



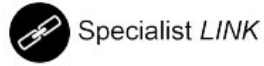
the fib-4  
paradigm  
shift

A Calgary  
Zone webinar

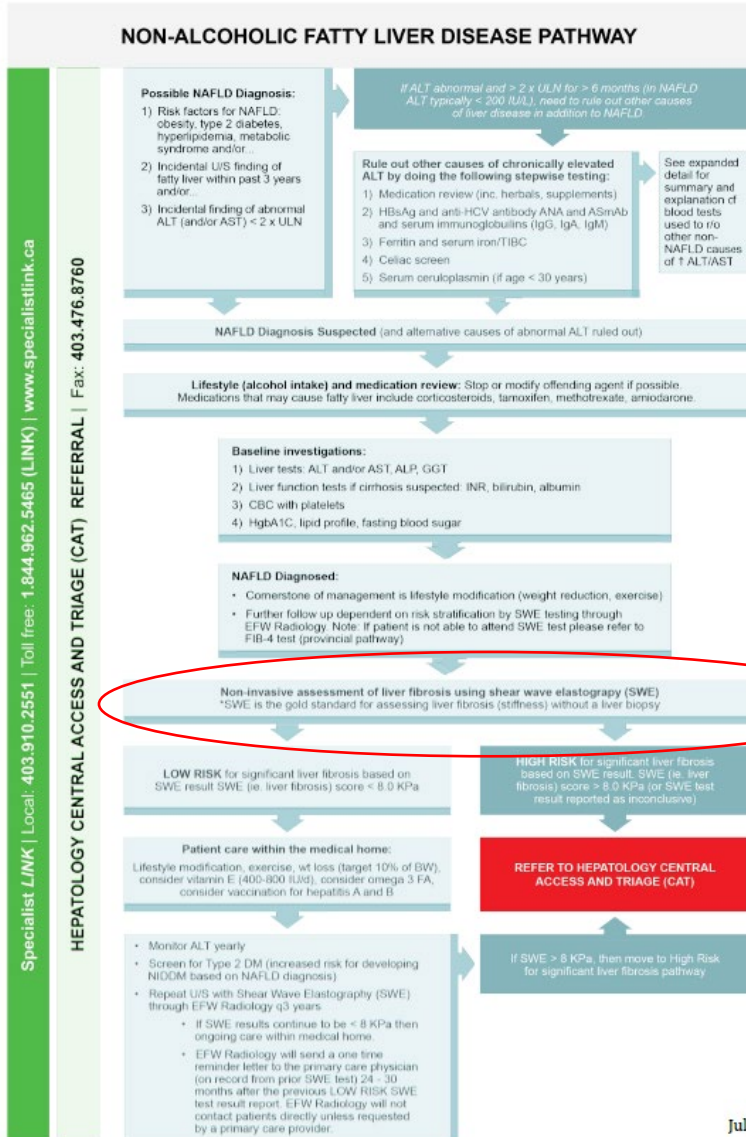
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FEBRUARY 26, 2024

# FIB-4: PARADIGM SHIFT



## The original Calgary Non-Alcoholic Fatty Liver Disease pathway Circa 2018

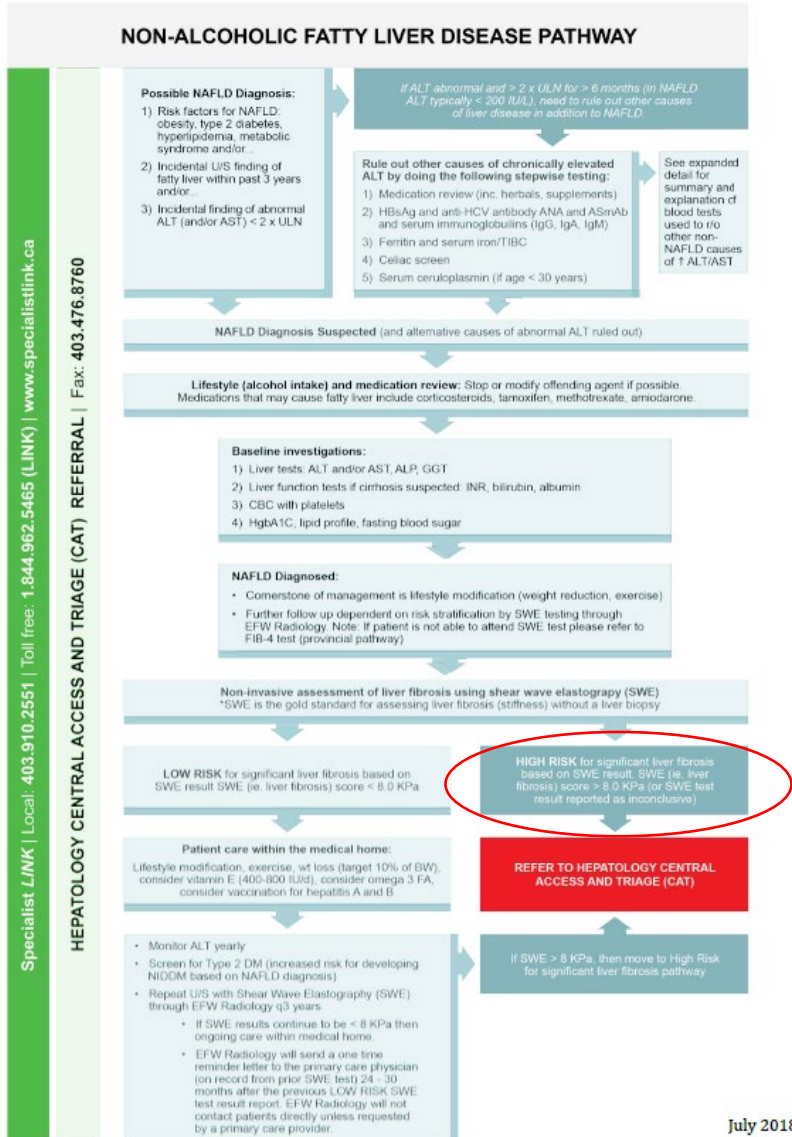


Within the NAFLD pathway SWE was used to stratify patients with NAFLD into being 'low' risk or 'high' risk for having significant liver fibrosis

