A Digital, Interactive, Decision-Support Algorithm to Facilitate and Improve the Hepatocellular Carcinoma Care Cascade in Adults: Integrating the Barcelona Clinic Liver Cancer (BCLC) Staging System and United Network for Organ Sharing (UNOS) Down-Staging Criteria into One Tool

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CLDF Chronic Liver Disease Foundation

Background

- Hepatocellular carcinoma (HCC) is the most common type of hepatic cancer; approximately 70%–90% of patients with HCC have an established background of chronic liver disease.[1,2]
- Effective implementation of HCC screening and surveillance in patients with cirrhosis is associated with improved diagnosis of HCC at an early stage, increased likelihood of curative treatment, and improved overall survival. However, sup-optimal HCC screening and surveillance has led to a high proportion of HCCs being detected at advanced stages.
- Several HCC staging systems exist, but none are universally adopted; the Barcelona Clinic Liver Cancer (BCLC) staging system and the United Network for Organ Sharing-Down Staging (UNOS-DS) criteria are both widely used staging systems that offer distinct advantages.
- Data suggest that a decision-support tool can impact healthcare professional treatment decisions in a rapidly evolving therapeutic landscape, potentially improving patient care.[4]
- Worldwide, digital devices are improving every stage of the HCC patient care pathway.[5]
- Clinicians would benefit from a digital, decision-support tool for HCC that combines widely used and clinically proven screening and staging systems.

Methods

- The Chronic Liver Disease Foundation (CLDF) is a nonprofit educational organization dedicated to increasing awareness of the impact of chronic liver disease in the US.
- The CLDF has assembled a group of HCC experts, who are also members of the CLDF, to form the HCC Steering Committee.
- This committee identified a need for practical, point-of-care tools to assist healthcare professionals in the screening, staging, and management of patients with HCC.
- A small working group, that contained steering committee members, was formed and tasked with creating clinical care recommendations on the screening and staging of HCC that can be made readily available as an interactive and "living" web-based resource for providers.
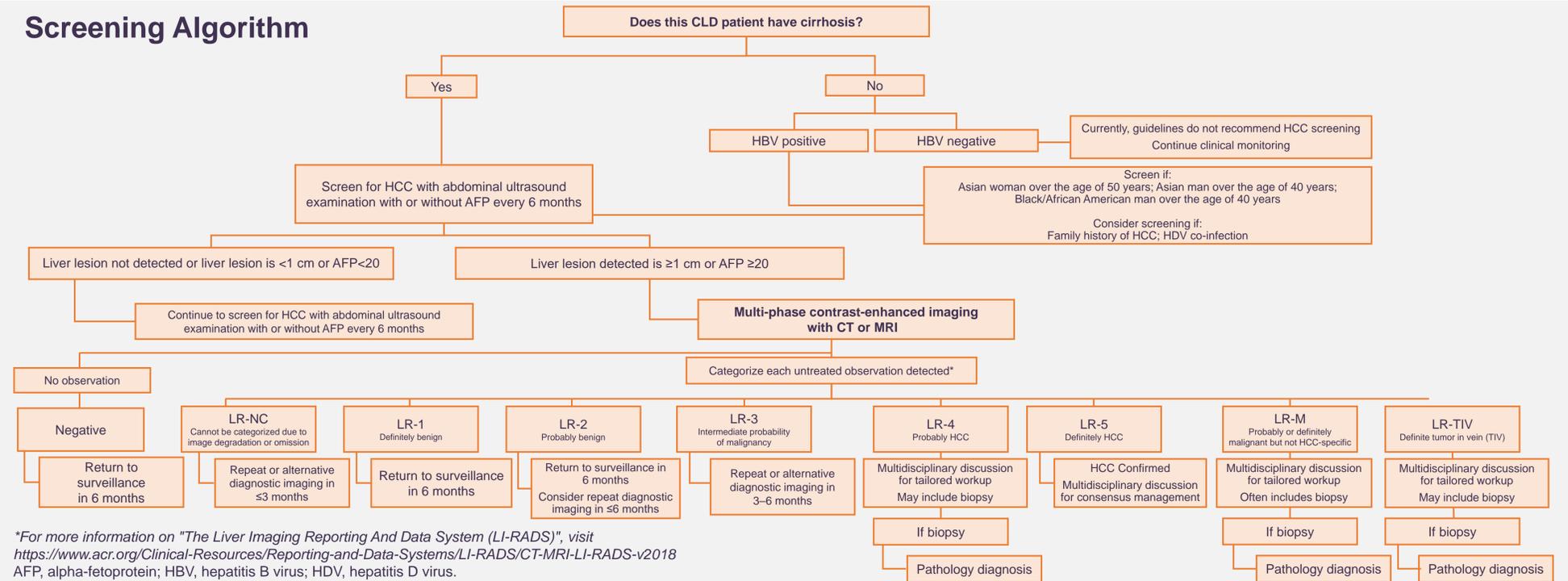
Conclusions

