ECHO IDAHO

Diabetes and Metabolic Conditions

MASLD Testing and Management for Patients with Diabetes

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Project ECHO

Learning Objectives

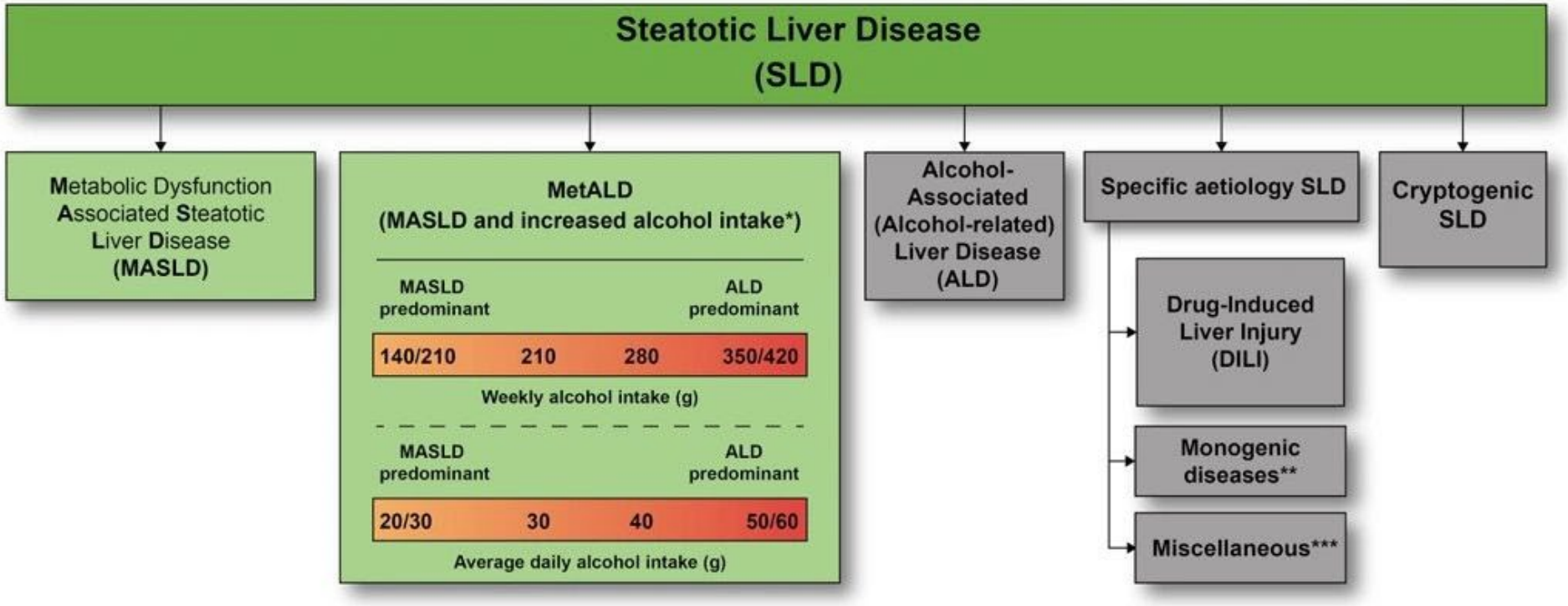
- Identify patients with MASLD
- Know how to risk stratify patients
- Know what MASLD specific treatments are available

Outline

- Nomenclature
- Diagnosis
- Staging
  - Elastography
  - Blood based fibrosis testing
- Management

Fatty liver → Steatotic liver disease

- MASLD, MASH (formerly NAFLD and NASH)



*Weekly intake 140-350g female, 210-420g male (average daily 20-50g female, 30-60g male)
**e.g. Lysosomal Acid Lipase Deficiency (LALD), Wilson disease, hypobetalipoproteinemia, inborn errors of metabolism
***e.g. Hepatitis C virus (HCV), malnutrition, celiac disease

Rinella et al. A multisociety Delphi consensus statement on new fatty liver disease nomenclature. Hepatology 2023

How do you diagnose MASLD?

