

<b>SUMMARY</b>	DECISION SUPPORT	PATIENT EDUCATION/SELF MANAGEMENT
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**GOAL**

- ✓ **DIAGNOSE CIRRHOSIS EARLY**
- ✓ **DETERMINE COMPLICATIONS, IF PRESENT**
- ✓ **DELAY DECOMPENSATION**

**ALERTS**

- ◆ **ABDOMINAL PAIN [CONSIDER SPONTANEOUS BACTERIAL PERITONITIS (SBP)]**
- ◆ **MENTAL STATUS CHANGES/COMA**
- ◆ **HEMATEMESIS/MELENA**
- ◆ **FEVER**
- ◆ **OLIGURIA/ANURIA**
- ◆ **RAPID WEIGHT GAIN OR LOSS**

**DIAGNOSTIC CRITERIA/EVALUATION**

- ▶ **CIRRHOSIS: THE FOLLOWING LABORATORY FINDINGS SUGGEST ADVANCED FIBROSIS/CIRRHOSIS:**
  - Serum albumin < 3 g/dl
  - INR > 1.5
  - Platelets < 75,000/ $\mu$ L (severe thrombocytopenia usually precedes other manifestations of cirrhosis.)
  - Total bilirubin > 3.0 mg/dl
- ▶ **DECOMPENSATED CIRRHOSIS IS DEFINED BY THE PRESENCE OR HISTORY OF:**
  - Ascites, variceal bleeding, spontaneous bacterial peritonitis, encephalopathy, hepatocellular carcinoma, hepatorenal syndrome, hepatopulmonary syndrome or Child-Pugh score of 7 or greater.
- ▶ **COMPLETE CLINICAL HISTORY INCLUDING:**
  - **SYMPTOMS:** fatigue, anorexia, nausea, abdominal pain, weakness, weight change, pruritus, rash, hematochezia/melena, hematemesis, mental status changes, tremor, scleral icterus, jaundice.
  - **MEDICATIONS:** including history of combination therapy for Hepatitis C.
  - **PHYSICAL EXAM:** including BP, weight and temperature at every visit, cardiac, respiratory, abdominal exam, neurologic exam, skin and extremity exam.
  - **LABS:** CBC, CMP and PT/INR. Hepatitis serologies and HIV, if not done prior.
  - **LIVER BIOPSY:** in selected patients.

**TREATMENT OPTIONS** (\*Overview of the complications, prognosis, and management of cirrhosis–UpToDate September 1, 2010)

COMPENSATED CIRRHOSIS*	Patients who have cirrhosis without history of variceal bleeding, ascites, or encephalopathy may be eligible for combination therapy for Hepatitis C virus. Treatment is contraindicated in patients with history of decompensated cirrhosis or Child-Pugh scores of 7 or greater (see page 6). Check InterQual <sup>®</sup> for inclusion criteria. If the PCP determines that the patient may be a candidate for transplant consideration, consultation with the CME or regional DME is recommended.
HEPATOCELLULAR CARCINOMA	Surgical excision or embolization of tumor, if possible; sorafenib (NexAVAR <sup>®</sup> ) used to delay tumor growth.
PORTAL HYPERTENSION	Non-selective beta blocker (do not lower systolic BP < 90 or heart rate (HR) < 55 ).
ESOPHAGEAL VARICES	Nonselective beta blockers recommended, unless contraindicated. Endoscopic variceal ligation recommended in primary prophylaxis if medium/large varices and high risk for bleeding, and in all secondary prophylaxis in combination with nonselective beta blockers.
HEPATIC ENCEPHALOPATHY	Lactulose - titrate dose to no more than 3-4 BMs/day; metronidazole 750 mg daily for one week; rifaximin-(NF) 400 mg two to three times daily <b>only after optimized lactulose treatment.</b>
ASCITES	Diuretics: If two agents needed; spironolactone to furosemide, best ratio 100 mg:40 mg [Na+ restriction (2 gm/day) consider fluid restriction only if hyponatremic (Na+ < 124-126) and symptomatic].
SPONTANEOUS BACTERIAL PERITONITIS (SBP)	Prophylaxis: ciprofloxacin 500 mg daily or sulfamethoxazole/trimethoprim DS, one tablet daily after an episode of SBP in patient with ESLD. Acute Illness: IV antibiotics; high risk of renal failure.

**MONITORING**

- ◆ If patient has achieved treatment goals and is clinically stable on at least two consecutive encounters the patient may be reevaluated every 90 days unless the PCP determines the patient needs more frequent monitoring.

