Observations in this cell are categorized LR-4 except as follows:
- LR-5g, if there is $\geq 50\%$ diameter increase in $\leq 6$ months. These observations are equivalent to OPTN 5A-g.
- LR-5us, if there is both “washout” and visibility as discrete nodules at antecedent surveillance ultrasound, per AASLD HCC criteria.
### Table

<table>
<thead>
<tr>
<th>Diameter (mm):</th>
<th>Arterial phase hypo- or iso-enhancement</th>
<th>Arterial phase hyper-enhancement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt; 20</td>
<td>≥ 20</td>
</tr>
<tr>
<td>None:</td>
<td>LR-3</td>
<td>LR-3</td>
</tr>
<tr>
<td>One:</td>
<td>LR-3</td>
<td>LR-4</td>
</tr>
<tr>
<td>≥ Two:</td>
<td>LR-4</td>
<td>LR-4</td>
</tr>
</tbody>
</table>

Observations in this cell are categorized LR-4 except as follows:

- **LR-5g**, if there is ≥ 50% diameter increase in ≤ 6 months. These observations are equivalent to OPTN 5A-g.
- **LR-5us**, if there is both “washout” and visibility as discrete nodules at antecedent surveillance ultrasound, per AASLD HCC criteria.
<table>
<thead>
<tr>
<th>Categories</th>
<th>Concept</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>LR-3</td>
<td>Concept: Both HCC and benign entity have moderate probability.</td>
<td>Definition: Observation that does not meet criteria for other LI-RADS categories.</td>
</tr>
<tr>
<td>LR-1</td>
<td>Concept: 100% certainty observation is benign.</td>
<td>Definition: Observation with imaging features diagnostic of a benign entity, or definite disappearance at follow up in absence of treatment.</td>
</tr>
<tr>
<td>LR-2</td>
<td>Concept: High probability observation is benign.</td>
<td>Definition: Observation with imaging features suggestive but not diagnostic of a benign entity.</td>
</tr>
<tr>
<td>LR-4</td>
<td>Concept: High probability observation is HCC but there is not 100% certainty.</td>
<td>Definition: Observation with imaging features suggestive but not diagnostic of HCC.</td>
</tr>
<tr>
<td>LR-5</td>
<td>Concept: 100% certainty observation is HCC.</td>
<td>Definition: Observation with imaging features diagnostic of HCC or proven to be HCC at histology.</td>
</tr>
<tr>
<td>LR-5V</td>
<td>Concept: 100% certainty that observation is HCC invading vein.</td>
<td>Definition: Observation with imaging features diagnostic of HCC invading vein.</td>
</tr>
<tr>
<td>LR-M</td>
<td>Concept: Observation is probably malignant, but imaging features are not specific for HCC.</td>
<td>Definition: Observation with imaging features suggestive of non-HCC malignancy.</td>
</tr>
<tr>
<td>LR-Treated</td>
<td>Concept: A loco-regionally treated observation.</td>
<td>Definition: Observation of any category that has undergone loco-regional treatment.</td>
</tr>
</tbody>
</table>
**Definite benign entities (examples)**
- Cyst
- Hemangioma
- Vascular anomaly
- Perfusion alteration
- Hepatic fat deposition or sparing
- Hypertrophic pseudomass
- Confluent fibrosis
- Focal scar
- Observation that spontaneously disappears

**Probable benign entities (examples)**
- Cyst
- Hemangioma
- Vascular anomaly
- Perfusion alteration
- Hepatic fat deposition or sparing
- Hypertrophic pseudomass
- Confluent fibrosis
- Focal scar
- LR-2 cirrhosis-associated nodule*

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**Features that favor HCC**
- Diffuse arterial-phase hyper-enhancement
- Diffuse washout appearance
- Capsule appearance
- Distinctive rim
- Intra-lesional fat
- Nodule-in-nodule architecture
- Diffuse T1 hyper-intensity
- Diffuse hepatobiliary phase hyper-intensity

**Features that favor non-HCC malignancy (e.g., ICC)**
- Rim or peripheral arterial-phase hyper-enhancement
- Peripheral washout appearance
- Progressive central enhancement
- Portal venous and delayed phase central enhancement
- Target appearance at DWI or in hepatobiliary phase
- Liver surface retraction
- Biliary dilation

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**LR-2 cirrhosis-associated nodule**
- Diameter < 20mm AND
- Homogeneous AND
- Iso-enhancement to background cirrhotic nodules in all phases AND

*DIFFER FROM BACKGROUND NODULES (≥ 1 of following):*
- Distinctly larger than background nodules (but still < 20mm)
- Mild to moderate CT hyper-attenuation
- Mild to moderate T1 hyper-intensity
- Mild T2 or T2* hypo-intensity
- Moderate or marked T2 or T2* hypo-intensity
**Ancillary features that may favor malignancy** may be applied to upgrade category by one or more categories (up to but not beyond LR-4). They cannot be used to upgrade category to LR-5. Absence of these features should not be used to downgrade the LR category.

- Mild-moderate T2 hyper-intensity
- Restricted diffusion
- Corona enhancement
- Mosaic architecture
- Nodule-in-nodule architecture
- Intra-lesional fat
- Lesional iron sparing
- Lesional fat sparing
- Blood products
- Diameter increase less than threshold growth
- Distinctive rim
- Hepatobiliary phase hypo-intense rim
- Hepatobiliary phase hypo-intensity

**Ancillary features that may favor malignancy**

- LR-1
- LR-2
- LR-3
- LR-4
- LR-5

**Ancillary features that may favor benignity** may be applied to downgrade category by one or more categories. Absence of these features should not be used to upgrade the LR category.

- Undistorted vessels
- Homogeneous marked T2 hyper- or hypo-intensity
- Parallels blood pool enhancement
- Diameter reduction
- Diameter stability ≥ 2 years
- Hepatobiliary phase iso-intensity
Assign LI-RADS Category

Sure about category?

Assign final LI-RADS Category

No

Apply ancillary features

Sure about category?

Assign final LI-RADS Category

No

Apply tie-breaking rules

Assign final LI-RADS Category

Tie-breaking rules: If, after application of ancillary features, a radiologist is still unsure about the final category for an observation, tie-breaking rules should be applied. The tie-breaking rules move observations to a category with a lower degree of certainty.

LR-1 versus LR-2 → LR-2
LR-2 versus LR-3 → LR-3
LR-3 versus LR-4 → LR-3
LR-4 versus LR-5 → LR-4
LR-3 versus LR-M → LR-3
LR-4 versus LR-M → LR-M
LR-5 versus LR-M → LR-M