PRACTICE MANAGEMENT Toolbox

Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD): Incorporating Imaging Testing in Your Practice

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Introduction

The prevalence of Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD) is increasing worldwide and is estimated to affect 25%-30% of the general adult population. The prevalence of Metabolic Dysfunction-Associated Steatohepatitis (MASH) is estimated to be 14% among asymptomatic patients undergoing colon cancer screening. The prevalence of clinically significant fibrosis in MASH patients (stage 2 or higher) has more than doubled. Hence, the incidence of Hepatic Decompensation, Hepatocellular Carcinoma (HCC), and death related to MASH cirrhosis is expected to increase two-to-three-fold by 2030.

With the first antifibrotic medication currently available with others in clinical trials and the availability of practice-based imaging modalities, gastroenterologists have a unique opportunity to diagnose and treat MASH and prevent progression.

Patient Selection for screening:
It is important to note that normal values provided by most laboratories are higher than what should be considered normal in MASLD:

True normal:

- Men: ALT: 29-33 U/L
- Women: ALT: 19-25 U/L

Initial evaluation should include:

- Assessment of metabolic comorbidities
- Evaluation of alcohol intake (normal intake is defined as ≤1 drink/day and ≤7 drinks/week for women, and ≤2 drinks/day and ≤14 drinks/week for men).

- Exclusion of other causes of liver disease
- Physical exam to identify signs of insulin resistance and advanced liver disease.
- Review of medications that are linked to MASLD/MASH:
    - Amiodarone
    - 5-FU
    - Irinotecan
    - Tamoxifen
    - Methotrexate
    - Corticosteroids

Routine screening of the general population for MASLD-related advanced fibrosis is not currently recommended. However, screening of individuals who are at increased risk for advanced liver fibrosis can be considered.

Society guidelines support screening for advanced fibrosis in the following high-risk groups:

- Patients with Type 2 Diabetes Mellitus
- Individuals with obesity plus at least one obesity-related comorbidity (e.g., insulin resistance, dyslipidemia, hypertension, etc.)
- MASLD with moderate alcohol use
    - Alcohol intake classification:
        - Mild: women: ≤20 g/day; Men: ≤30 g/day
        - Moderate: women: 21–39 g/day; Men: 31–59 g/day
        - Heavy: Women: ≥ 40g/day; Men: ≥ 60g/day
- First degree relatives of patients with cirrhosis due to MASLD/MASH
- Patients with ≥2 metabolic risk factors

Risk stratification the American Association for the Study of Liver Diseases (AASLD) guidance statement:

- All patients with hepatic steatosis or clinically suspected MASLD based on the presence of obesity and metabolic risk factors should undergo primary risk assessment with FIB-4
- High-risk individuals, such as those with Type 2 Diabetes, medically complicated obesity, family history of cirrhosis, or more than mild alcohol consumption, should be screened for advanced fibrosis

