

# Gaps in Confirmatory Fibrosis Risk Assessment in Primary Care Patients with Nonalcoholic Fatty Liver Disease

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## Background

- Nonalcoholic fatty liver disease (NAFLD) and nonalcoholic steatohepatitis (NASH) is estimated to affect 37% and up to 6.5% of adults in the United States, respectively <sup>1-3</sup>
- Identifying clinically significant fibrosis is essential for hepatology referral and comorbid management <sup>4</sup>
- Serologic fibrosis risk scores such as Fibrosis-4 (FIB-4) and NAFLD Fibrosis Score (NFS) can assess for fibrosis <sup>5</sup>
- Indeterminant and high-risk serologic risk scores warrant confirmatory liver stiffness testing such as vibration controlled elastography (VCTE) <sup>6</sup>

## Aim

- We investigated the use of VCTE for fibrosis risk assessment in primary care patients with NAFLD and indeterminant-risk or greater serologic fibrosis risk

## Hypothesis

- >50% of patients diagnosed with NAFLD would have a serologic score of indeterminant-risk or greater
- Few qualifying patients would have a confirmatory test

## Methods

- Retrospective cohort study comprised of patients in a primary care clinic
- Patients with NAFLD identified from 2012-2021 using ICD 9/10 codes
- Qualifying inputs for FIB-4 and NFS calculation within 3 years from the end of study period
- Required platelet counts within 6 months of AST and ALT values. Most recent laboratory data was utilized
- Charts reviewed to identify outcome of confirmatory fibrosis assessment (elastography or biopsy)
- Exclusion criteria: ALT or AST >350 IU/L; severe liver outcome during study period (cirrhosis, HCC, transplant)

## RESULTS

**Table 1.** Cohort characteristics overall and by incidence of a CLD

Indication for confirmatory advanced fibrosis risk assessment				
	Overall	Yes	No	p-value
Characteristics		FIB-4 ≥ 1.3 or NFS ≥ -1.455	FIB-4 < 1.3 and NFS < -1.455	
	n=604	n=399	n=205	
Demographics				
Age (mean ± SD)	57.0 ± 13.7	61.1 ± 12.3	49.1 ± 12.9	<.0001
Gender % (n)				0.6645
Female	59.8 (361)	59.1 (236)	61.0 (125)	
Male	40.2 (243)	40.9 (163)	39.0 (80)	
Race % (n)				0.0016
Black	29.6 (179)	33.8 (135)	21.5 (44)	
Non-Black	70.4 (425)	66.2 (264)	78.5 (161)	
Clinical variables, Median (IQR)				
BMI	32.2 ± 7.6	33.4 ± 8.0	29.9 ± 6.1	<.0001
Bilirubin	0.63 ± 0.55	0.63 ± 0.55	0.62 ± 0.54	0.7864
AST	37.5 ± 42.0	41.9 ± 49.6	29.0 ± 17.7	<.0001
ALT	41.7 ± 35.6	40.5 ± 35.7	44.0 ± 35.4	0.2651
Albumin	3.7 ± 0.6	3.6 ± 0.6	4.0 ± 0.5	<.0001
Platelets	248.7 ± 84.9	219.3 ± 67.3	305.8 ± 86.5	<.0001
Comorbidities % (n)				
Hypertension	78.5 (474)	85.0 (339)	65.9 (135)	<.0001
Diabetes	45.4 (274)	55.4 (221)	25.9 (53)	<.0001
Hyperlipidemia	69.2 (418)	76.4 (305)	55.1 (113)	<.0001
CVD	25.5 (154)	29.8 (119)	17.1 (35)	0.0007
CKD	15.6 (94)	20.1 (80)	6.8 (14)	<.0001

\*Two sample Student t test. <sup>1</sup>Chi square test. <sup>2</sup>Mann-Whitney U test.FIB-4=Fibrosis-4 Index; NFS=NAFLD Fibrosis Score; SD=standard deviation; BMI=body mass index; AST=aspartate aminotransferase; ALT=alanine aminotransferase; CVD=cardiovascular disease; CKD=chronic kidney disease.

**Table 2.** Cohort FIB-4 and NFS scores, categorized by advanced fibrosis risk (a.), with the number of patients completing confirmatory testing by fibrosis risk category (b).

NAFLD Fibrosis score				
Fibrosis-4 Index	NFS ≤ -1.455	-1.455 < NFS < 0.676	NFS ≥ 0.676	Total (%)
FIB-4 ≤ 1.3	205	140	10	355 (58.8)
1.3 < FIB-4 < 2.67	23	123	41	187 (31.0)
FIB-4 ≥ 2.67	4	14	44	62 (10.3)
Total (%)	232 (38.4)	277 (45.9)	95 (15.7)	604

a.