HEPATOCELLULAR CARCINOMA *2011 AASLD GUIDELINES	*Ultrasound (US) of cirrhotic patients approx every six months is appropriate screening method. [AFP is no longer recommended for surveillance in 2010 AASLD guidelines as it is not sufficiently sensitive or specific. This recommendation does not preclude evaluation of abnormal previously ordered AFP.] (See page 7)
PORTAL HYPERTENSION	BP and weight at every visit.
ESOPHAGEAL VARICES	EGD at time of diagnosis of cirrhosis, repeat screening schedule varies depending on presence of varices, cause of liver disease, and overall patient health.
HEPATIC ENCEPHALOPATHY	Mental status screening at every visit.
ASCITES	Weight, physical exam, and electrolyte levels for patients on diuretics.
SPONTANEOUS BACTERIAL PERITONITIS	Mental status exam, temperature, abdominal exam.
HEPATORENAL SYNDROME	Avoid renal toxic medications and monitor creatinine.

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**MEDICATIONS:**

MEDICATION	INDICATION	SIDE EFFECTS	COMMENTS/PRECAUTIONS
<b>Ciprofloxacin</b> Cipro <sup>®</sup> Recommended Dose: 500 mg daily, indefinitely	SBP prophylaxis if one or more episodes of SBP.	Rash, headache, increase in AST/ALT, nausea, vomiting, diarrhea.	Concurrent administration of tizanidine.
<b>sulfamethoxazole/ trimethoprim DS</b> Bactrim DS <sup>®</sup> Septra DS <sup>®</sup>  One daily, indefinitely	SBP prophylaxis if one or more episodes of SBP.	GI Upset (N/V, anorexia), rash, urticaria.	Megaloblastic anemia due to folate deficiency; pregnancy (at term); breastfeeding.
<b>lactulose</b> Constulose <sup>®</sup> , Enulose <sup>®</sup> Generlac <sup>®</sup> , Kristalose <sup>®</sup> Recommended Dose: 30 cc by mouth, twice daily	hepatic encephalopathy	Electrolyte imbalance, abdominal discomfort, cramping, diarrhea (excessive dose), flatulence, nausea, vomiting.	Titrate dose to no more than three to four BMs/day.
rifaximin Xifaxan <sup>®</sup>	breakthrough hepatic encephalopathy despite optimized lactulose dosing.	Headache, abnormal dreams, angioneurotic edema, pruritus, rash, urticaria.	Diarrhea with fever or blood in the stool. Superinfection in prolonged use.
<b>furosemide</b> Lasix <sup>®</sup> Recommended Dose: 40 mg by mouth daily with 100 mg spironolactone  (Ratio: 100 mg spironolactone to 40 mg furosemide)	ascites	Acute hypotension, hypokalemia, dizziness, headache, vertigo, bullous pemphigoid, rash, urticaria, anorexia, constipation, photosensitivity, hyperuricemia, gout.	Anuria
<b>spironolactone</b> Aldactone <sup>®</sup> Recommended dose: 100 mg by mouth daily with food	ascites	Gynecomastia, hyperkalemia, headache, drowsiness, urticaria, anorexia, cramps, diarrhea, nausea, vomiting.	Anuria, acute renal insufficiency; significant impairment of renal excretory function; hyperkalemia.
<b>propranolol</b> Inderal <sup>®</sup> , InnoPran XL <sup>®</sup> Recommended dose: 20 mg twice daily	esophageal varices	Bradycardia, hypotension, impaired myocardial contractility, bronchospasm, dizziness, fatigue, hypersomnolence, rash, pruritus, urticaria, hyperkalemia, hyper/hypoglycemia, nausea, vomiting, diarrhea, impotence.	Uncompensated CHF, cardiogenic shock, severe sinus bradycardia or 2 <sup>nd</sup> /3 <sup>rd</sup> degree heart block, severe hyperactive airway disease (asthma/ COPD). (ensure patients HR ≥ 55 and systolic BP ≥ 90)
<b>nadolol</b> Corgard <sup>®</sup> Recommended dose: 40 mg daily	esophageal varices	Bradycardia, hypotension, bronchospasm, dizziness, impaired myocardial contractility, fatigue, hypersomnolence, rash, pruritus, urticaria, hyperkalemia, hyper/hypoglycemia, nausea, vomiting, diarrhea, impotence.	Bronchial asthma; sinus bradycardia; sinus node dysfunction; 2 <sup>nd</sup> /3 <sup>rd</sup> degree heart block; cardiogenic shock; uncompensated CHF.

\*Hypersensitivity to the medication, medication class or a component of the formulation is a contraindication to use of the drug.