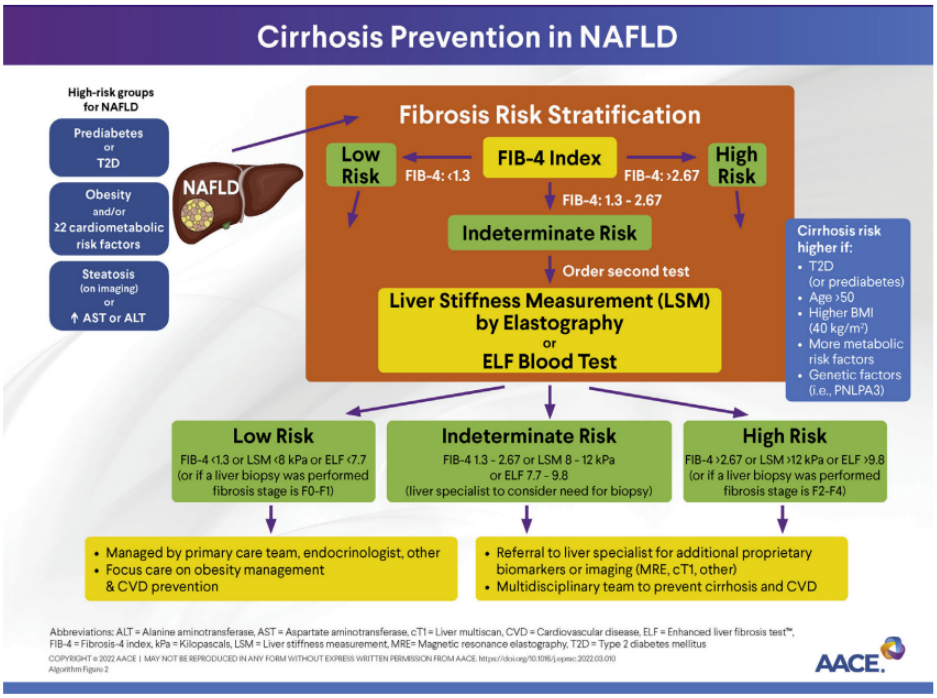
Tests to Detect Advanced Fibrosis

Serum Based Tests:

- Fibrosis (FIB)-4 Index: Calculated using age, AST, ALT, and Platelet count
- NAFLD Fibrosis Score (NFS): Includes age, BMI, diabetes status, AST/ALT ratio, platelet count, and albumin level
- Enhanced Liver Fibrosis (ELF) Score: Measures levels of type III procollagen peptide, hyaluronic acid, and tissue inhibitor of metalloproteinase-1
- FIBROSpect II: Measures alpha-2 macroglobulin, Hyalrunic acid and Tissue inhibitor of metalloproteinase type I

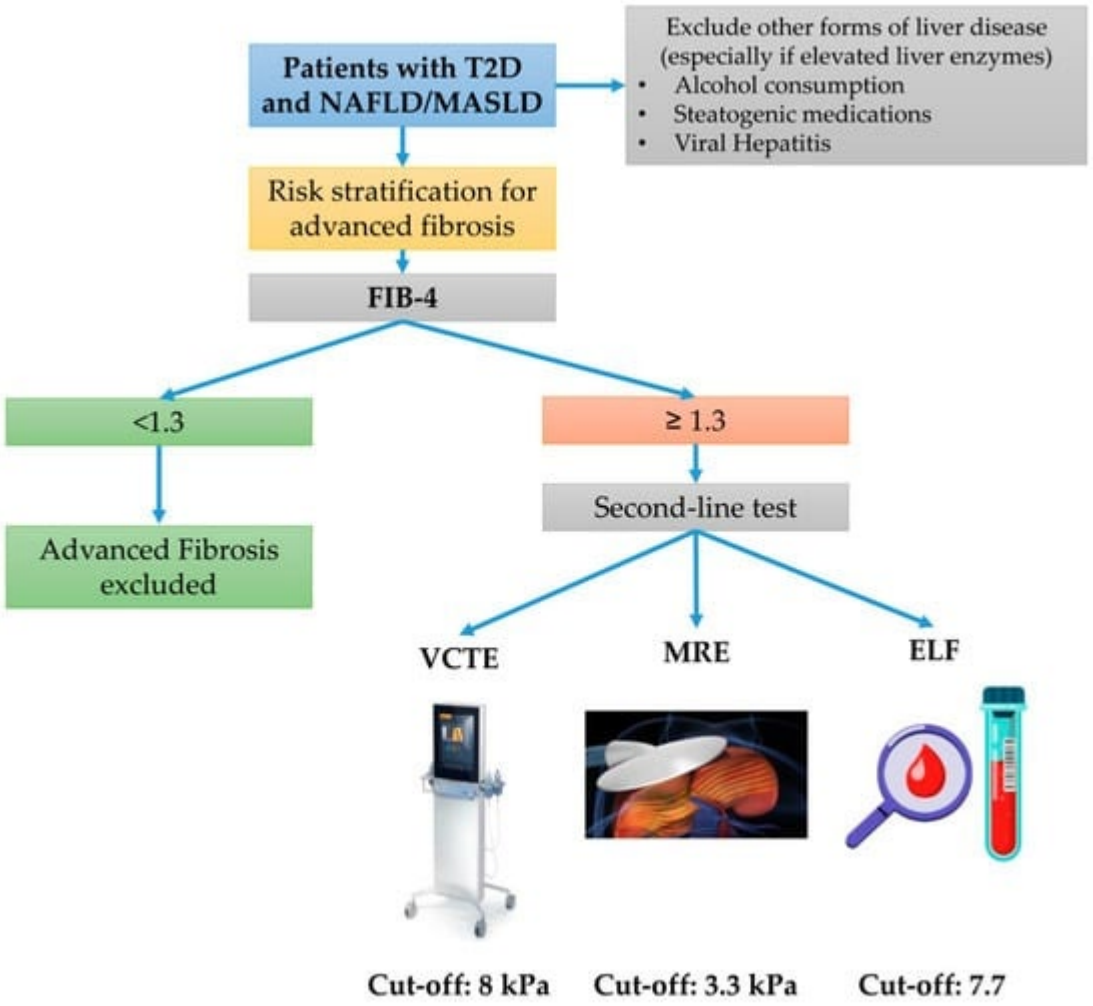
Imaging- Based Tests:

- VCTE (Vibration Controlled Elastography)
- ARFI (Acoustic Radiation Force Impulse)
- SWE (Shear Wave Elastography)
- MRE (Magnetic Resonance Elastography)



Algorithm Fig. 2. Cirrhosis prevention in nonalcoholic fatty liver disease (NAFLD). Once the presence of NAFLD is established, fibrosis risk stratification is essential. The first test recommended is the FIB-4, which often allows separation of those at low risk versus those at high risk of liver fibrosis. However, a significant proportion of persons will fall in a "gray zone" of indeterminate risk that requires additional testing to decide referral to the liver specialist. The second test recommended is LSM or, if unavailable, an ELF blood test. This should determine the risk in most individuals. Persons with a low risk of cirrhosis should be managed in primary care and/or endocrinology clinics, while those with an indeterminate to high risk of liver fibrosis merit referral to the liver specialist and a multidisciplinary approach to management.

Note: Patients with advanced fibrosis (F3-F4) should be referred to and managed by hepatologists rather than primary care providers.



Device Selection:

This toolbox is most useful for practices seeking to incorporate elastography to identify and monitor patients with MASLD. The timing coincides with the FDA's first ever approval of a MASLD therapeutic agent.

On March 14, 2024, the FDA granted accelerated approval to resmetirom (Rezdiffra, Madrigal) for treating metabolic dysfunction–associated steatohepatitis. Resmetirom is approved for use in conjunction with diet and exercise for adults with noncirrhotic MASH with moderate to advanced liver fibrosis (stages F2-F3 fibrosis). It is not approved for the treatment of alcoholic liver disease.

Consider the following factors when selecting a device:

- What are your imaging needs?
- Do you have enough patient volume to ensure cost-effectiveness?
- Can the device be integrated into your practice workflow seamlessly?
- Can you be reimbursed adequately to make it sustainable?
- Portable imaging is best suited for practices with multiple satellite offices.

	Capital purchase option	Software & Maintenance fee	Consumables per patient (Sweep Guide)	CPT Code	Reimbursement (Medicare)	Revenue of **1300** Scans / 1st year if purchased	Pros	Cons
Velacur (SWE)	$52,000 $1603/month for 36 months	$600/ month	$6/ patient	76981	$106	$76,000	Affordable, Portable, No radiologist needed, better in quantification of steatosis than FibroScan	Cannot detect HCC, not useable for ultrasound
FibroScan (VCTE)	$90,000	0	0	91200	$31.49	-$49,063	Familiar, well validated	Poorly reimbursed, no ultrasound
Mindray	$116,000	0	0	76981	$106	$21,800	Full ultrasound capabilities, can be used for bowel imaging	Expensive, Bulky, and requires radiologist

Integration to Practice

- *Location of Device*
    - The device selected should be placed at your busiest and most centrally located office. Use a private or semi-private room with an examination table for the purpose of convenient imaging.

- *Personnel*
    - Velacur and FibroScan imaging can be done by a medical assistant, CNA/RMA, or trained nurse. It is not recommended to use a physician assistant, nurse practitioner, or physician because this task would be cost prohibitive. This excludes Mindray technology as this technology requires a radiologist.

- *Incorporation of Records into Enterprise EMR*
    - None of these devices currently integrate their reports into proprietary EMR systems like EPIC, Cerner, gMed, eClinicalWorks, and Allscripts. Reports must be manually downloaded and uploaded. A notable exception is Mindray reports can be directly entered by a radiologist.

Billing and Reimbursement

Based on the selected device, the requisite CPT code and dollar amount will be determined. It is vital that patient selection, practice guidelines, and documentation support our reimbursement claims.