# FIB-4: PARADIGM SHIFT



## The original Calgary Non-Alcoholic Fatty Liver Disease pathway Circa 2018

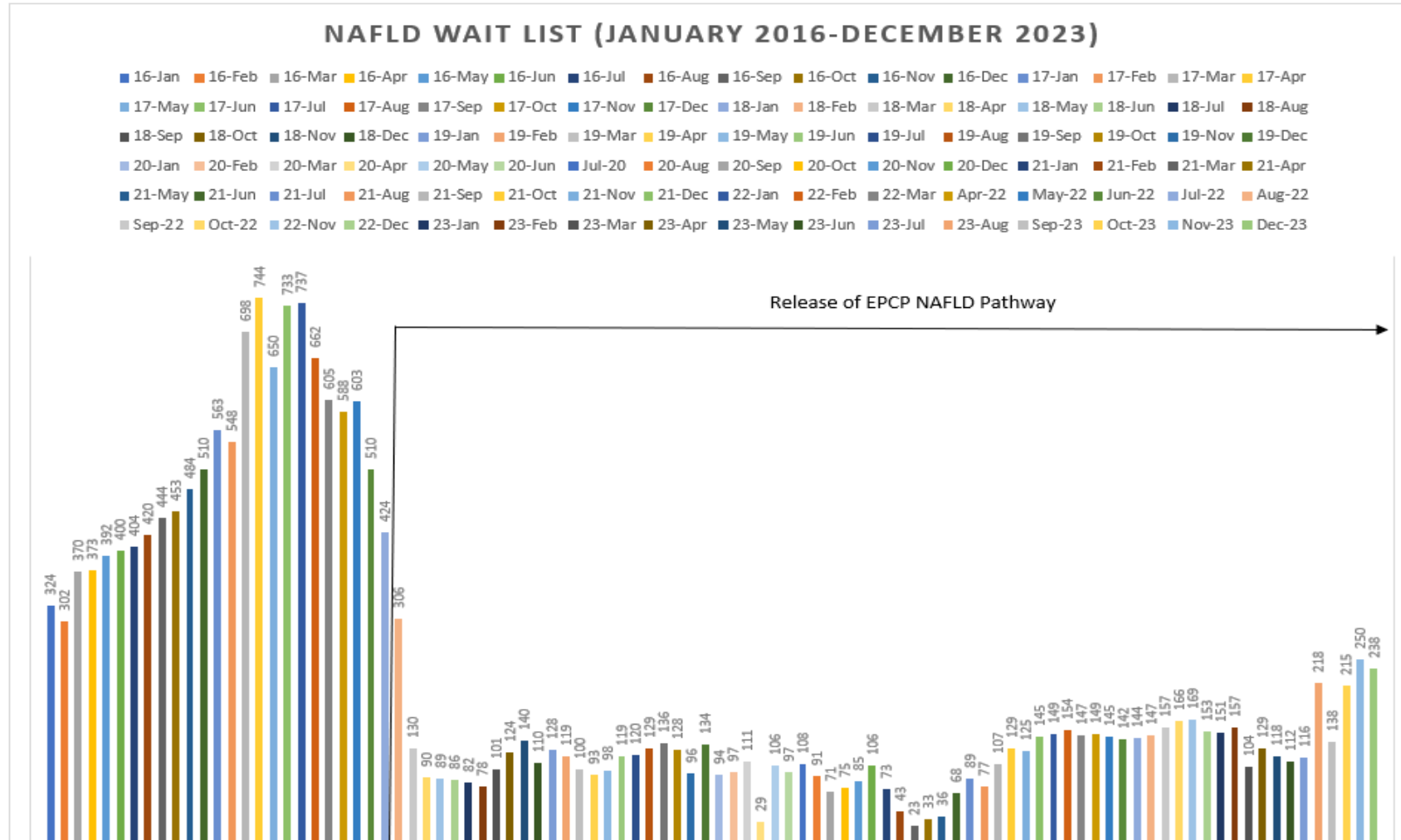


**Recommendation:**  
Patients with a SWE  $\geq$  8 kPa (or inconclusive result; mainly due to high BMI) be referred to hepatology for further evaluation.

