NATIONAL POLICY UPDATES FOR LIVER TRANSPLANTATION (LT) FOR HEPATOCELLULAR CARCINOMA (HCC)

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LIVER TRANSPLANTATION FOR HCC
MILAN CRITERIA

1 lesion ≤5 cm

2 to 3, none >3 cm

+ Absence of Macroscopic Vascular Invasion
Absence of Extra-hepatic Spread

HCC, hepatocellular carcinoma
LIVER TRANSPLANTATION FOR HCC

MILAN CRITERIA

1 lesion ≤ 5 cm

2 to 3, none > 3 cm

Post-LT

5-year survival: > 75%

5-year HCC recurrence: 10–15%

HCC, hepatocellular carcinoma; LT, liver transplantation
RECENT CHANGES

**Uniform diagnostic criteria (OPTN/LIRADS) + standardised reporting**

- Only HCC patients within Milan criteria with LIRADS 5 lesions are eligible to receive priority listing

HCC, hepatocellular carcinoma; LIRADS, Liver Imaging Reporting and Data System; OPTN, Organ Procurement and Transplantation Network
LIVER TRANSPLANTATION FOR HCC

RECENT CHANGES

- Uniform diagnostic criteria (OPTN/ LIRADS) + standardised reporting
  - Only HCC patients within Milan criteria with LIRADS 5 lesions are eligible to receive priority listing
- 6-month mandatory waiting period before awarding MELD exception

HCC, hepatocellular carcinoma; LIRADS, Liver Imaging Reporting and Data System; MELD, Model for End-Stage Liver Disease; OPTN, Organ Procurement and Transplantation Network
### DELAYED HCC-MELD EXCEPTION SCORE

<table>
<thead>
<tr>
<th>Delays in HCC-MELD exception</th>
<th>HCC LT rates (per 100 person-years)</th>
<th>Non-HCC LT rates (per 100 person-years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>108.7</td>
<td>30.1</td>
</tr>
<tr>
<td>3 months</td>
<td>65.0</td>
<td>32.5</td>
</tr>
<tr>
<td>6 months</td>
<td>44.2</td>
<td>33.9</td>
</tr>
<tr>
<td>9 months</td>
<td>33.6</td>
<td>34.8</td>
</tr>
</tbody>
</table>

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LIVER TRANSPLANTATION FOR HCC

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Regional variation in access to LT for HCC still exists

HCC, hepatocellular carcinoma; LIRADS, Liver Imaging Reporting and Data System; LT, liver transplantation; MELD, Model for End-Stage Liver Disease; OPTN, Organ Procurement and Transplantation Network
PROBABILITY OF WAITLIST DROPOUT BY WAIT TIME REGION AND LISTING PERIOD

Long wait time (LWTR) is regions 1, 5, and 9
Mid wait time (MWTR) is regions 2, 4, 6, 7, and 8
Short wait time (SWTR) is regions 3, 10, and 11

Cumulative incidence of waitlist dropout

Time since initial HCC exception (years)

LWTR, 2010-2014
MWTR, 2010-2014
LWTR, 2005-2009
MWTR, 2005-2009
SWTR, 2010-2014
SWTR, 2005-2009

p<0.001

LIVER TRANSPLANTATION FOR HCC
RECENT CHANGES

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As of May 2019, the HCC-MELD ladder system has been replaced by awarding median MELD at transplant (MMAT) for the donor service area (DSA) minus 3 points
- 6-month waiting period still in effect

6-month mandatory waiting period before awarding MELD exception

Regional variation in access to LT for HCC still exists

HCC, hepatocellular carcinoma; LIRADS, Liver Imaging Reporting and Data System; LT, liver transplantation; MELD, Model for End-Stage Liver Disease; OPTN, Organ Procurement and Transplantation Network
**Definition:** Reduction in the tumour size using local regional therapy to meet acceptable criteria for LT\(^1\)

**Tumour response:** Based on radiographic measurement of the size of all viable tumours, not including the area of necrosis from local regional therapy\(^2\)

**A selection tool** for tumours with more favourable biology that respond to down-staging treatment and do well after LT\(^1\)

HCC, hepatocellular carcinoma; LT, liver transplantation
Median post-LT follow-up: 4 years
Overall post-LT HCC recurrence: 10%

HCC, hepatocellular carcinoma; LT, liver transplantation
UNOS DOWN-STAGING PROTOCOL

• **Inclusion criteria**
  – 1 lesion >5 cm and ≤8 cm
  – 2 or 3 lesions ≤5 cm with total tumour diameter ≤8 cm
  – 4 or 5 lesions ≤3 cm with total tumour diameter ≤8 cm
  – No vascular invasion on imaging

• This protocol has recently been adopted as national policy for automatic priority listing in patients who have been successfully down staged to within Milan criteria
High AFP Threshold

- Candidates with lesions meeting T2 criteria but with an AFP >1000 are not eligible for a standardized MELD exception

- If AFP falls <500 after local regional therapy, the candidate is eligible for a standardized MELD exception
AFP AND POST-TRANSPLANT OUTCOME
FRANCE

AFP, alpha-fetoprotein; LT, liver transplantation
AFP AND POST-TRANSPLANT OUTCOME – UCSF

AFP, alpha-fetoprotein; UCSF, University of California, San Francisco

SUMMARY

- After **6-month delay**, eligible HCC patients are now awarded **MMAT-3** rather than the previous ladder upgrade system.

- Patients within UNOS down-staging criteria who are **down-staged into Milan criteria** with local regional therapy are eligible for **automatic priority listing**.

- **Patients with AFP ever >1000 must come down to <500** with local regional therapy before being eligible for LT.
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