

NASH treatments

	Steatosis	Fibrosis	Insulin resistance	CVD
Weight loss	↓↓↓	↓	↓	↓ (if 10% loss)
Exercise	↓↓	No data	↓	↓
Metformin	←⊙	No data	↓	↓
Pioglitazone	↓↓↓	↓	↓	←⊙
SGLT-2 inhib	No data	No data	↓	↓
GLP-1 agonists	↓↓	↓	↓	←⊙
Insulin SC	↓↓	No data	↓	↓

Weight loss therapy

- Weight loss:
 - 3% ↓ = some reduction in steatosis
 - 5% ↓ = improvement in inflammation
 - 7% ↓ = could be enough to resolve NASH
 - 10% ↓ = potential reversal of fibrosis, if not cirrhotic

- 5 visits/year result in better weight loss adherence
- Refer to a dietitian
- Encourage a formal program
- Exercise 150 minutes a week
- Medications and disability are more expensive than healthy food and exercise equipment...
- Bariatric surgery could be considered

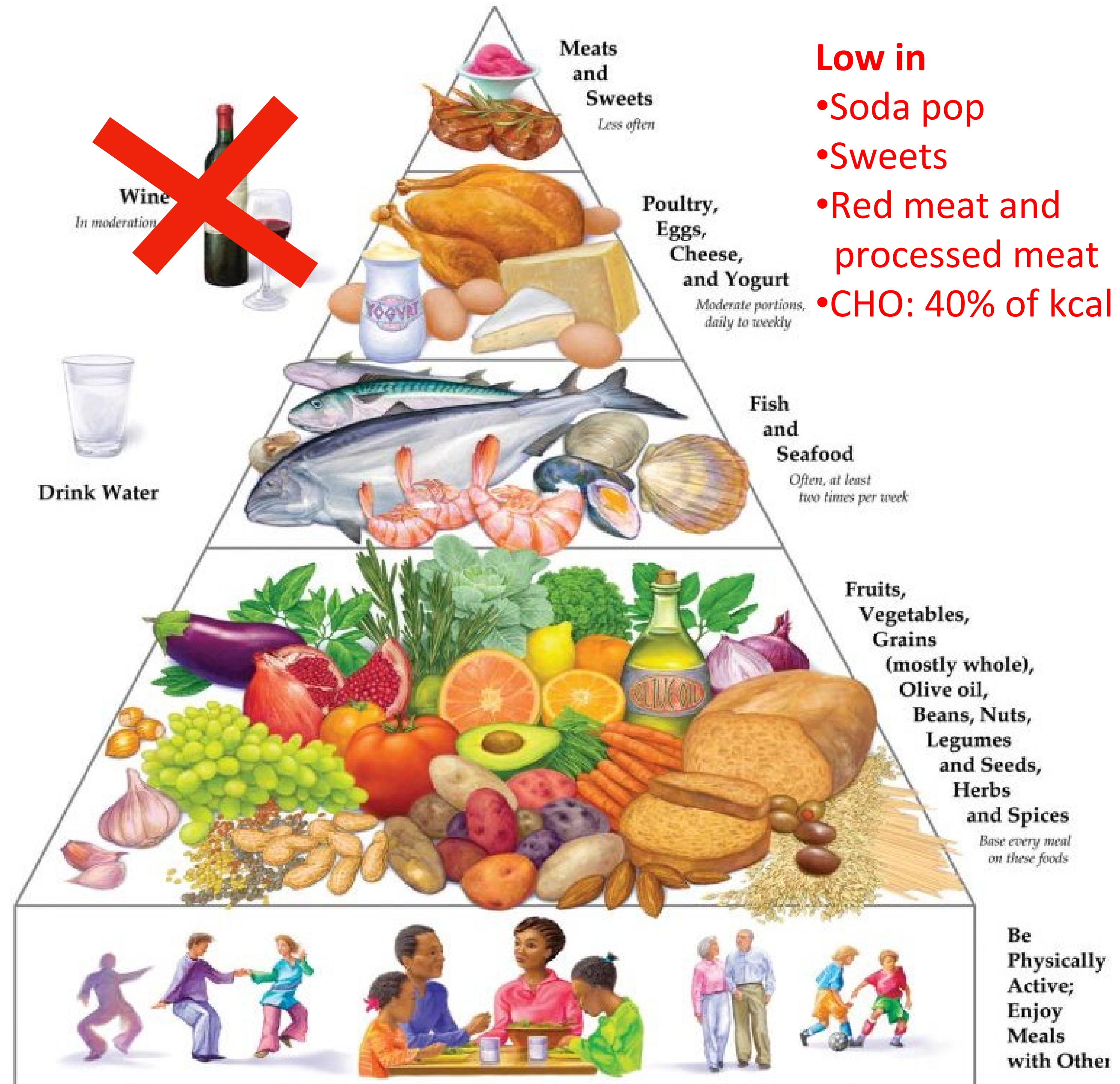
Mediterranean Diet Pyramid

High in

- Olive oil 4tbsp/day
- Handful of nuts/day
- Fish 3x/week
- Legumes 3x/week
- Fruits and vegetables
- Fat: 40% of kcal, MUFA, PUFA

Low in

- Soda pop
- Sweets
- Red meat and processed meat
- CHO: 40% of kcal



Diabetes

CVD

NAFLD

Blood pressure

Lipid profile

Glucose

CRP



Semaglutide

The NEW ENGLAND JOURNAL of MEDICINE

- 320 patients with stage 2-3 fibrosis (F4 = cirrhosis)
- 59% had resolution of NASH with 0.4mg weekly vs. 17% of placebo group
- 13% weight loss at 0.4mg vs 1% in placebo group