# FIB-4: PARADIGM SHIFT

## Number of NAFLD patients on the hepatology waitlist since the launch of the NAFLD pathway

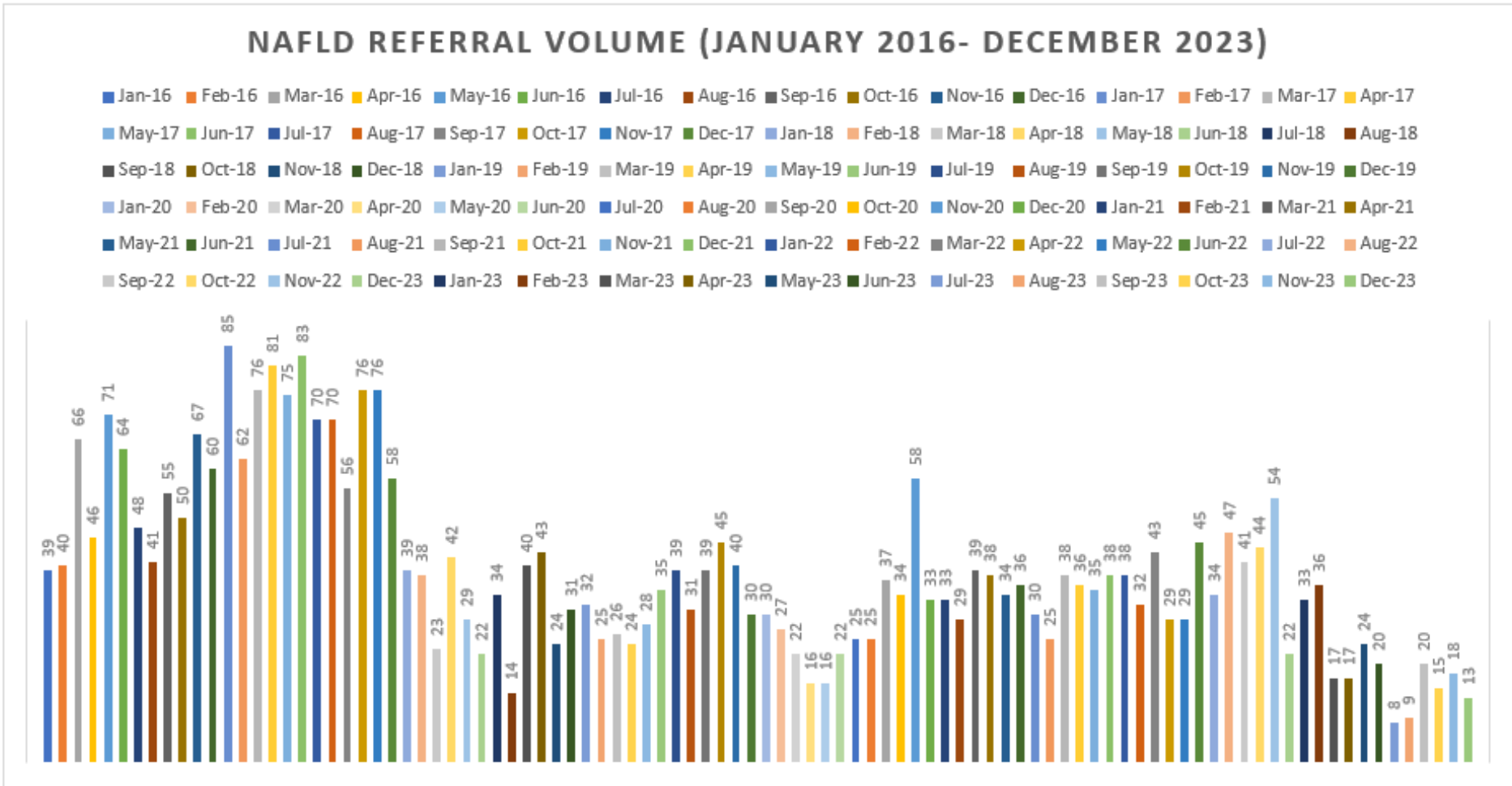
### NAFLD WAIT LIST



# FIB-4: PARADIGM SHIFT

## NAFLD patient referral volume to hepatology CAT since the launch of the NAFLD pathway

### NAFLD REFERRAL VOLUME



# FIB-4: PARADIGM SHIFT

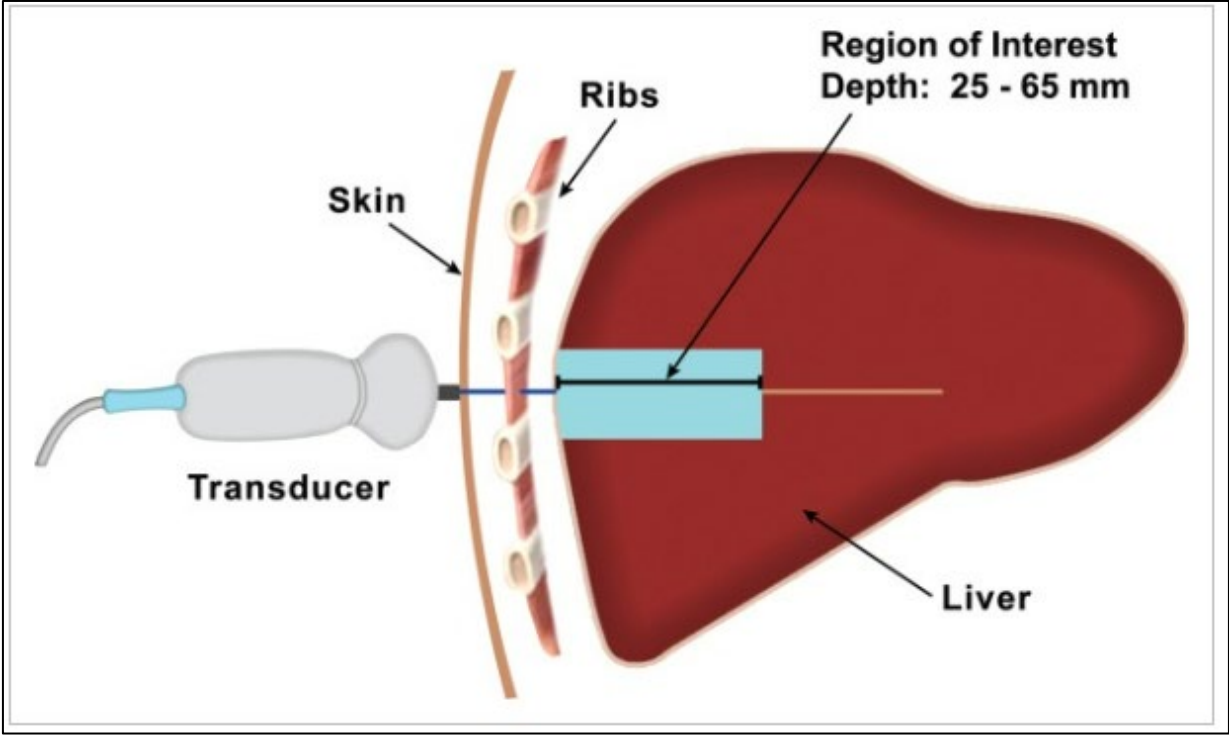
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**Amazing!!!!!!**



# FIB-4: PARADIGM SHIFT

But ...



# FIB-4: PARADIGM SHIFT

Can we use a '2 step' approach to risk stratify NAFLD patients in primary care, with SWE as the second step?

## Step one?





# FIB-4: PARADIGM SHIFT

## What is FIB-4? Why should I use FIB-4?

- The Fibrosis-4 Index (FIB-4) is a non-invasive method to estimate the amount of liver scarring and determine which patients require further investigation.
- The FIB-4 index has been tested against other non-invasive serum markers for liver fibrosis and was found to be superior.
- $FIB-4 \geq 2.67$  has an 80% positive predictive value of significant liver scarring.
- FIB4 index  $< 1.30$  has a 90% negative predictive value (i.e., people with this FIB-4 score are unlikely to have significant liver scarring).
- A FIB-4 check box is now available on community lab requisitions (If not readily available, can order a CBC, ALT, AST and calculate the FIB-4).



