Supplementary Methods

Histological Assessment: Hepatic fibrosis was scored from 0 to 4 (0, 1, 2, 3, 4), steatosis and lobular inflammation were scored from 0 to 3 (0, 1, 2, 3), and hepatocellular ballooning was scored from 0 to 2 (0, 1, 2). The sum of these scores, known as the NAFLD activity score (NAS) was calculated. NASH was scored on a three-point scale (no NASH, borderline NASH, or definite NASH). Patients with borderline or definite NASH were considered as having NASH in this study.

Magnetic Resonance Elastography: A standard 60 Hz shear-wave was generated by an acoustic passive driver attached to the body wall anterior to the liver and coupled with an acoustic active driver outside the MR exam room. A two-dimensional motion-sensitized gradient-recalled-echo MRE pulse sequence synchronized to the shear wave frequency was acquired to obtain four noncontiguous axial slices (10mm thickness, 10mm interslice gap), each during a 16-second breath hold, through the widest transverse section of the liver with short recovery times in between. The acquisition parameters were as follows: repetition time, 50 ms; echo time, 20.2 ms; flip angle, 30 degrees; matrix, 256 × 64; field of view, 48 × 48 cm; one-signal average; receiver bandwidth ± 33 kilohertz; and parallel imaging accelerating factor, 2. The total acquisition time was approximately 2 minutes.

The wave images from each slice location were automatically processed on the scanner computer using inversion algorithm to generate axial liver stiffness maps called elastograms. The elastograms were transferred and analyzed offline by a trained image analyst (at least 6 months of experience with MRE analysis) blinded to clinical and histological data. While avoiding liver edges, large blood vessels, and artifacts, the image analyst drew regions of interests on the elastograms using a custom software package in parts of the liver where wave propagation was shown clearly on the wave images. The mean per-pixel liver stiffness values across regions of interests at the four slices were calculated and automatically recorded in an electronic spreadsheet.

Supplementary Tables

Supplementary Table 1– Time to biopsy

Diagnostic test characteristics of TE and MRE for the Diagnosis of Fibrosis and MRI and CAP for Steatosis against models including time to biopsy.

Overall N=94		AUROC (95% CI)	Unadj vs time *p**
Primary analyses			
Stage 1-4 (n=51) versus Stage 0 (n=43)	MRE	0.82 (0.74-0.91)	
	MRE + TIME	0.84 (0.76-0.92)	0.1746
Stage 1-4 (n=51) versus Stage 0 (n=43)	TE	0.67 (0.56-0.78)	
	TE + TIME	0.62 (0.51-0.74)	0.4365
Grade 1-3 (n=71) versus Grade 0 (n=6)	MRI	0.99 (0.98-1.00)	
	MRI + TIME	0.99 (0.98-1.00)	1.000
Grade 1-3 (n=71) versus Grade 0 (n=6)	CAP	0.87 (0.77-0.98)	
	CAP + TIME	0.91 (0.83-0.99)	0.1829

**p* value: AUROC of unadjusted model versus model with time via Delong Test

AUROC: Area under receiver operating characteristic curve; CI: Confidence interval; PPV: Positive predictive value; NPV: Negative predictive value

Supplementary Table 2 – Probe Type

Diagnostic test characteristics of TE and MRE for the Diagnosis of Fibrosis and MRI and CAP for Steatosis against models including probe type.

		AUROC (95% CI)	Unadj vs probe (*p*)*
Primary analyses			
Stage 1-4 (n=51) versus Stage 0 (n=43)	TE	0.67 (0.56-0.78)	
	TE + Probe	0.62 (0.51-0.74)	0.2982
Grade 1-3 (n=71) versus Grade 0 (n=7)	CAP	0.85 (0.74-0.96)	
	CAP + Probe	0.85 (0.72-0.98)	0.9774

**p* value: AUROC of unadjusted model versus model with probe type via Delong Test

AUROC: Area under receiver operating characteristic curve; CI: Confidence interval; PPV: Positive predictive value; NPV: Negative predictive value