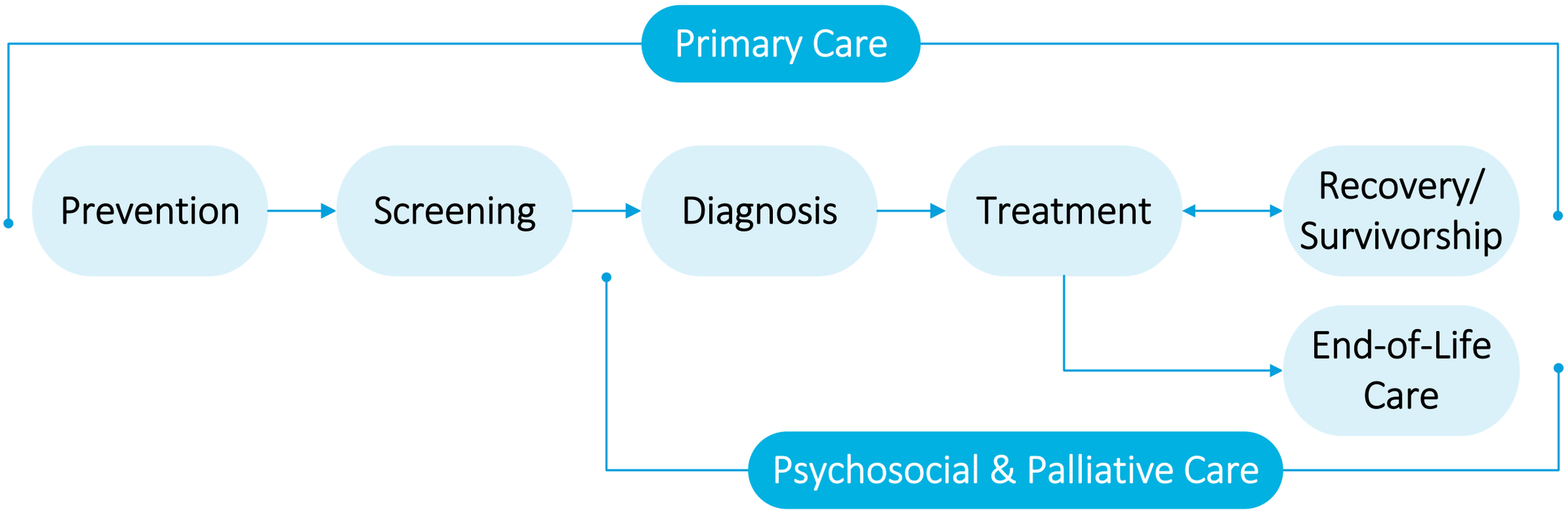
Hepatocellular Cancer Diagnosis Pathway Map Version 2024.07



Ontario Health
Cancer Care Ontario

Target Population

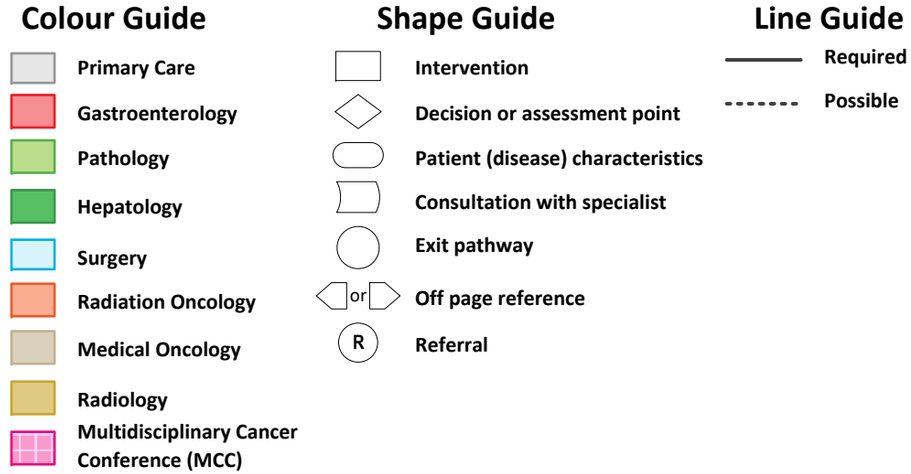
Patients at risk for developing Hepatocellular Cancer (HCC) with an abnormal liver imaging study (high risk screening or incidental finding)