# FIB-4: PARADIGM SHIFT

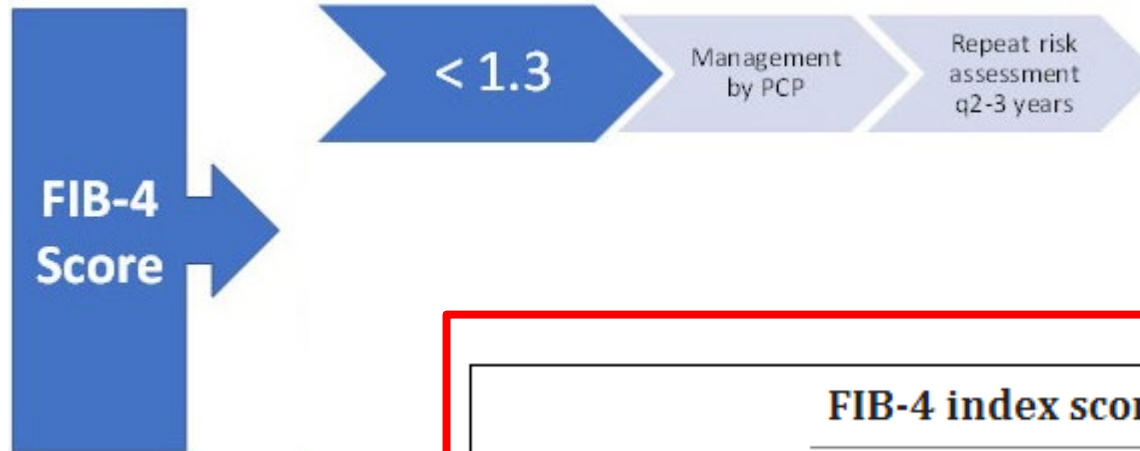
## The FIB-4 calculation

Now a check box on community lab order sheet

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

# FIB-4: PARADIGM SHIFT

## Use of a '2 step' approach to risk stratify NAFLD patients in primary care



cmajOPEN

Research

Risk stratification of patients with nonalcoholic fatty liver disease using a case identification pathway in primary care: a cross-sectional study

Abdel Aziz Shaheen MBBCh MPH, Kiarash Riazi MBBCh, Alexandra Medellin MD, Deepak Bhayana MD, Gilaad G. Kaplan MD MPH, Jason Jiang MSc, Roy Park MD, Wendy Schaufert RN, Kelly W. Burak MD MSc, Monica Sargious MD, Mark G. Swain MD MSc

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

# FIB-4: PARADIGM SHIFT

*How do the various fibrosis detection tools compare?*

	<b>FIB-4</b>	<b>Ultrasound with SWE</b>
<b>How it's done</b>	Calculated based on ALT, AST, platelets	Accessible in community, provider-dependent
<b>Advantages</b>	Low cost, easy to access	May give clues about advanced disease (portal hypertension, nodularity, splenomegaly)
<b>Limitations</b>	Overestimates (40-50% deemed high risk)	Needs more validation A few months to access Less accurate if body mass index (BMI) > 35 10% indeterminate or high risk