**Bold = Formulary**

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**MEDICATIONS:**

MEDICATION	INDICATION	SIDE EFFECTS	COMMENTS/PRECAUTIONS
<b>isosorbide mononitrate</b> Imdur <sup>®</sup> , Ismo <sup>®</sup> , Monoket <sup>®</sup>	esophageal varices - do not use for primary prophylaxis, limited use in secondary prophylaxis. (see page 4)	Headache, hypotension, lightheadedness, dizziness, nausea/vomiting, weakness, blurred vision.	Concurrent use with phosphodiesterase type 5 (PDE-5) inhibitors; angle-closure glaucoma, severe anemia; head trauma or cerebral hemorrhage.
<b>isosorbide dinitrate</b> Dilatrate <sup>®</sup> , Isordil Titradose <sup>®</sup>	esophageal varices - do not use for primary prophylaxis, limited use in secondary prophylaxis. (see page 4)	Headache, hypotension, lightheadedness, dizziness, nausea/vomiting, weakness, blurred vision.	Concurrent use with PDE-5 inhibitors; angle-closure glaucoma, severe anemia; head trauma or cerebral hemorrhage.
<b>omeprazole</b> PriLOSEC <sup>®</sup>	portal hypertensive gastropathy	Headache, dizziness, rash, abdominal pain, diarrhea, nausea, vomiting, flatulence, taste perversion.	
<b>sorafenib</b> NexAVAR <sup>®</sup> Recommended dose: 400 mg (200 mg x 2) by mouth, twice daily	unresectable hepatocellular carcinoma	Hypertension, fatigue, sensory neuropathy, pain, rash, alopecia, hypoalbuminemia, diarrhea, abdominal pain, , wt loss, anorexia, nausea, vomiting, constipation, muscle pain, weakness, dyspnea, cough, desquamation, amylase/ lipase elevations.	
<b>acetaminophen</b>	pain management	Rash, may increase chloride, uric acid, glucose; may decrease sodium, bicarbonate, calcium; blood dyscrasias; anemia.	Not > 1-2 grams per day of acetaminophen per day in cirrhosis.
<b>morphine sulfate</b>	pain management	Sedation, physical and psychological dependence, circulatory depression, bradycardia, hypotension, pruritus, constipation, nausea, vomiting, urinary retention.	Severe respiratory depression; acute/severe asthma; known or suspected paralytic ileus, potentiation of drug effect (including mental obtundation) may be observed in cirrhosis.
<b>methadone</b>	pain management	Sedation, headache, drowsiness, arrhythmia, bradycardia, QT prolongation, edema, hypotension, rash, urticaria, pruritus, antidiuretic effect, hypokalemia, hypomagnesaemia, abdominal pain, constipation, nausea, vomiting, weight gain, impotence, urinary retention/hesitancy, pulmonary edema, physical/psychological dependence.	Respiratory depression; acute bronchial asthma or hypercarbia; paralytic ileus; concurrent use of selegiline, potentiation of drug effect (including mental obtundation) may be observed in cirrhosis.
<b>NSAIDs</b>	pain management		NSAIDs (including aspirin and COX-2 inhibitors) should generally be avoided in patients with cirrhosis. These are associated with increased risk of variceal hemorrhage, impaired renal function, and the development of diuretic resistant ascites.

\*Hypersensitivity to the medication, medication class or a component of the formulation is a contraindication to use of the drug.

