Jewish Hospital Fibroscan Interpretation Fibrosis Assessment SOP

SOP’s derived primarily from EASL Guidelines (PMID: 25911335) and/or review articles (PMID:24909907, 24452634) unless otherwise noted.

1) Liver Stiffness Interpretation


<table>
<thead>
<tr>
<th>Disease</th>
<th>F0–F1 (Kpa)</th>
<th>F2 (Kpa)</th>
<th>F3 (kpa)</th>
<th>F4 (kpa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis B</td>
<td>≤6.0</td>
<td>≥6.0</td>
<td>≥9.0</td>
<td>≥12.0</td>
</tr>
<tr>
<td>Hepatitis C</td>
<td>≤7.0</td>
<td>≥7.0</td>
<td>≥9.5</td>
<td>≥12.0</td>
</tr>
<tr>
<td>HCV–HIV coinfection</td>
<td>≤7.0</td>
<td>≤10</td>
<td>≥11.0</td>
<td>≥14.0</td>
</tr>
<tr>
<td>Cholestatic liver disease</td>
<td>≤7.0</td>
<td>≥7.5</td>
<td>≥10.0</td>
<td>≥17.0</td>
</tr>
<tr>
<td>NAFLD/NASH</td>
<td>≤7.0</td>
<td>≥7.5</td>
<td>≤10</td>
<td>≥14.0</td>
</tr>
</tbody>
</table>

*Alcoholic Liver Disease F3 9.5-12.4 and F4≥12.5 kPa if not drinking while 22.7 suggests cirrhosis if drinking (PMID:26791825).
*Rule out Dominant Stricture in PSC as this will influence liver stiffness.
*Insufficient data on noninvasive fibrosis markers for autoimmune hepatitis.
*Screening and surveillance for esophageal varices and HCC are recommended for F4 fibrosis.
*20 kPa suggests HVPG >10 and 50.7 kPa suggests high risk for variceal bleeding.
*Baveno VI guidelines suggest that if stiffness < 20 kpa and platelets >150k, then there is no need for screening EGD, but the fibroscan and platelet count should be repeated yearly.

2) Liver Steatosis Interpretation (PMID: 24637477)

<table>
<thead>
<tr>
<th>Steatosis Category</th>
<th>Hepatic Fat on Biopsy</th>
<th>CAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>5-33%</td>
<td>225-275 dB/M</td>
</tr>
<tr>
<td>Mod-Severe</td>
<td>&gt;33%</td>
<td>275-400 dB/M</td>
</tr>
</tbody>
</table>

A

Steatosis quantification using CAP

* p=0.002, ** p<0.001
3) **Fibrosis Biomarkers**

Should be measured for patients with NAFLD or HCV and compared to VCTE results determine concordance for presence or absence of advanced fibrosis (F0-F2 vs. F3-F4). For hepatitis C, AASLD-IDSA guidelines recommend direct biomarkers (e.g. fibrotest or fibrosure) rather than indirect biomarkers (if available).

A) **NAFLD: NAFLD Fibrosis Score (NFS):** PMID:17393509, [http://nafldscore.com/](http://nafldscore.com/)

B) **HCV: FIB-4** [http://www.hepatitisc.uw.edu/page/clinical-calculators/fib-4](http://www.hepatitisc.uw.edu/page/clinical-calculators/fib-4)

4) **Determine if Fibroscan and Serologic Fibrosis Scores are Concordant or Discordant in NAFLD or HCV** (caution is advised in HIV-HCV coinfection due to HIV related thrombocytopenia and DILI)

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Predicted Biopsy</th>
<th>Liver Stiffness (KPa)</th>
<th>Serologic Fibrosis Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAFLD</td>
<td>F0-F2</td>
<td>&lt;10</td>
<td>NFS: &lt;= -1.455</td>
</tr>
<tr>
<td></td>
<td>F3-F4</td>
<td>&gt;=10</td>
<td>NFS: &gt;= 0.675</td>
</tr>
<tr>
<td>Hepatitis C</td>
<td>F0-F2</td>
<td>&lt;9.5</td>
<td>FIB-4: &lt;= 1.45</td>
</tr>
<tr>
<td></td>
<td>F3-F4</td>
<td>&gt;=9.5</td>
<td>FIB-4: &gt;= 3.25</td>
</tr>
</tbody>
</table>

For HCV, use fibrotest or fibrosure rather than FIB-4 or Apri if available.

*NAFLD Fibrosis Score: Indeterminate Range: -1.456 to 0.674

*FIB-4 Indeterminate Range HCV With or Without HIV Coinfection: 1.46-3.24

If fibrosis stage between VCTE and serologic tests differs or if the serologic test yields indeterminate results, then consider liver biopsy on a case-by-case basis especially if the result would affect patient management.
Chronic Hepatitis C
- Cutoffs to know:
  - 7.3 kPa suggests significant fibrosis
  - 12.5 kPa suggests cirrhosis

Chronic Hepatitis B
- Must know: HBV DNA
- Cutoffs to know:
  - 11.7 kPa suggests cirrhosis
  - If normal ALT: consider treating at 9.0 kPa

NAFLD
- Cutoff to know:
  - 10.3 kPa suggests cirrhosis
- Consider performing CAP assessment
- Consider XL probe for obese patients

Transient elastography: what the clinician needs to know
1. What is the underlying disease?
2. Other evidence of advanced liver disease? (e.g., perform a physical exam and check serological tests for fibrosis)
3. What can affect the test?
   a. Is the patient fasting?
   b. What is the body mass index?
   c. What is the burden of inflammation? (e.g., check ALT)
   d. Is the patient actively drinking alcohol?
   e. Is there evidence of cholestasis?

Alcoholic liver disease
- Must also know: drinking status
- Cutoffs to know:
  - 22.7 kPa suggests cirrhosis if drinking
  - 12.5 kPa suggests cirrhosis if abstinent

Biliary liver disease
- Must also know: alkaline phosphatases
- Cutoff to know:
  - 17.9 kPa suggests cirrhosis

Portal hypertension in cirrhotic patients
- Cutoffs to know:
  - 20.0 kPa suggests HVPG ≥ 10
  - 30.7 kPa suggests high risk of variceal bleeding

Ultrasonic transducer
Explored volume