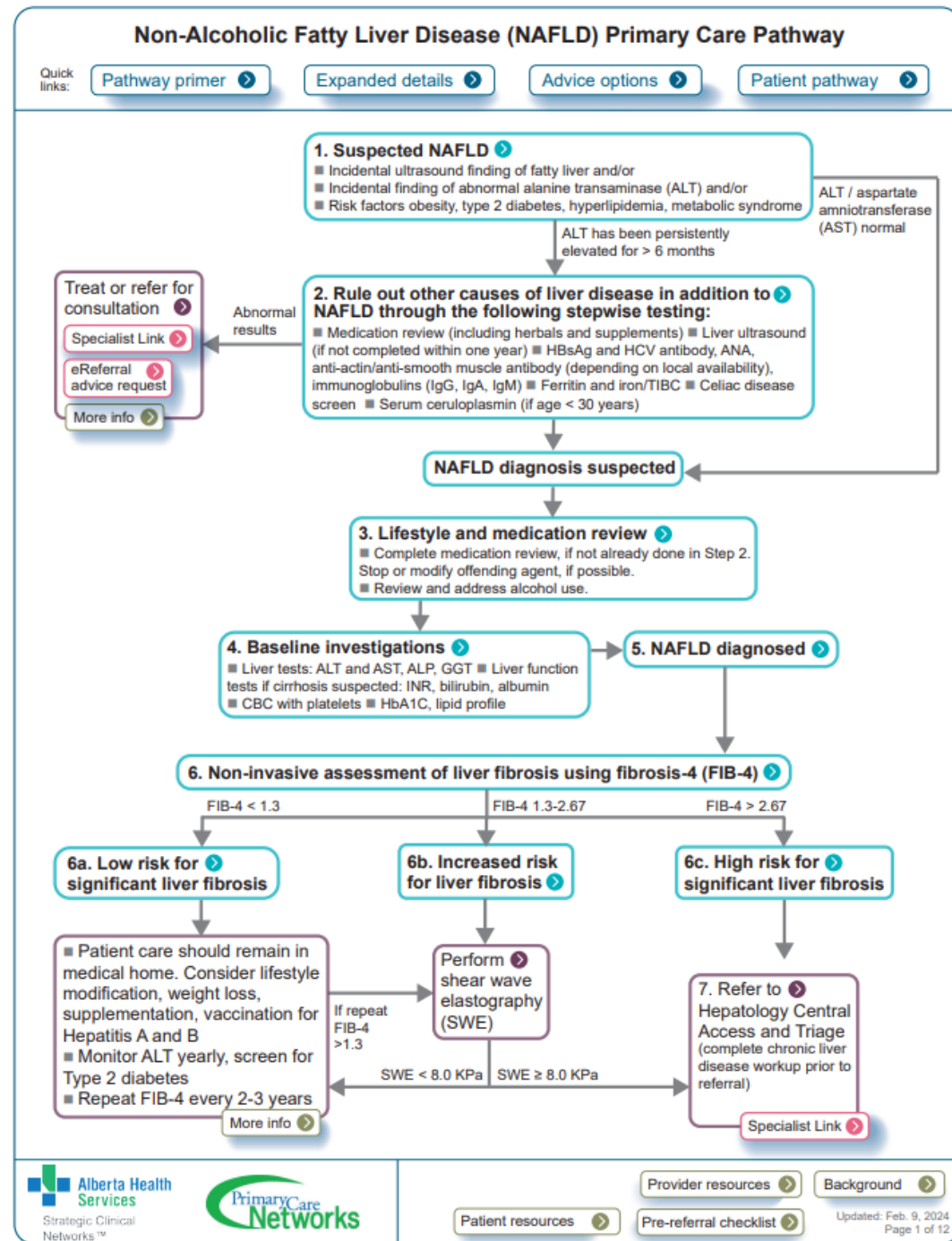


# FIB-4: PARADIGM SHIFT

## The 'new and improved' Calgary NAFLD pathway Circa February 2024

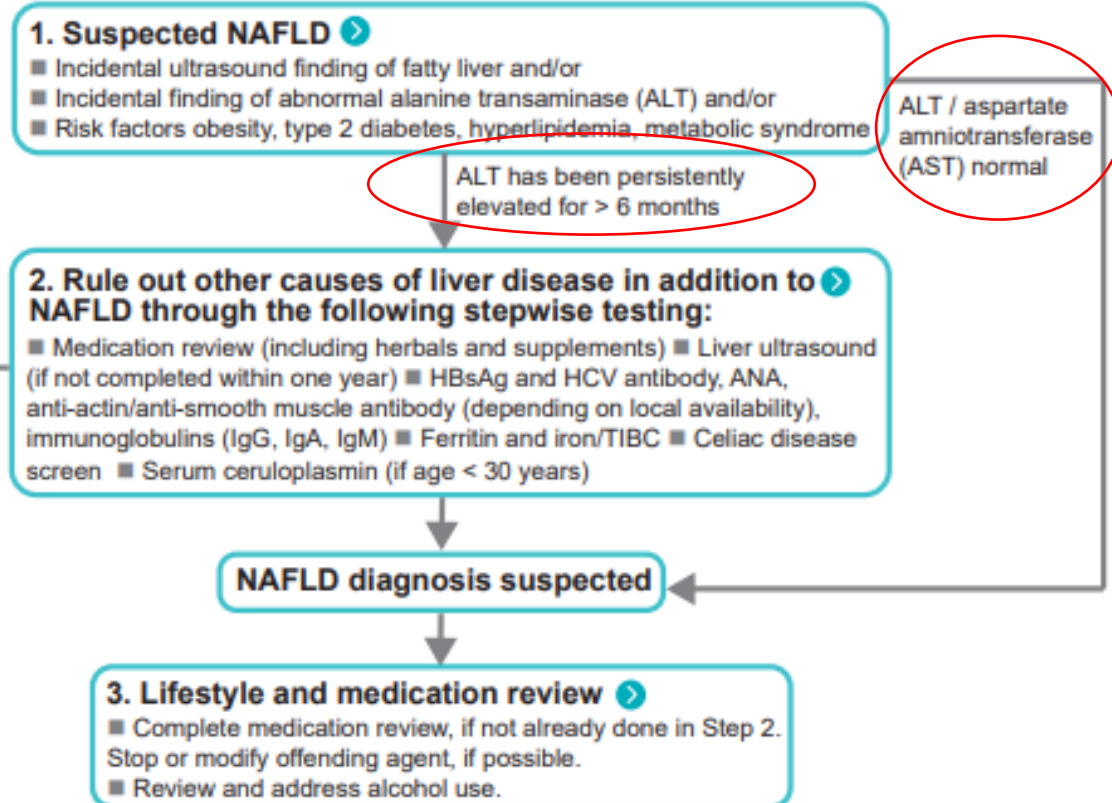


<https://tvtropes.org/pmwiki/pmwiki.php/Main/NewAndImproved>



# FIB-4: PARADIGM SHIFT

## NAFLD primary care pathway

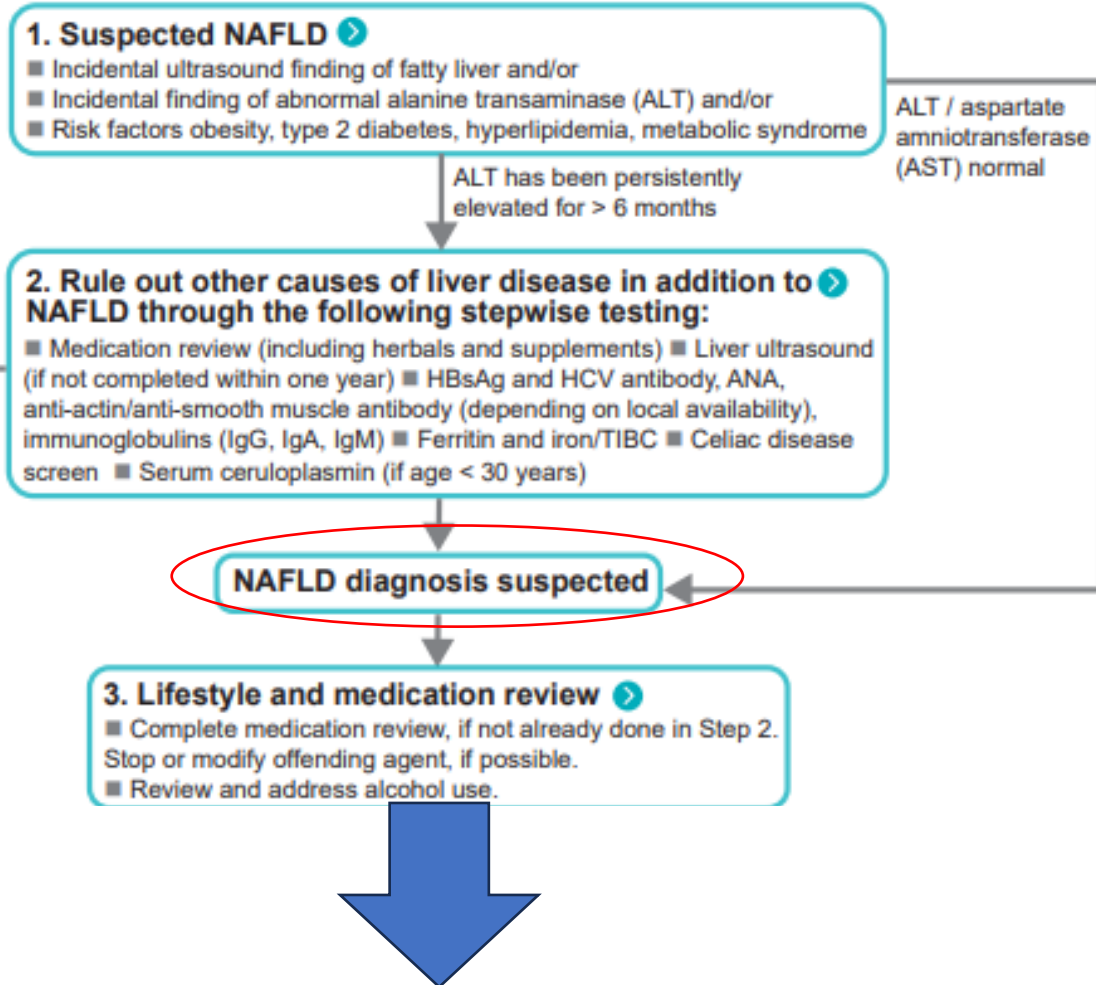


~40% of NAFLD patients have persistently normal ALT/AST

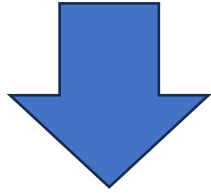
# FIB-4: PARADIGM SHIFT

## NAFLD primary care pathway

~40% of NAFLD patients have persistently normal ALT/AST



# FIB-4: PARADIGM SHIFT



## 4. Baseline investigations >

- Liver tests: ALT and AST, ALP, GGT
- Liver function tests if cirrhosis suspected: INR, bilirubin, albumin
- CBC with platelets
- HbA1C, lipid profile