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## SUMMARY

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## CIRRHOSIS COMPLICATIONS

## ESOPHAGEAL VARICES

DIAGNOSTIC CRITERIA/ EVALUATION	At the time of diagnosis of cirrhosis, a baseline EGD should be performed to screen for esophageal varices.
TREATMENT*  <i>(*Primary Prophylaxis Against Variceal Hemorrhage in Patients with Cirrhosis - UpToDate, November 29, 2010)</i>  <i>(*Prevention of Recurrent Variceal Hemorrhage in Patients with Cirrhosis UpToDate, September 28,2010)</i>	<ul style="list-style-type: none"> <li>◆ Prescribe nonselective beta-blocker therapy (propranolol) for patients identified with esophageal varices. Dose of beta blocker should be titrated to reduce resting heart rate by 25%, but not below 55 beats/min, and to reduce systolic BP, but not below 90 mmHg. Recommended starting dose propranolol 20 mg twice daily.</li> <li>◆ For primary prophylaxis (varices that have not bled):             <ul style="list-style-type: none"> <li>• For small varices, nonselective beta blocker preferred choice. (e.g., propranolol, nadolol)</li> <li>• For medium/large varices, nonselective beta blocker preferred choice over endoscopic variceal ligation (EVL or “banding”), except when patients are at highest risk of hemorrhage (Child Pugh B or C or variceal red wale markings on endoscopy). EVL may also be considered in patients with contraindications or intolerance to beta blockers.</li> <li>• Nitrates should not be used in primary prophylaxis.</li> </ul> </li> <li>◆ For secondary prophylaxis (varices that have bled):             <ul style="list-style-type: none"> <li>• Combination of nonselective beta blockers plus EVL is best option.</li> <li>• Routine use of nitrates alone or in combination with beta blockers for secondary prophylaxis has not been adequately validated and is not recommended.</li> </ul> </li> <li>◆ Shunt therapy, Transjugular Intrahepatic Portosystemic Shunting (TIPS), should be considered in patients who are Child Pugh A or B who experience recurrent variceal hemorrhage despite combination of maximal doses of nonselective beta blockers and EVL.</li> </ul>
MONITORING	<ul style="list-style-type: none"> <li>◆ Surveillance: negative initial EGD: repeat every one to three years, depending on presence/absence of decompensated cirrhosis.</li> <li>◆ For patients on primary prophylaxis with nonselective beta blockers with varices that have not bled, surveillance EGD is not necessary.</li> <li>◆ For patients treated with EVL, repeat EGD every one to two weeks until obliteration, and repeat EGD one to three months after obliteration achieved, and then every six to twelve months for surveillance.</li> </ul>

## ASCITES

DIAGNOSTIC CRITERIA/ EVALUATION	<ul style="list-style-type: none"> <li>◆ Could be diagnosed by abdominal US or abdominal CT scan.</li> <li>◆ Consider paracentesis with clinically apparent new onset ascites if etiology is unclear.</li> <li>◆ Evaluation of ascites via paracentesis (see page 6):             <ul style="list-style-type: none"> <li>• Routine: Cell count differential, total protein, albumin, and cultures.</li> <li>• Optional: Glucose, LDH, gram stain, and amylase.</li> <li>• Special: AFB smear and culture, cytology, triglycerides, bilirubin.</li> <li>• Serum to Ascitic Albumin Gradient (SAAG) to help determine presence of portal hypertension.                 <ul style="list-style-type: none"> <li>– SAAG &gt; 1.1 indicates portal hypertension with 97% accuracy.</li> <li>– SAAG &lt; 1.1 indicates no portal hypertension.</li> </ul> </li> </ul> </li> </ul> <p>Note: Ascites may be caused by conditions other than liver disease; about 15% are due to heart failure, nephrotic syndrome, cancer, tuberculosis, or other conditions.</p>
TREATMENT	<ul style="list-style-type: none"> <li>◆ Diuretics: Start low and titrate up. Use combination drugs as needed.             <ul style="list-style-type: none"> <li>• Spironolactone 50-400 mg/day or amiloride 5-10 mg/day. (Recommended starting dose spironolactone 100 mg/day or 50 mg/day for smaller patient.)</li> <li>• Furosemide 40-160 mg/day. (Recommended starting dose 40 mg/day or 20 mg/day for smaller patient.)</li> <li>• Spironolactone + furosemide in a ratio of 100 mg/40 mg per day seems to maintain better K+ balance.</li> </ul> </li> <li>◆ Sodium Restriction: 2 gm/day (consider dietary consult or handout).</li> <li>◆ Fluid restriction if sodium &lt; 124-126 mEq/dl and symptomatic. If not symptomatic, consider fluid restriction based on the severity of hyponatremia and prior response to fluid restriction.             <ul style="list-style-type: none"> <li>• If a patient has a sodium 120-124 mEq/dl that remains stable, consider that fluid restriction can be difficult for patient-inmates and may contribute to dehydration and hypoperfusion.</li> </ul> </li> <li>◆ Large volume paracentesis.             <ul style="list-style-type: none"> <li>• Large volume paracentesis or aggressive diuresis may precipitate hepatorenal syndrome.</li> </ul> </li> <li>◆ Refractory ascites: TIPS procedure.             <ul style="list-style-type: none"> <li>• TIPS procedure associated with increased risk of hepatic encephalopathy.</li> </ul> </li> </ul>
MONITOR	<ul style="list-style-type: none"> <li>◆ Labs: Chem-20 every one to two months.</li> </ul>