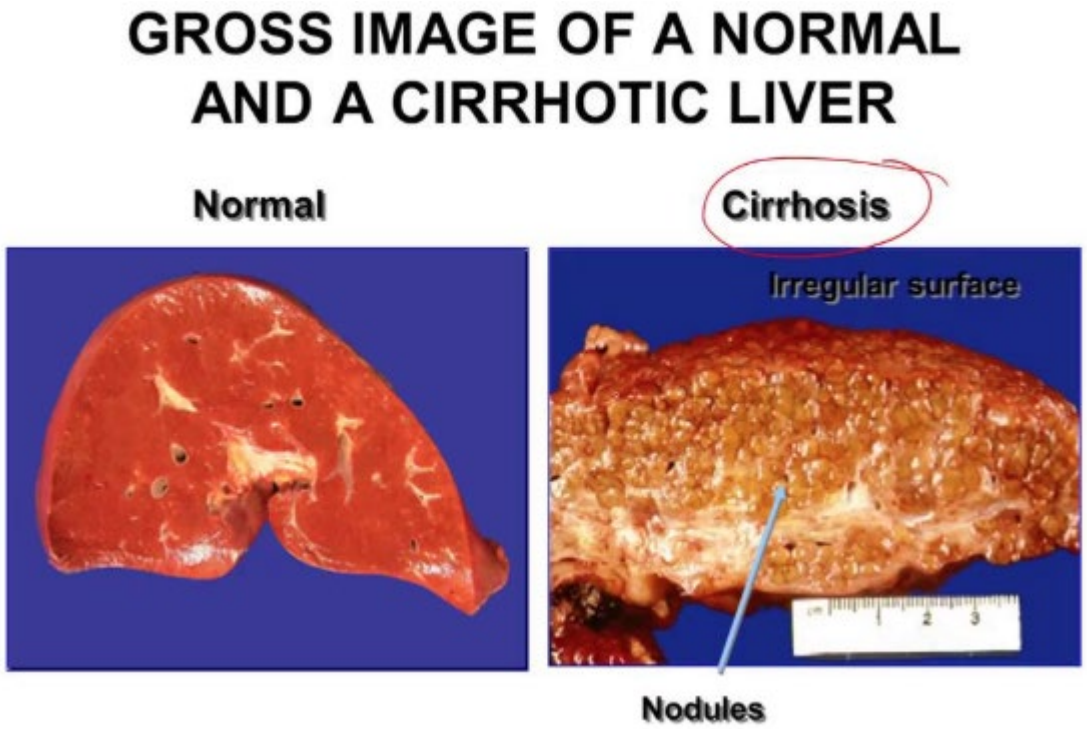
- Risk factors
  - BMI > 25 (23 if Asian), HTN, Dyslipidemia, T2DM
- Labs
  - Mild to moderate AST and ALT elevations (AST < ALT), sometimes Alk phos elevation
  - Low platelet count concerning for cirrhosis
- Imaging
  - US, CT, MRI can also suggest steatosis/fatty infiltration
- Rule out other causes of liver disease
  - ETOH, Medications, viral hepatitis, iron overload
  - Autoimmune liver disease (AMA, IgG, ANA, ASMA, ceruloplasmin, A1AT, TTG, IgA)
- Liver biopsy - only if alternative etiology is suspected or unable to stage noninvasively

Staging MASLD

- Blood based fibrosis testing
- US based techniques
  - Vibration-controlled transient elastography (Fibroscan)- specialty clinics
  - 2D-SWE and ARFI – performed by radiology departments, usually more $$
- MR Elastography
  - More accurate than US based techniques but $$$
- Liver biopsy

What is Fibroscan?

- Non invasive fibrosis testing
  - 80% sensitivity for detecting advanced fibrosis (F3) or cirrhosis (F4)
- Measures liver density



Density measurement (kPa)

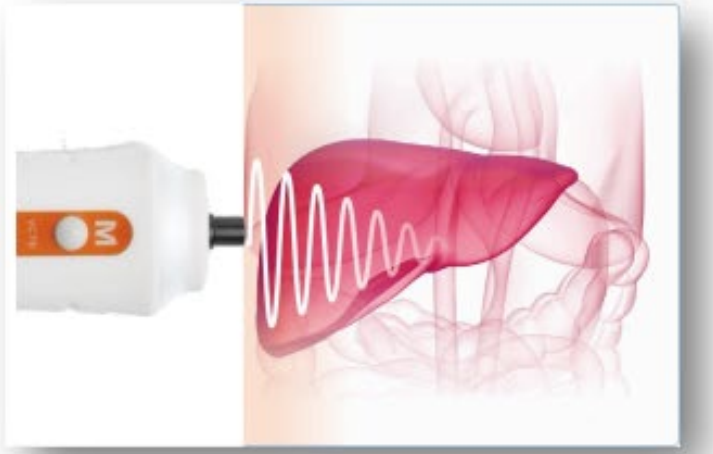
- In soft tissues, stiffness is related to the velocity of elastic waves called **shear waves**.
- The faster the shear waves, the stiffer the medium.