Pathway Map Considerations

- Primary care providers play an important role in the cancer journey and should be informed of relevant tests and consultations. Ongoing care with a primary care provider is assumed to be part of the pathway map. For patients who do not have a primary care provider, Health811 is a government resource that helps patients find a doctor or nurse practitioner.
- Throughout the pathway map, a shared decision-making model should be implemented to enable and encourage patients to play an active role in the management of their care. For more information see Person-Centred Care Guideline and EBS #19-2 Provider-Patient Communication.*
- Hyperlinks are used throughout the pathway map to provide information about relevant CCO tools, resources and guidance documents.
- The term 'healthcare provider', used throughout the pathway map, includes primary care providers and specialists, e.g. family doctors, nurse practitioners, and emergency physicians.
- Multidisciplinary Cancer Conferences (MCCs) may be considered for all phases of the pathway map. For more information on Multidisciplinary Cancer Conferences, visit MCC Tools.
- For more information on wait time prioritization, visit Surgery.
- Clinical trials should be considered for all phases of the pathway map.
- Sexual health should be considered throughout the care continuum. Healthcare providers should discuss sexual health with patients before, during and after treatment as part of informed decision-making and symptom management. See Psychosocial Oncology Guidelines Resources.
- Before initiating gonadotoxic therapy (e.g. surgery, systemic, radiation), healthcare providers should discuss potential effects on fertility with patients and arrange referral to a fertility specialist if appropriate. See Ontario Fertility Program.
- Psychosocial oncology (PSO) is the interprofessional specialty concerned with understanding and treating the social, practical, psychological, emotional, spiritual and functional needs and quality-of-life impact that cancer has on patients and their families. Psychosocial care should be considered an integral and standardized part of cancer care for patients and their families at all stages of the illness trajectory. For more information, visit EBS #19-3.*
- The following should be considered when weighing the treatment options described in this pathway map for patients with potentially life-limiting illness:
  - Palliative care may be of benefit at any stage of the cancer journey, and may enhance other types of care – including restorative or rehabilitative care – or may become the total focus of care.
  - Ongoing discussions regarding goals of care is central to palliative care, and is an important part of the decision-making process. Goals of care discussions include the type, extent and goal of a treatment or care plan, where care will be provided, which health care providers will provide the care, and the patient's overall approach to care.

* **Note. EBS #19-2 and EBS #19-3** are older than 3 years and are currently listed as 'For Education and Information Purposes'. This means that the recommendations will no longer be maintained but may still be useful for academic or other information purposes.

Pathway Map Legend



Pathway Map Disclaimer

This pathway map is a resource that provides an overview of the treatment that an individual in the Ontario cancer system may receive.

The pathway map is intended to be used for informational purposes only. The pathway map is not intended to constitute or be a substitute for medical advice and should not be relied upon in any such regard. Further, all pathway maps are subject to clinical judgment and actual practice patterns may not follow the proposed steps set out in the pathway map. In the situation where the reader is not a healthcare provider, the reader should always consult a healthcare provider if he/she has any questions regarding the information set out in the pathway map. The information in the pathway map does not create a physician-patient relationship between Ontario Health (Cancer Care Ontario) and the reader.

While care has been taken in the preparation of the information contained in the pathway map, such information is provided on an "as-is" basis, without any representation, warranty, or condition, whether express, or implied, statutory or otherwise, as to the information's quality, accuracy, currency, completeness, or reliability.

Ontario Health (Cancer Care Ontario) and the pathway map's content providers (including the physicians who contributed to the information in the pathway map) shall have no liability, whether direct, indirect, consequential, contingent, special, or incidental, related to or arising from the information in the pathway map or its use thereof, whether based on breach of contract or tort (including negligence), and even if advised of the possibility thereof. Anyone using the information in the pathway map does so at his or her own risk, and by using such information, agrees to indemnify Ontario Health (Cancer Care Ontario) and its content providers from any and all liability, loss, damages, costs and expenses (including legal fees and expenses) arising from such person's use of the information in the pathway map.

This pathway map may not reflect all the available scientific research and is not intended as an exhaustive resource. Ontario Health (Cancer Care Ontario) and its content providers assume no responsibility for omissions or incomplete information in this pathway map. It is possible that other relevant scientific findings may have been reported since completion of this pathway map. This pathway map may be superseded by an updated pathway map on the same topic.