- The algorithms proposed are based on extensive discussion among expert clinical hepatologists.
- These proposed interactive algorithms will be posted on the CLDF website for review by health-care providers.
- The algorithms will be updated, as appropriate, and will be used as educational tools for health care providers.
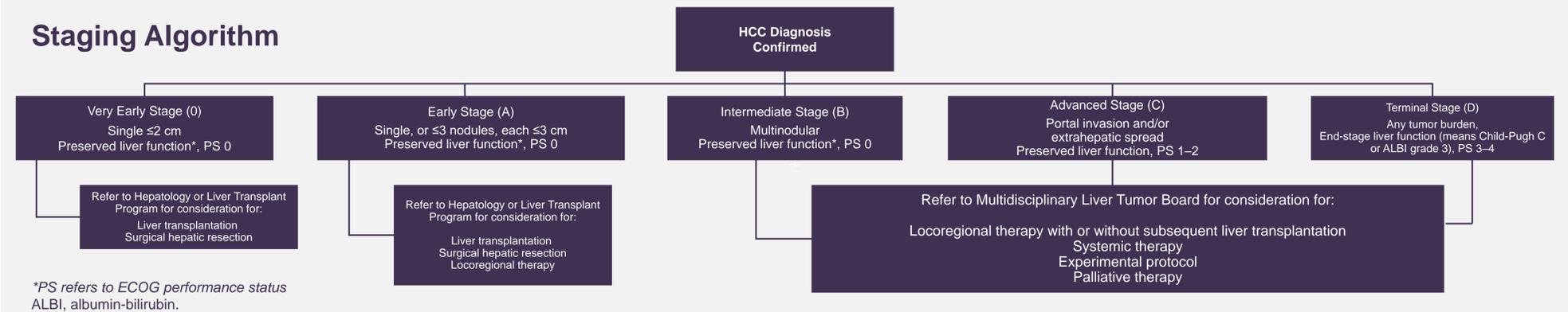
Scan the QR code to learn more about the interactive digital algorithm!

Screening Algorithm

*For more information on "The Liver Imaging Reporting And Data System (LI-RADS)", visit https://www.acr.org/Clinical-Resources/Reporting-and-Data-Systems/LI-RADS/CT-MRI-LI-RADS-v2018
AFP, alpha-fetoprotein; HBV, hepatitis B virus; HDV, hepatitis D virus.

Staging Algorithm

*PS refers to ECOG performance status
ALBI, albumin-bilirubin.

Stage	Additional Criteria to Consider		
	MILAN Criteria or UNOS Exception Criteria for Waitlisting for Liver Transplant Surgery	**UNOS Downstaging Criteria**	**Alpha-Fetoprotein (AFP) Criteria**
Very Early Stage (0)			
Early Stage (A)		A single HCC lesion 5.1–8cm. Two to three HCC lesions ≤5 cm. Four to five HCC lesions ≤3 cm. Total Tumor Diameter (TTD) must be ≤8 cm with no extrahepatic spread of HCC.	
Intermediate Stage (B)	Single HCC lesion <5 cm or up to 3 HCC lesions all <3 cm with no extrahepatic spread of HCC.		If initial AFP level was >1,000 ng/mL, it must drop to less than 500 ng/mL following DS by LRT to qualify for waitlisting for LT with UNOS Exception Criteria.
Advanced Stage (C)			
Terminal Stage (D)		HCC must be downstaged to Milan Criteria by locoregional therapy (LRT) for automatic waitlisting for liver transplantation (LT) with an HCC exception by UNOS (United Network of Organ Sharing).	

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