# RUCAM Causality Assessment

Drug: ______________ Initial ALT: ________ Initial Alk P: ________  
R ratio = [ALT/ULN] ÷ [Alk P/ULN] = ________ ÷ ________ = ________

The R ratio determines whether the injury is hepatocellular (R > 5.0), cholestatic (R < 2.0), or mixed (R = 2.0 – 5.0)

### 1. Time to onset

<table>
<thead>
<tr>
<th>Hepatocellular Type</th>
<th>Cholestatic or Mixed Type</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial Treatment</strong></td>
<td><strong>Subsequent Treatment</strong></td>
<td><strong>Initial Treatment</strong></td>
</tr>
<tr>
<td>o From the beginning of the drug:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Suggestive</td>
<td>5 – 90 days</td>
<td>1 – 15 days</td>
</tr>
<tr>
<td>• Compatible</td>
<td>&lt; 5 or &gt; 90 days</td>
<td>&gt; 15 days</td>
</tr>
<tr>
<td>o From cessation of the drug:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Compatible</td>
<td>≤ 15 days</td>
<td>≤ 15 days</td>
</tr>
</tbody>
</table>

**Note:** If reaction begins before starting the medication or >15 days after stopping (hepatocellular), or >30 days after stopping (cholestatic), the injury should be considered unrelated and the RUCAM cannot be calculated.

### 2. Course

<table>
<thead>
<tr>
<th>Change in ALT between peak value and ULN</th>
<th>Change in Alk P (or total bilirubin) between peak value and ULN</th>
<th>Score (check one only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>After stopping the drug:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Highly suggestive</td>
<td>Decrease ≥ 50% within 8 days</td>
<td>Not applicable</td>
</tr>
<tr>
<td>• Suggestive</td>
<td>Decrease ≥ 50% within 30 days</td>
<td>Decrease ≥ 50% within 180 days</td>
</tr>
<tr>
<td>• Compatible</td>
<td>Not applicable</td>
<td>Decrease &lt; 50% within 180 days</td>
</tr>
<tr>
<td>• Inconclusive</td>
<td>No information or decrease ≥ 50% after 30 days</td>
<td>Persistence or increase or no information</td>
</tr>
<tr>
<td>• Against the role of the drug</td>
<td>Decrease &lt; 50% after 30 days OR Recurrent increase</td>
<td>Not applicable</td>
</tr>
<tr>
<td>o If the drug is continued:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Inconclusive</td>
<td>All situations</td>
<td>All situations</td>
</tr>
</tbody>
</table>

### 3. Risk Factors:

<table>
<thead>
<tr>
<th>Ethanol</th>
<th>Ethanol or Pregnancy (either)</th>
<th>Score (check one for each)</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Alcohol or Pregnancy</td>
<td>Presence Absence</td>
<td>Presence Absence</td>
</tr>
<tr>
<td>o Age</td>
<td>Age of the patient ≥ 55 years Age of the patient &lt; 55 years</td>
<td>Age of the patient ≥ 55 years Age of the patient &lt; 55 years</td>
</tr>
</tbody>
</table>
### 4. Concomitant drug(s):

- None or no information or concomitant drug with incompatible time to onset
  - Score: 0
- Concomitant drug with suggestive or compatible time to onset
  - Score: -1
- Concomitant drug known to be hepatotoxic with a suggestive time to onset
  - Score: -2
- Concomitant drug with clear evidence for its role (positive rechallenge or clear link to injury and typical signature)
  - Score: -3

### 5. Exclusion of other causes of liver injury:

**Group I (6 causes):**
- Acute viral hepatitis due to HAV (IgM anti-HAV), or
  - Score: +2
- HBV (HBsAg and/or IgM anti-HBc), or
  - Score: +1
- HCV (anti HCV and/or HCV RNA with appropriate clinical history)
  - Score: 0
- Biliary obstruction (By imaging)
  - Score: -2
- Alcoholism (History of excessive intake and AST/ALT ≥ 2)
  - Score: -3
- Recent history of hypotension, shock or ischemia (within 2 weeks of onset)
  - Score: 0

**Group II (2 categories of causes):**
- Complications of underlying disease(s) such as autoimmune hepatitis, sepsis, chronic hepatitis B or C, primary biliary cirrhosis or sclerosing cholangitis; or
  - Score: 0
- Clinical features or serologic and virologic tests indicating acute CMV, EBV, or HSV.
  - Score: 0

### 6. Previous information on hepatotoxicity of the drug:

- Reaction labeled in the product characteristics
  - Score: +2
- Reaction published but unlabeled
  - Score: +1
- Reaction unknown
  - Score: 0

### 7. Response to readministration:

- Positive
  - Doubling of ALT with drug alone
  - Doubling of Alk P (or bilirubin) with drug alone
  - Score: +3
- Compatible
  - Doubling of the ALT with the suspect drug combined with another drug which had been given at the time of onset of the initial injury
  - Doubling of the Alk P (or bilirubin) with the suspect drug combined with another drug which had been given at the time of onset of the initial injury
  - Score: +1
- Negative
  - Increase of ALT but less than ULN with drug alone
  - Increase of Alk P (or bilirubin) but less than ULN with drug alone
  - Score: -2
- Not done or not interpretable
  - Other situations
  - Other situations
  - Score: 0

**TOTAL (add the checked figures)**

*Abbreviations used: ALT, alanine aminotransferase; Alk P, alkaline phosphatase; ULN, upper limit of the normal range of values