LI-RADS® (Liver Imaging Reporting & Data System)

A quality assurance tool developed by the American College of Radiology (ACR) to standardize liver cancer screening CT reporting and management recommendations, reduce confusion in liver cancer screening CT interpretations and facilitate monitoring of participant outcomes. LI-RADS® assessment categories and their corresponding conceptual definitions and CT/MRI criteria are:

LI-RADS® Category	Conceptual definition	CT/MRI Criteria†
LI-RADS® NC (LR-NC) Noncategorizable*	Observation that cannot be meaningfully categorized because image omission or degradation prevents assessment of one or more major features	Both of the following: • One or more major features cannot be assessed because of image omission or degradation AND • As a direct result, possible categories range from those in which cancer is unlikely (LR-1 or LR2) to those in which cancer is likely (LR-4, LR-5, LR-M)
LI-RADS® 1 (LR-1) Definitely benign	100% certainty observation is nonmalignant	LI-RADS® does not provide criteria for most entities that may be categorized LR-1, but instead provides examples
LI-RADS® 2 (LR-2) Probably benign	High probability but not 100% certainty observation is nonmalignant	LI-RADS® does not provide criteria for most entities that may be categorized LR-2, but instead provides examples
LI-RADS® 3 (LR-3) Intermediate	Nonmalignant & malignant entities each have moderate probability	**Nonrim arterial phase hyperenhancement:** • < 20 mm with no additional major features **Arterial phase hypo- or isoenhancement:** • < 20 mm with ≤ 1 additional major feature OR • ≥ 20 mm with no additional major features **Additional major features:** Nonperipheral "washout" | Enhancing "capsule" | Threshold growth
LI-RADS® 4 (LR-4) Probably Hepatocellular Carcinoma (HCC)	High probability but not 100% certainty observation is HCC	**Nonrim arterial phase hyperenhancement:** • < 10 mm with ≥ 1 additional major feature OR • 10-19 mm with "capsule" as the only additional major feature OR • ≥ 20 mm with no additional major feature **Arterial phase hypo- or isoenhancement:** • < 20 mm with ≥ 2 additional major features OR • ≥ 20 mm with ≥ 1 additional major feature **Additional major features:** Nonperipheral "washout" | Enhancing "capsule" | Threshold growth
LI-RADS® 5 (LR-5) Definitely HCC	Observation is almost certainly HCC	**Nonrim arterial phase hyperenhancement AND:** • 10-19 mm with nonperipheral "washout" OR • 10-19 mm with threshold growth OR • ≥ 20 mm with ≥ 1 additional major feature **Additional major features:** Nonperipheral "washout" | Enhancing "capsule" | Threshold growth

LI-RADS® M (LR-M)
Malignant, not definitely HCC
	High probability or almost 100% certainty observation is malignant but features are not HCC specific	**Targetoid mass with any of following Imaging appearance on various phases or sequences:**
		• Targetoid dynamic enhancement, any of following:
		  ○ Rim APHE
		  ○ Peripheral washout appearance
		  ○ Delayed central enhancement
		• Targetoid diffusion restriction
		• Targetoid TP or HBP signal intensity
		Nontargetoid mass with one or more of the following (No tumor in vein; Not meeting LR-5 criteria):
		• Infiltrative appearance
		• Marked diffusion restriction
		• Necrosis or severe ischemia
		• Other feature suggesting non-HCC malignancy (specify in report)

Ancillary features
May be used at radiologist discretion for improved detection, increased confidence, or category adjustment

Ancillary features favouring malignancy

Favouring malignancy in general, not HCC in particular
- US visibility as discrete nodule
- Subthreshold growth
- Restricted diffusion
- Mild-moderate T2 hyperintensity
- Corona enhancement
- Fat sparing in solid mass
- Iron sparing in solid mass
- Transitional phase hypointensity
- Hepatobilliary phase hypointensity

Favouring HCC in particular
- Nonenhancing "capsule"
- Nodule-in-nodule
- Mosaic architecture
- Blood products in mass
- Fat in mass, more than adjacent liver

Ancillary features favouring benignity

- Size stability > 2 years
- Size reduction
- Parallels blood pool
- Undistorted vessels
- Iron in mass, more than liver
- Marked T2 hyperintensity
- Hepatobiliary phase isointensity