## 5. NAFLD diagnosed >

## 6. Non-invasive assessment of liver fibrosis using fibrosis-4 (FIB-4) >

FIB-4 < 1.3

FIB-4 1.3-2.67

FIB-4 > 2.67

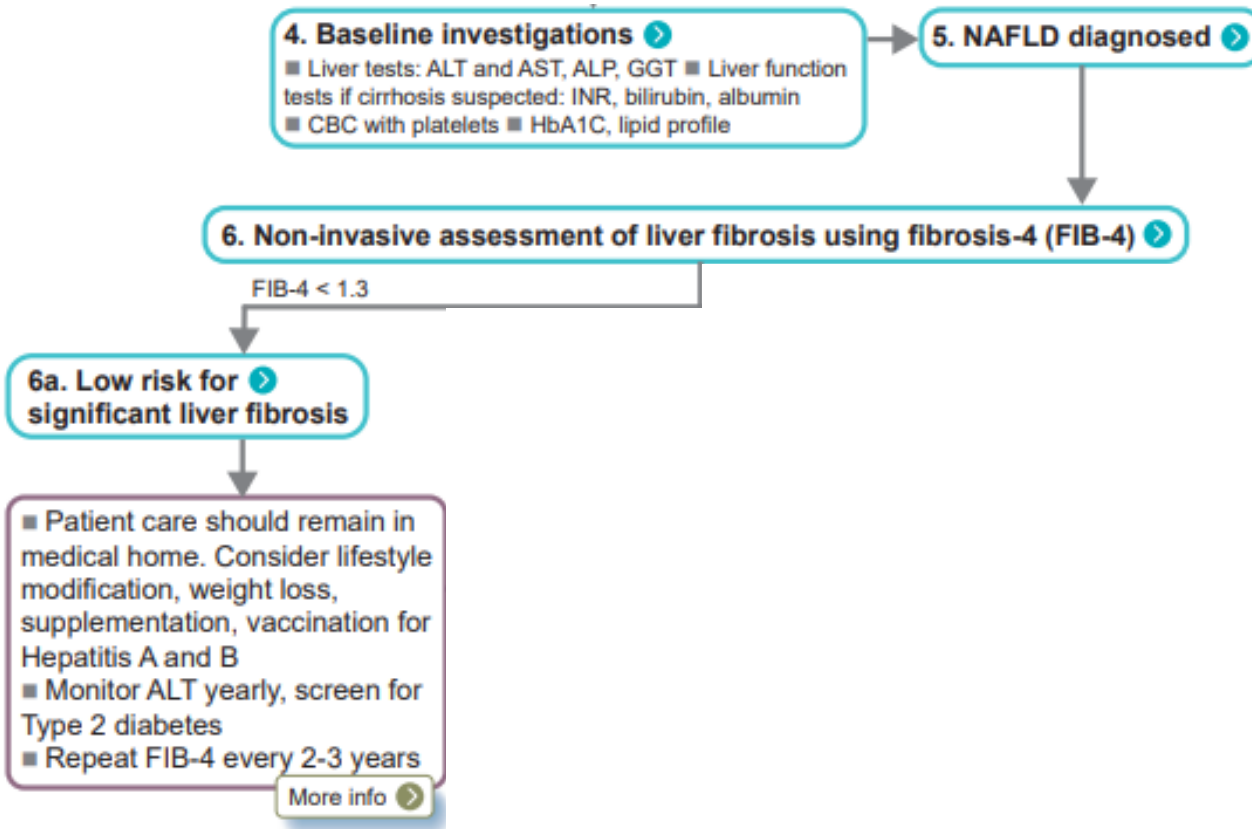
6a. Low risk for >  
significant liver fibrosis

6b. Increased risk for >  
liver fibrosis

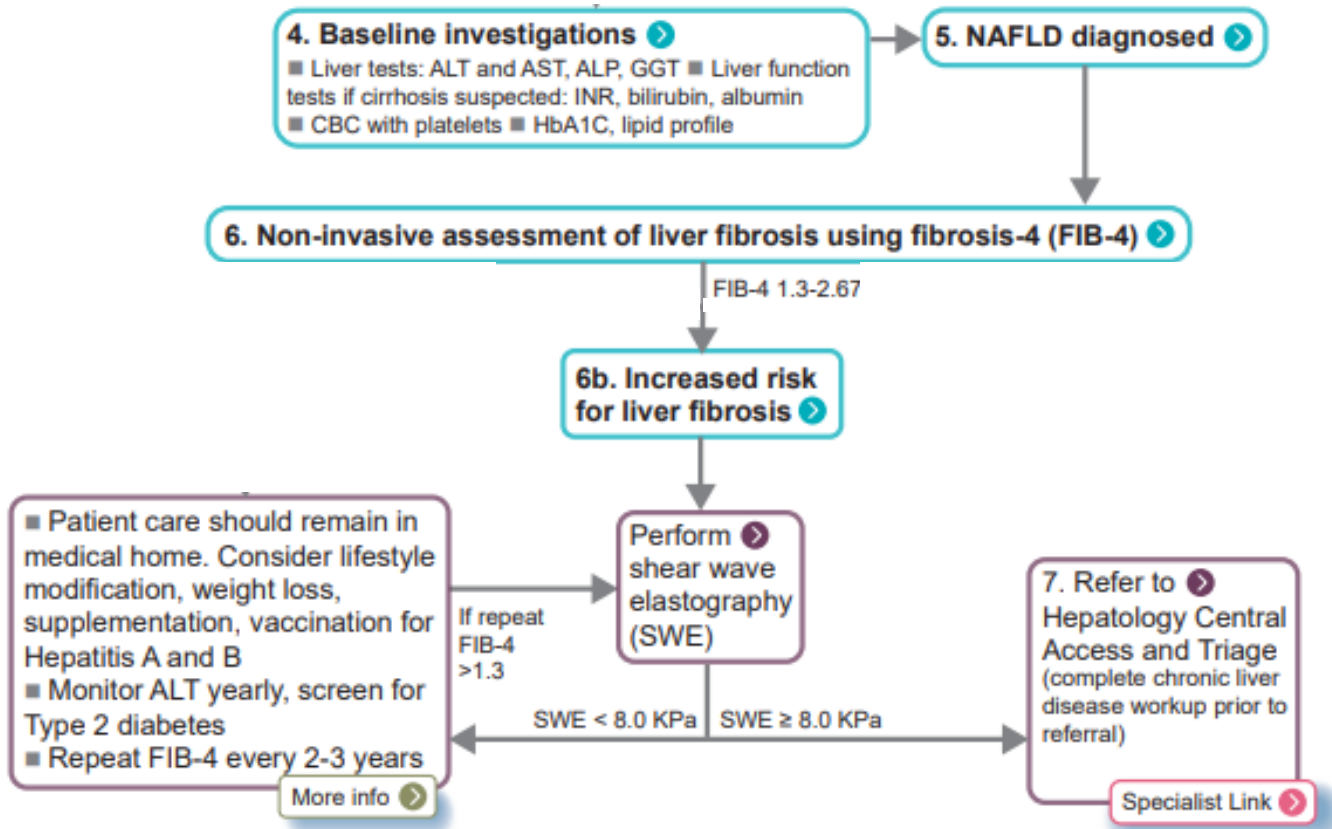
6c. High risk for >  
significant liver fibrosis