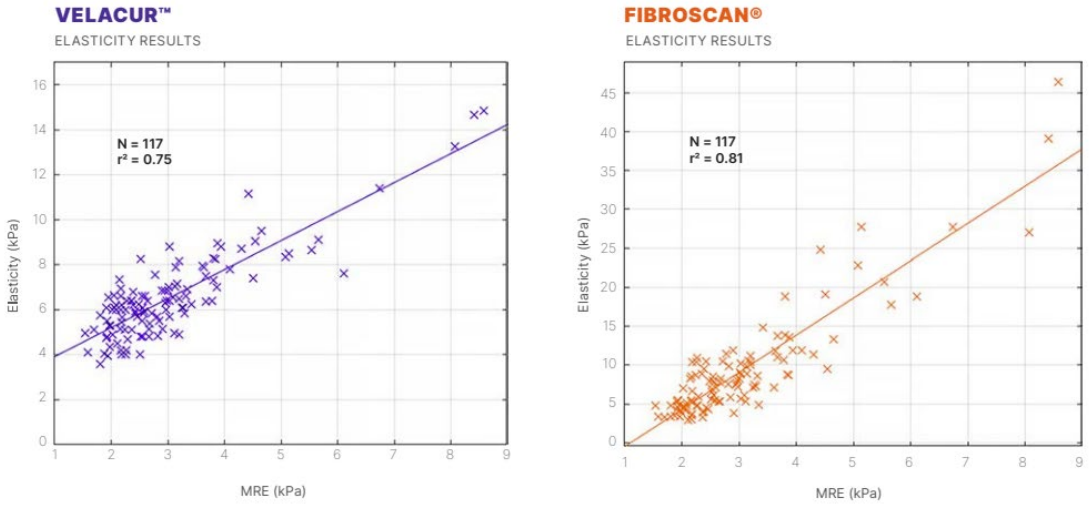
We anticipate further guidelines on frequency for repeating liver stiffness measurement (LSM) in patients undergoing pharmacotherapy (e.g., remiseterom or GLP-1 agonists) and those under surveillance.

FibroScan® Expert 630

A prototype Velacur® system comprised of a control unit, a laptop, an ultrasound probe, and an activation unit.

Stage	Velacur AUROC [CI]	FibroScan AUROC [CI]	Statistically different ($p < 0.05$)
>F0	0.826 [0.714, 0.888]	0.875 [0.809, 0.925]	No
>F1	0.889 [0.794, 0.933]	0.883 [0.803, 0.930]	No
>F2	0.953 [0.913, 0.983]	0.967 [0.940, 0.997]	No
>F3	0.961 [0.900, 0.991]	0.992 [0.971, 1.000]	No

Above: AUROCs for Velacur and FibroScan at each fibrosis stage. Separation of each cutoff was not significantly different.



Source: POSTER PRESENTATION #2685 - AASLD 2022. COMPARISON OF VELACUR™ AND FIBROSCAN® TO MAGNETIC RESONANCE IMAGING. FOR QUANTITATIVE ASSESSMENT OF FIBROSIS AND STEATOSIS IN NAFLD. Rohit Loomba et al.

Hepaticus Series Diagnostic Ultrasound System (Mindray)

Hepatus 6

Hepatus 5

References

AASLD Practice Guidance on the clinical assessment and management of nonalcoholic fatty liver disease: Hepatology 2023;77- Issue 5.

Younossi ZM, et al. Global epidemiology of nonalcoholic fatty liver disease: Hepatology. 2016;64:73-84.

Harrison SA, et al. Evaluation of NAFLD and NASH in a middle-aged U.S. cohort. J Hepatology. 2021;75:284-91.

Estes C, et al. Modeling NAFLD burden. Hepatology. 2018;67:123-33.
Kwo PY, et al. ACG Clinical Guidelines: Abnormal liver chemistries. Am J Gastroenterol. 2017;112:18-35.

FDA Approval of Resmetirom for MASH: https://www.fda.gov/news-events/press-announcements/...

Curry MP, et al. Velacur® feasibility study. Int J Hepatol. 2024;2024:8877130.

Cusi K, et al. AACE Guidelines on NAFLD: Endocr Pract. 2022;28(5):528-562.

FibroScan Expert 630: https://www.echosens.com/products/fibroscan-expert/

Mindray Hepaticus Series: https://www.mindray.com/en/products/ultrasound/liver-care/hepatus-series

Ciardullo S, et al. NAFLD in Type 2 Diabetes: J Clin Med. 2023;12(17):5597.

Rinella ME, et al. AASLD Guidance on NAFLD: Hepatology 2023; 77:1797.