Stiffness (E) ~ 3 x (shear wave speed)²

1. Generate a shear wave in the liver
2. Uses ultrasound to measure shear wave speed Vs (m/s)
3. Compute the corresponding stiffness (E) in kPa

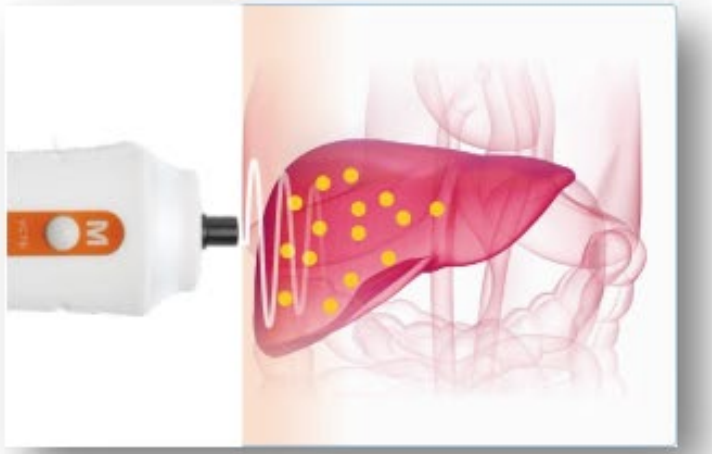
CAP (Ultrasound attenuation Rate)

CAP (dB/m) is measured by sending ultrasound waves into the liver and then measuring how much of the signal was attenuated.



Liver without Steatosis

- Low Ultrasound attenuation rate
- Low CAP value (dB/m)



Liver with Steatosis

- High Ultrasound attenuation rate
- Elevated CAP value (dB/m)

Confounding factors

(aka other things that make the liver seem dense)

- Alcohol
- Inflammation
- Hepatic Congestion (R heart failure)
- Cholestasis

- Not fasting
- Operator Error

- These factors falsely INCREASE results. Hard to have false negative or decrease kPa

How to use Fibroscan

1) Staging Liver Disease
   - Prognosis based on fibrosis stage >> steatosis
   - If F2 or F3, then qualify for MASLD specific medications
   - If F4, standard cirrhosis protocol for HCC screening with US and AFP q6 months

2) Evaluate for steatosis
   - !!!! Does NOT replace standard US in the workup of abnormal LFTs because we are not looking for structural/biliary changes
   - Less of a reliable measurement for grading steatosis

Blood based fibrosis testing

- Free “tests”
  - Fib 4 – Age, AST, ALT, platelet count
    - Good at ruling OUT advanced fibrosis (90% NPV for if score < 1.3)
  - APRI – AST to platelet ratio
  - NFS (NAFLD fibrosis score) – age, BMI, DM, AST, ALT, Plt count, albumin

- Proprietary panels -not recommended in AASLD guidelines
  - ELF – can be used to get insurance prior authorization for MASH specific medications
  - FibroSure/FibroTest, FibroSpect, etc

Sterling et al. AASLD Practice Guideline on blood-based noninvasive liver disease assessment of hepatic fibrosis and steatosis. Hepatology 2025