# FIB-4: PARADIGM SHIFT



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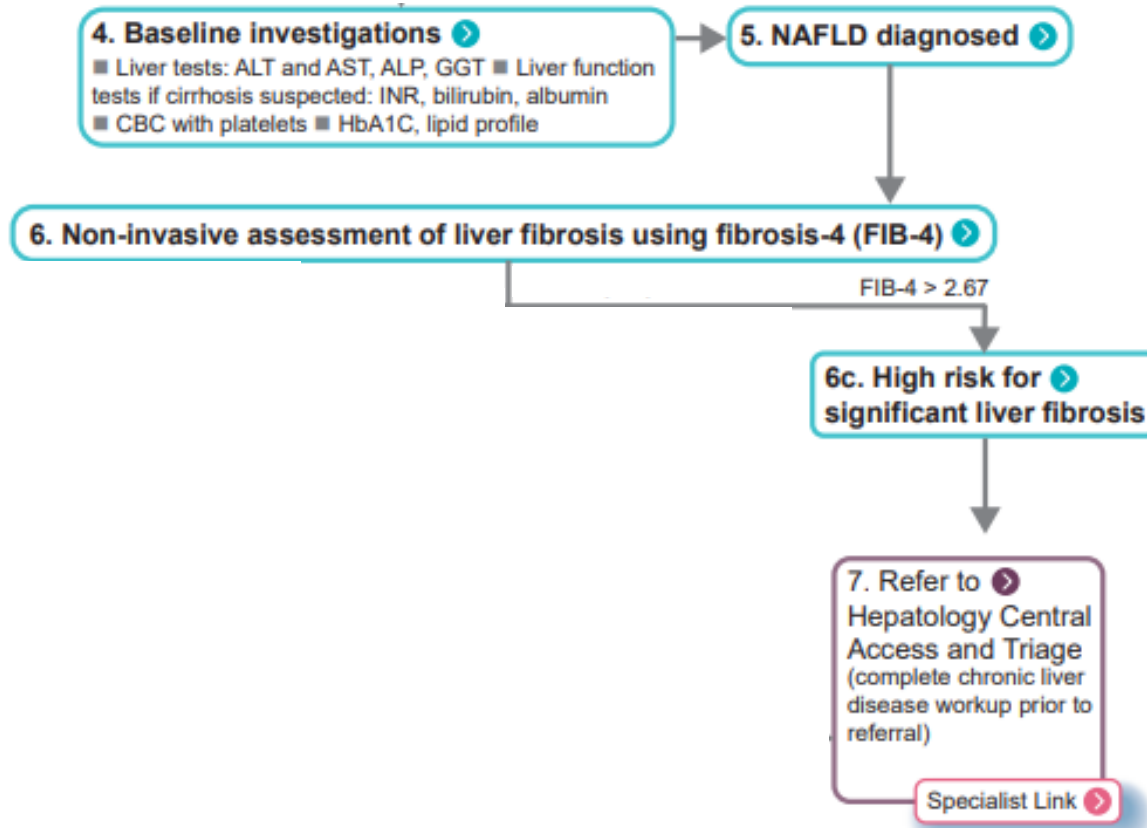
## Shear Wave Elastography (SWE)

**Shear Wave Elastography (SWE):** The gold standard for assessing liver stiffness (a measure of liver scarring) without a liver biopsy. EFW Radiology (EFW) and Mayfair Diagnostics radiology groups have fulfilled quality assessment for the Calgary Non-Alcoholic Fatty Liver Disease (NAFLD) pathway SWE measurement. Currently they are the recommended providers for SWE in the Calgary Zone.