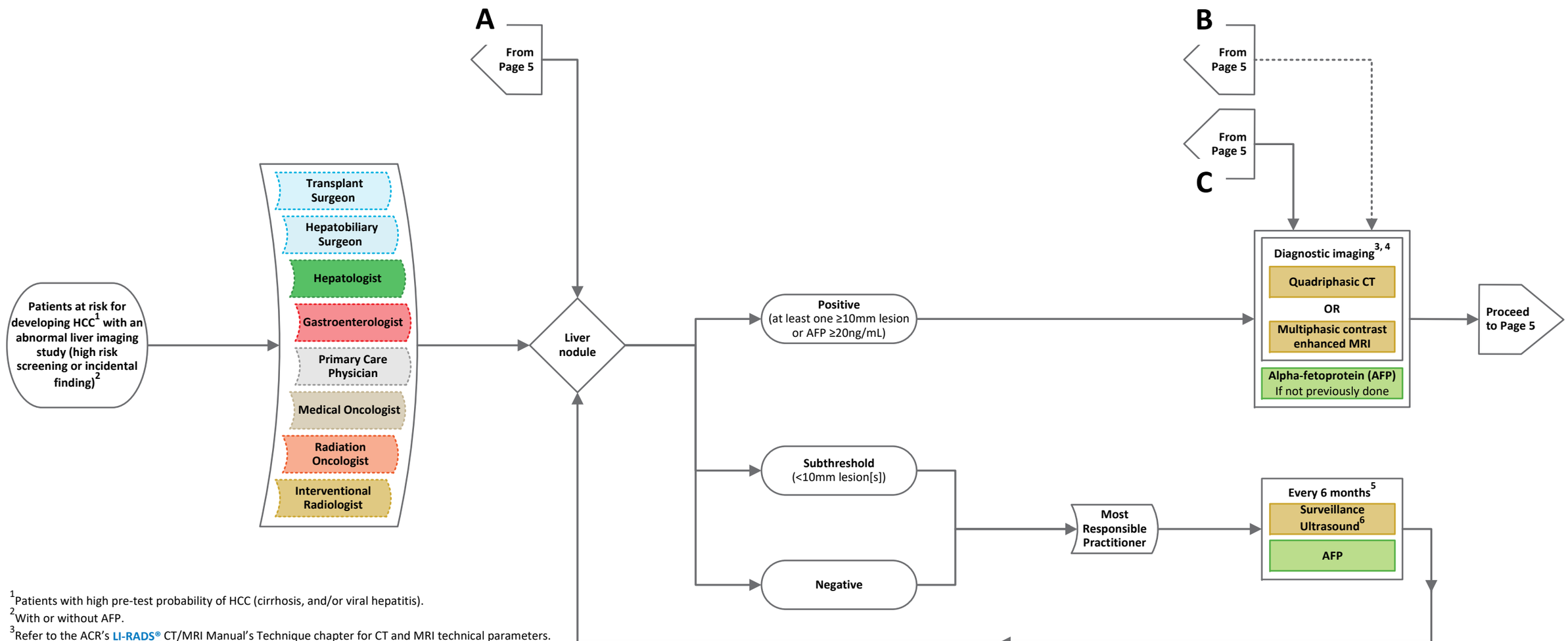
Adapted from the American College of Radiology Committee on LI-RADS®'s CT/MRI Manual, Chapter 8: LI-RADS® Diagnostic Categories v2018.

*Do NOT assign LR-NC if the images required for major feature characterization were of acceptable quality or for observations in which categorization is challenged only by unusual imaging features or by inability to characterize ancillary features.

†*Contrast-enhanced ultrasound can be considered as an alternative at centres with expertise, refer to the American College of Radiology Committee on LI-RADS®'s CEUS diagnostic criteria.*

Screen for psychosocial needs, and assessment and management of symptoms. Click here for more information about symptom assessment and management tools

Consider the introduction of palliative care, early and across the cancer journey. Click here for more information about palliative care



[1] Patients with high pre-test probability of HCC (cirrhosis, and/or viral hepatitis).
[2] With or without AFP.
[3] Refer to the ACR's LI-RADS® CT/MRI Manual's Technique chapter for CT and MRI technical parameters.
[4] Contrast-enhanced ultrasound (CEUS) can be considered as an alternative at centres with expertise, refer to the ACR's LI-RADS® CEUS Diagnostic Criteria.
[5] For recall, surveillance ultrasound could be as frequently as every 3 months.
[6] Refer to the ACR's LI-RADS® Ultrasound Screening and Surveillance algorithm for guidance on surveillance ultrasounds.