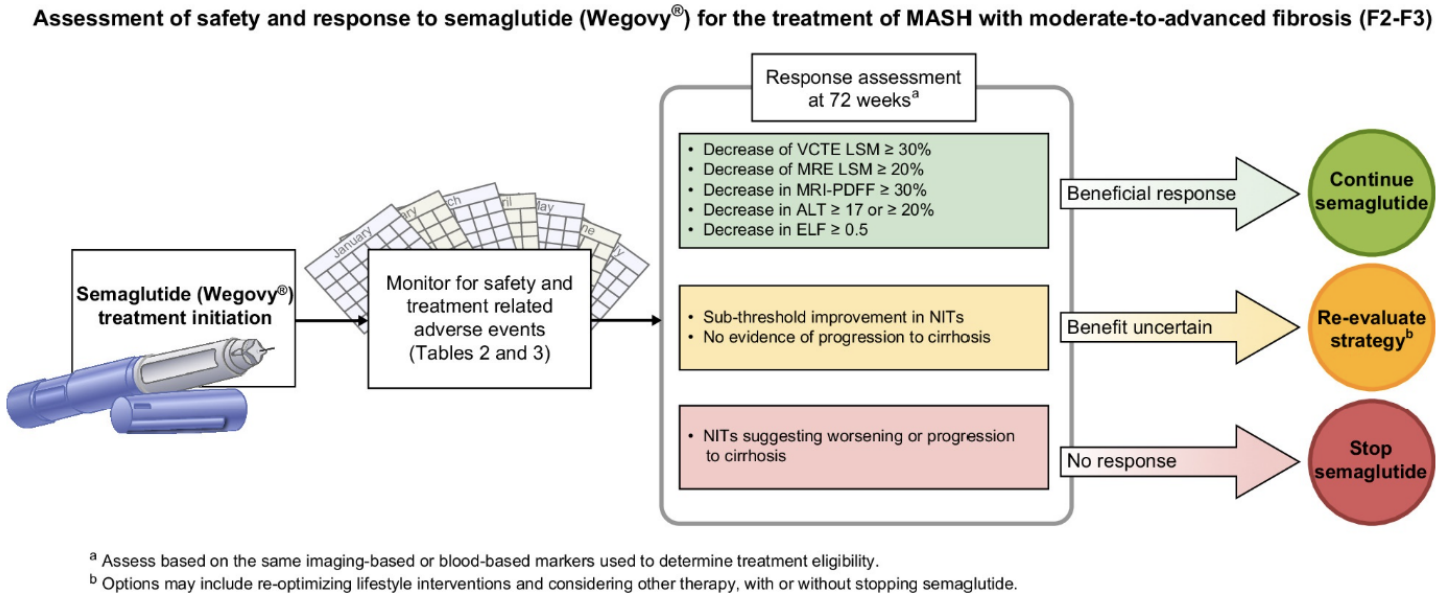
Management – non pharmacologic

- Weight loss – 10% total body weight reduction
  - Bariatric surgery
- Mediterranean Diet- consider referral to dietician
  - Other diets can work too but I generally don't recommend extreme diets like keto
  - 2 cups black coffee/day
- Physical Activity – 150 minutes/week
  - Beneficial even in absence of weight loss
- Avoid ETOH
- Immunizations for Hep A/B
- Optimize blood glucose and lipids

Rinella et al. AASLD Practice Guidance on the clinical assessment and management of nonalcoholic fatty liver disease. Hepatology 2023

Management – pharmacologic

- GLP1 agonists
- Semaglutide (Wegovy)
  - FDA approved for MASH with F2 or F3 fibrosis – Fibroscan ~ 8-15 kPa
    - ESSENCE trial
    - Resolution of MASH without worsening of fibrosis (62.9% vs. 34.3% placebo, *p*<0.001)
    - ≥1 stage reduction in liver fibrosis without worsening of MASH (36.8% vs. 22.4%placebo, *p*<0.001)
- Tirzepatide and liraglutide – not FDA approved for MASH specifically but studies show effective



Bansal et al. Semaglutide therapy for metabolic dysfunction–associated steatohepatitis: November 2025 updates to AASLD Practice Guidance. Hepatology 2026

Management – pharmacologic

- Resmetirom (Rezdiffra)
  - FDA approved for MASH with F2 or F3 fibrosis
  - Thyroid receptor beta agonist
    - Promotes TG clearance reducing liver fat, reduces lipoproteins/lipotoxicity which decreases inflammation and fibrosis progression
  - Can be used first line (instead of GLP1)
  - Second line if cannot tolerate or do not achieve weight loss with GLP1
  - 52 week outcomes
    - MASH resolution ~25% vs 9% with placebo
    - Improvement of fibrosis by at least one stage 25% vs 14% with placebo

Harrison et al. A Phase 3, Randomized, Controlled Trial of Resmetirom in NASH with Liver Fibrosis. NEJM 2024

Management - pharmacologic

- Pioglitazone
  - Can be considered for patients with DM
  - 47% vs 21 % MASH resolution in PIVENS trial
  - Weight gain

- Vit E – guidelines say “select use” - I generally don’t use

Rinella et al. AASLD Practice Guidance on the clinical assessment and management of nonalcoholic fatty liver disease. Hepatology 2023

Key Points

- Diagnosed based on risk factors, imaging, labs and ruling out other causes of liver disease
- Staging is important for both prognosis and management including qualifications for MASH specific therapies
- Management includes both lifestyle changes and FDA approved medications including Semaglutide and Resmetiron

References

- Rinella et al. A multisociety Delphi consensus statement on new fatty liver disease nomenclature. Hepatology 2023
- Sterling et al. AASLD Practice Guideline on blood-based noninvasive liver disease assessment of hepatic fibrosis and steatosis. Hepatology 2025
- Rinella et al. AASLD Practice Guidance on the clinical assessment and management of nonalcoholic fatty liver disease. Hepatology 2023
- Bansal et al. Semaglutide therapy for metabolic dysfunction–associated steatohepatitis: November 2025 updates to AASLD Practice Guidance. Hepatology 2026
- Harrison et al. A Phase 3, Randomized, Controlled Trial of Resmetirom in NASH with Liver Fibrosis. NEJM 2024
- Long et al. Phase 3 Trial of Semaglutide in Metabolic Dysfunction–Associated Steatohepatitis. NEJM 2025