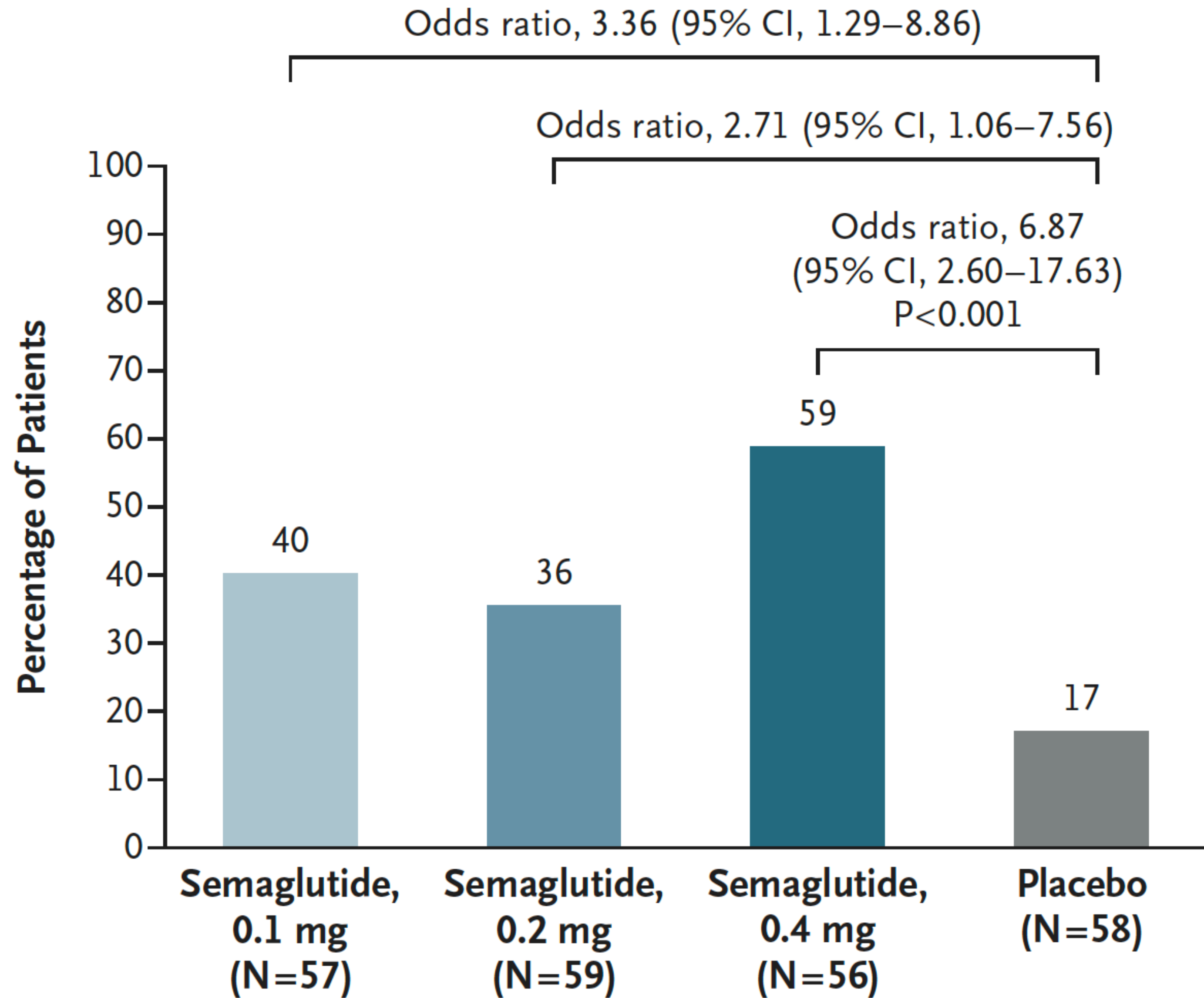
ORIGINAL ARTICLE

A Placebo-Controlled Trial of Subcutaneous Semaglutide in Nonalcoholic Steatohepatitis

P.N. Newsome, K. Buchholtz, K. Cusi, M. Linder, T. Okanoue, V. Ratziu, A.J. Sanyal, A.-S. Sejling, and S.A. Harrison, for the NN9931-4296 Investigators*

published November 13, 2020,

**A Resolution of NASH with No Worsening of Liver Fibrosis
(primary end point)**



Summary

- We have to screen for NAFLD if we want to find it early enough to change the course of disease.
- FIB-4 is an easy to use tool with minimal effort to stratify risk of fibrosis (scarring) to determine urgency of intervention needed
- Shearwave elastography as an 'add-on' to initial Ultrasound for those with elevated FIB-4 score will further stratify these people
- Basic treatment starts immediately: Diabetic control, treat CVD risk factors, consider weight loss programs and/or semaglutide