NAFLD Fibrosis score				
Fibrosis-4 Index	NFS ≤ -1.455	-1.455 < NFS < 0.676	NFS ≥ 0.676	Total (%)
FIB-4 ≤ 1.3	N/A	4	2	6 (14.6)
1.3 < FIB-4 < 2.67	1	24	3	28 (68.3)
FIB-4 ≥ 2.67	0	1	6	7 (17.1)
Total (%)	1 (2.4)	29 (70.7)	11 (26.8)	41

b.

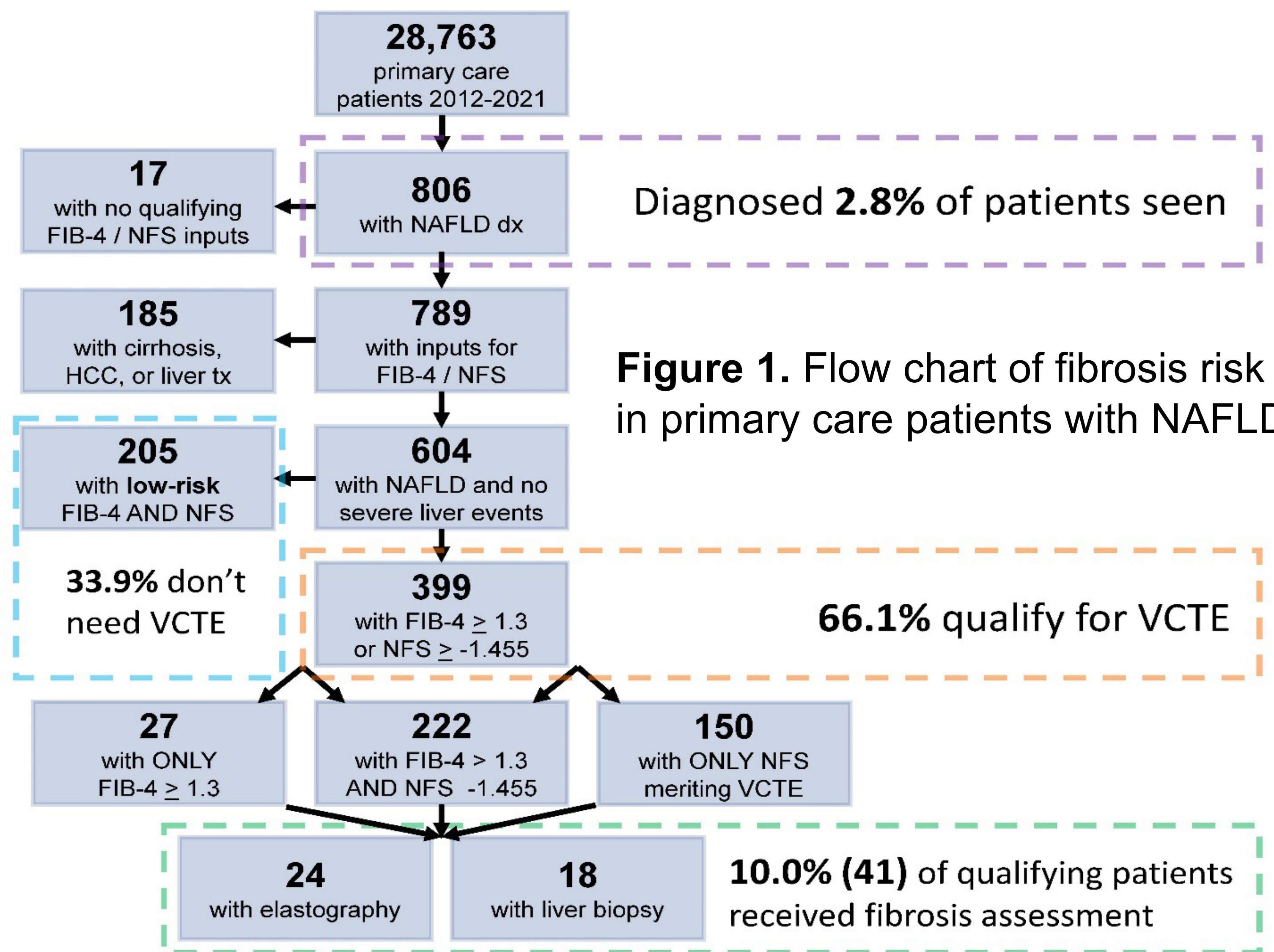
FIB-4=Fibrosis-4 Index; NFS=NAFLD Fibrosis Score

## Discussion

- Large care gaps currently exist at the primary care level in the confirmatory risk assessment of indeterminant and high-risk patients with NAFLD
- As the prevalence of NAFLD and NASH continue to increase, the role of primary care in identifying and risk stratifying these patients will become increasingly important
- Advanced fibrosis is a key indicator of future poor health outcomes in patients with NAFLD and a critical signal for primary care referral to hepatology
- Significant opportunities exists at the primary care level to increase fibrosis risk assessment awareness and to expand confirmatory testing

## References

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Dx=diagnosis; HCC=hepatocellular carcinoma; tx=transplant.