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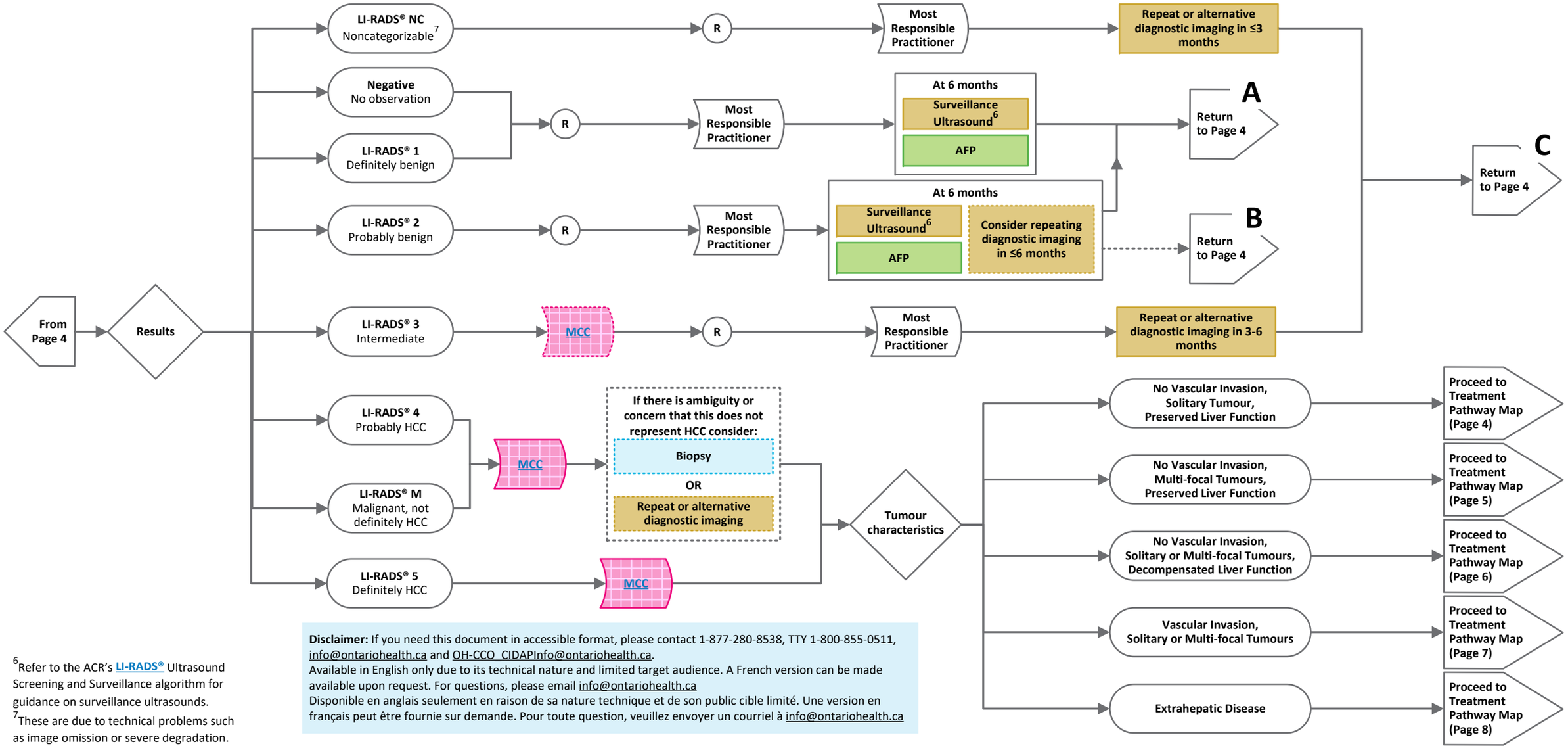

[6]Refer to the ACR's LI-RADS® Ultrasound Screening and Surveillance algorithm for guidance on surveillance ultrasounds.

[7]These are due to technical problems such as image omission or severe degradation.