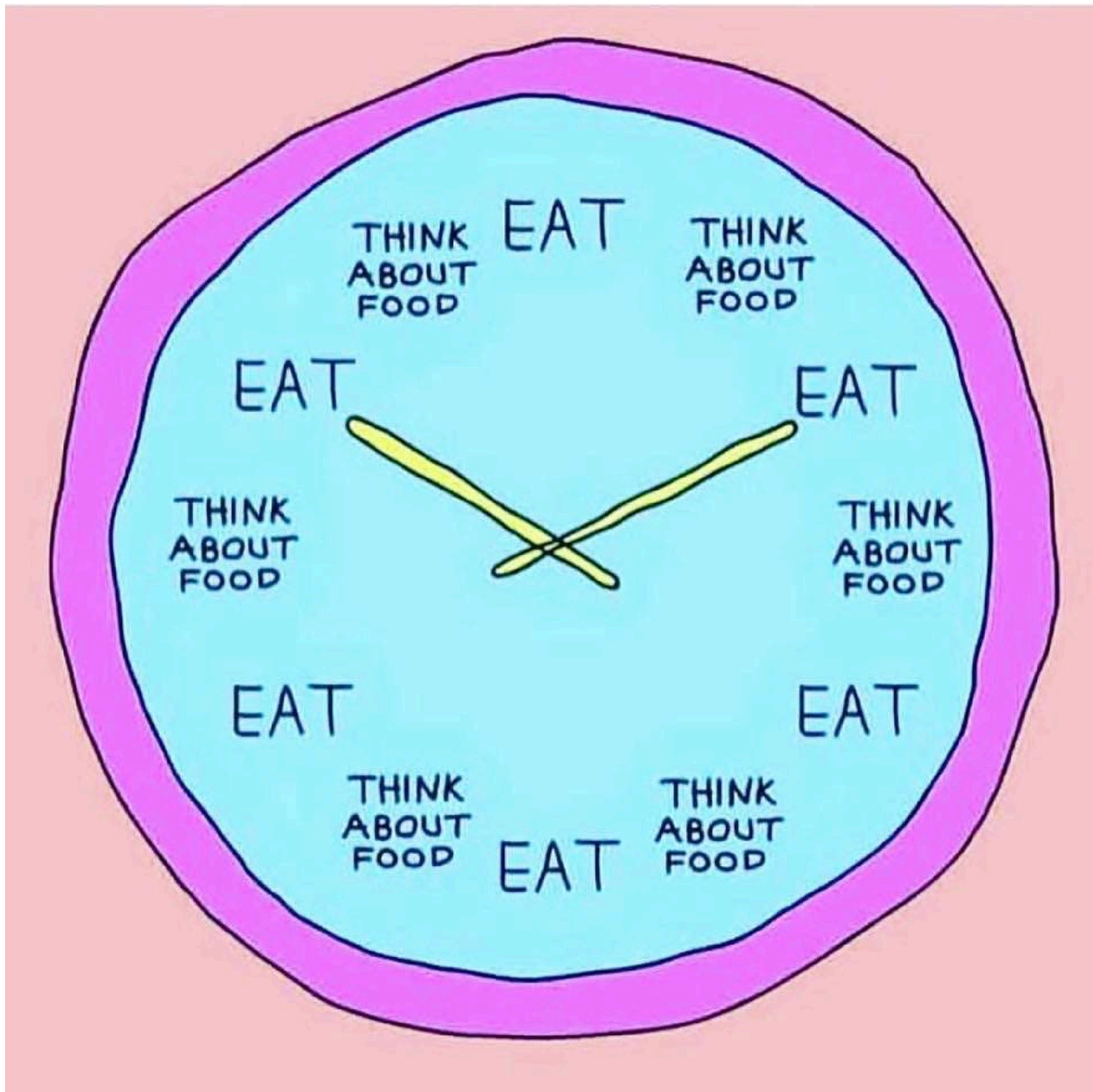
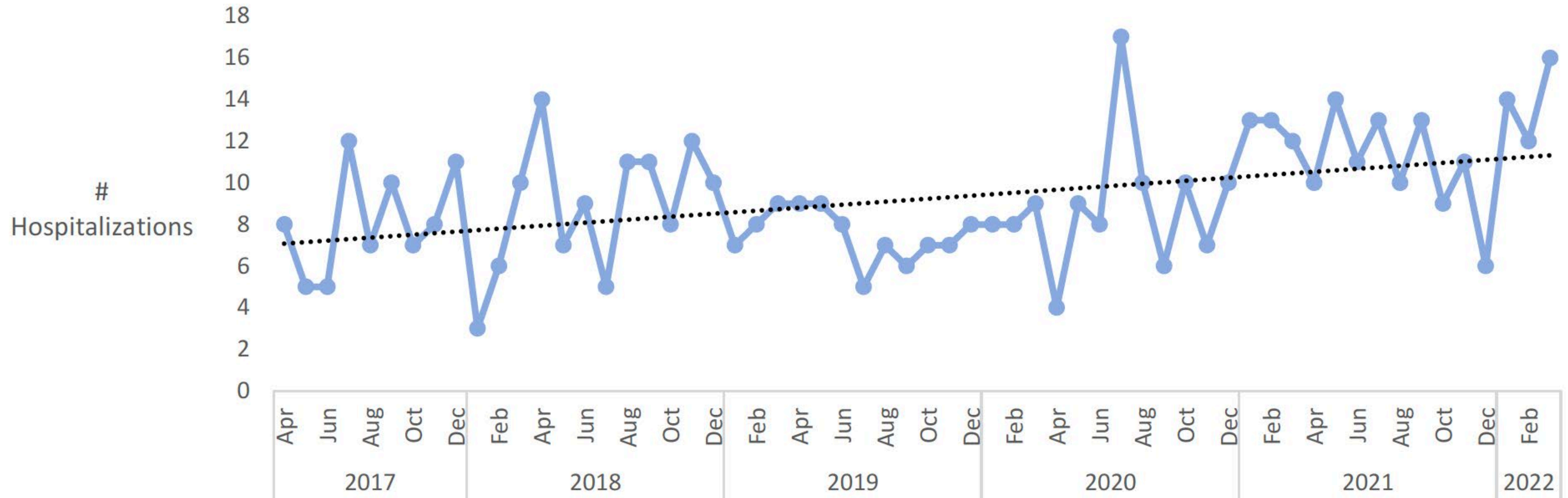


Figure 1. EKRH & EVH Chronic Liver Disease Hospitalizations by Month, Fiscal Years 2017/18 to 2021/22

Over the last five fiscal years, hospitalizations at EKRH and EVH overall, showed an increasing trend which ranged from three discharged a month (Jan 2017) to 17 discharged a month (July 2020).



From 2017/18 to 2021/22: 552 hospitalizations for 421 unique patients