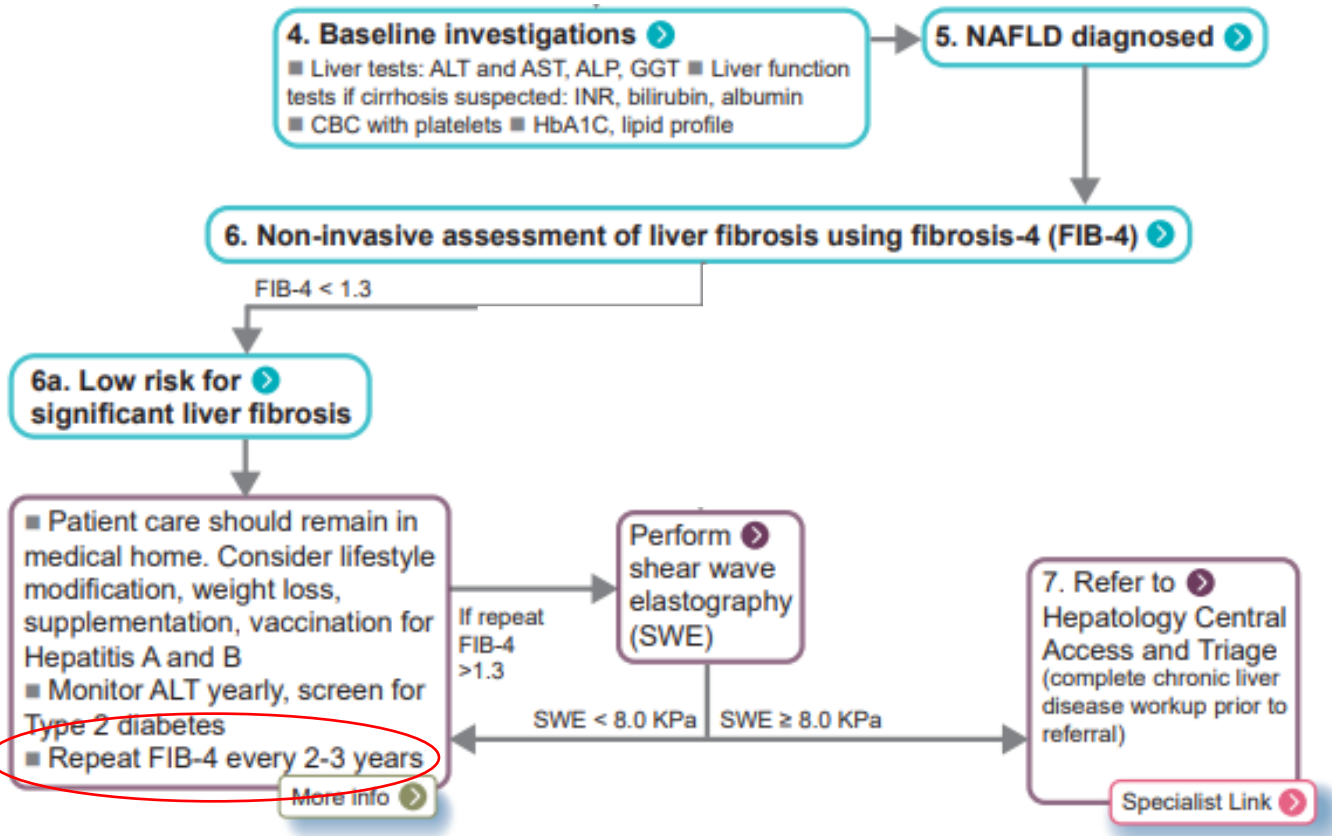
- [EFW Liver Program Requisition form](#)
- [Mayfair Diagnostics General Requisition form](#)



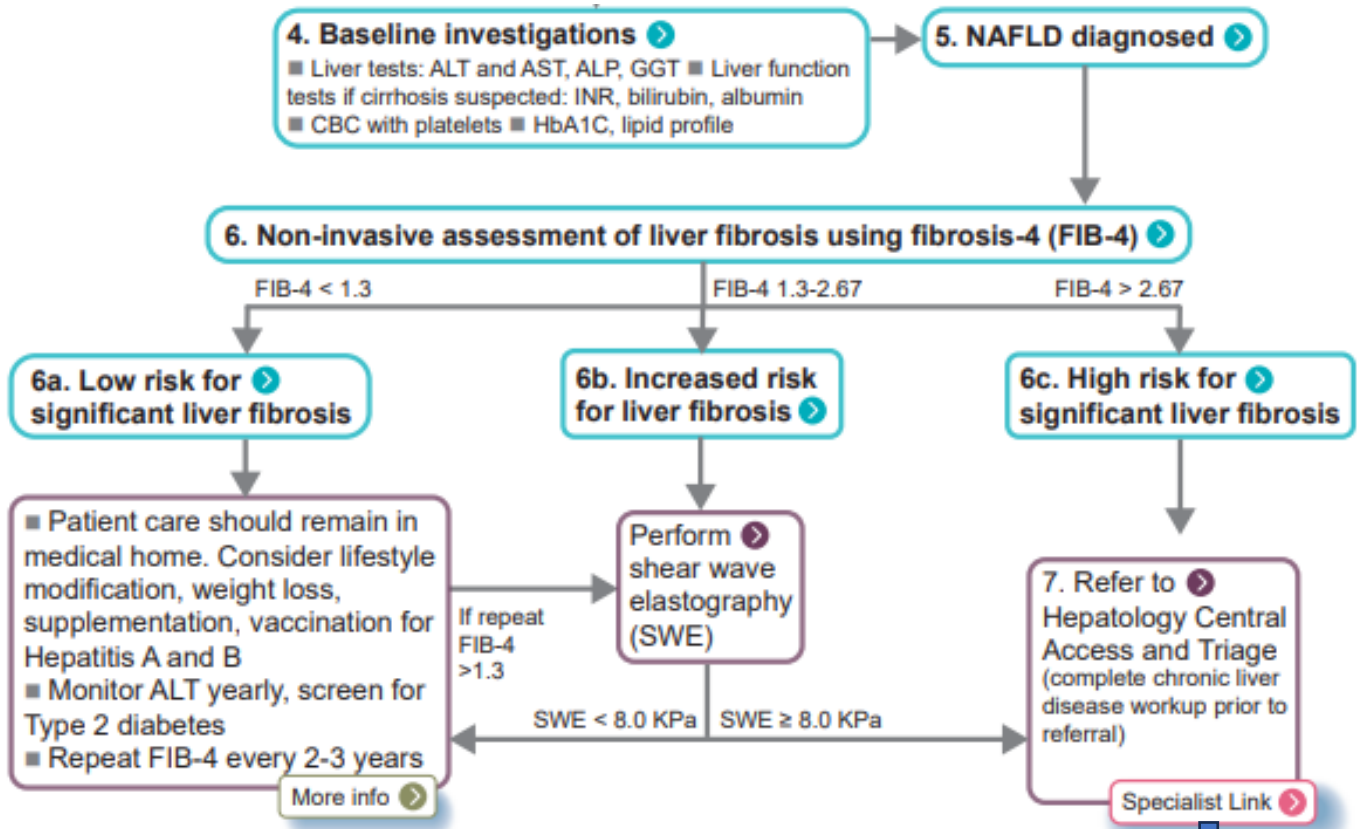
# FIB-4: PARADIGM SHIFT



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# FIB-4: PARADIGM SHIFT



For patients that are going to be referred to hepatology please perform all screening blood tests for chronic liver disease before referral → as outlined in Box 2 at top of pathway

**2. Rule out other causes of liver disease in addition to NAFLD through the following stepwise testing:**

- Medication review (including herbals and supplements)
- Liver ultrasound (if not completed within one year)
- HBsAg and HCV antibody, ANA, anti-actin/anti-smooth muscle antibody (depending on local availability), immunoglobulins (IgG, IgA, IgM)
- Ferritin and iron/TIBC
- Celiac disease screen
- Serum ceruloplasmin (if age < 30 years)