SUMMARY	DECISION SUPPORT	PATIENT EDUCATION/SELF MANAGEMENT
<b>CIRRHOSIS COMPLICATIONS (CONTINUED)</b>		
<b>SPONTANEOUS BACTERIAL PERITONITIS</b>		
DIAGNOSTIC CRITERIA/ EVALUATION	<p>May be asymptomatic or have only elevated wbc, acidosis, or worsening renal function. Most common symptoms are fever, abdominal pain and/or tenderness, and altered mental status.</p> <ul style="list-style-type: none"> <li>◆ Diagnosis is made by paracentesis (See page 6):               <ul style="list-style-type: none"> <li>• Ascitic fluid will reveal <math>\geq 250</math> PMNs/ml in the fluid and/or positive bacterial growth. (Most often E. coli, or klebsiella. Can be streptococcus or rarely staphylococcus.)</li> <li>• Culture negative neutrophilic ascites/bacterascites is also treated as SBP.</li> </ul> </li> </ul>	
TREATMENT	<ul style="list-style-type: none"> <li>◆ Usually in hospital with IV cefotaxime (or quinolone for patients with allergy to <math>\beta</math>-lactamase antibiotics). Avoid aminoglycosides (due to nephrotoxicity).</li> <li>◆ 30-40% of patients develop renal failure – studies demonstrate albumin can decrease risk (1.5 g/kg within six hours of detection and 1g/kg on day three), and reduce mortality by 30%.</li> </ul>	
PROPHYLAXIS	<ul style="list-style-type: none"> <li>◆ All patients with history of prior SBP and significant ascites should be treated indefinitely with:               <ul style="list-style-type: none"> <li>• Ciprofloxacin 750 mg once a week or sulfamethoxazole/trimethoprim DS one tablet daily.</li> <li>• Patients with cirrhosis who are hospitalized with GI bleed should receive antibiotic prophylaxis: either cefotaxime IV or sulfamethoxazole/trimethoprim DS for seven days.</li> </ul> </li> </ul>	
<b>HEPATIC ENCEPHALOPATHY</b>		
DIAGNOSTIC CRITERIA/ EVALUATION	<ul style="list-style-type: none"> <li>◆ Presentation may vary from mild subclinical changes in mentation to deep coma.</li> <li>◆ Patients may present with confusion, decreased attention, slowing of ability to perform mental tasks, irritability, sleep disorder, lethargy, asterixis and/or unresponsiveness.</li> <li>◆ Precipitating factors: GI bleed, infection, blood transfusion, excess protein intake, constipation, dehydration, drugs, poor adherence to medications, and portohepatic shunts.</li> </ul>	
TREATMENT	<ul style="list-style-type: none"> <li>◆ Patients with significant mental status changes should be referred to higher level of care.</li> <li>◆ Give lactulose when patient is able to take medications orally for treatment and prophylaxis. Recommended starting dose: 30cc po BID -TID. Titrate dose to no more than three to four BMs/day.</li> <li>◆ Consider NA or DOT administration for recurrent symptoms in selected cases, e.g., nonadherence.</li> <li>◆ Consider lactulose enemas when patient is comatose. These should only be given in inpatient setting.</li> <li>◆ Antibiotics: metronidazole 750 mg daily for one week (caution: GI side effects, worsening of liver function), or rifaximin 400 mg two or three times daily, may prevent breakthrough encephalopathy. (Only for patients on optimized lactulose dosing.)</li> </ul>	
<b>HEPATORENAL SYNDROME</b>		
DIAGNOSTIC CRITERIA/ EVALUATION	<p>There are two forms of Hepatorenal Syndrome (HRS), based on the speed of onset of renal failure.</p> <ul style="list-style-type: none"> <li>◆ Type I HRS is more serious and generally develops in less than two weeks with serum creatinine increasing two fold and Cl<sub>cr</sub> falling to below 20 ml/min.</li> <li>◆ Type II HRS is defined as less severe renal insufficiency often precipitated by overly rapid diuresis, GI bleed, or infection. Serum creatinine level increases over days to weeks.</li> </ul>	
TREATMENT	<p>Hepatorenal syndrome is usually treated in a hospital setting as it has high mortality rate and requires specialty care.</p>	
<b>HEPATOPULMONARY SYNDROME</b>		
DIAGNOSTIC CRITERIA/ EVALUATION*	<ul style="list-style-type: none"> <li>◆ Hepatopulmonary syndrome (HPS) occurs in patients with liver disease, impaired oxygenation, and intrapulmonary vascular abnormalities. It is most commonly associated with portal hypertension (with or without cirrhosis). Most patients with HPS eventually develop dyspnea on exertion or at rest, or both, usually after years of liver disease.</li> </ul>	
<p>(*UpToDate: Hepatopulmonary syndrome: Prevalence, causes, clinical manifestations and diagnosis April 2011)</p>		

## SUMMARY

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*Child-Pugh is a tool used to help assess prognosis in patients with liver disease. Variations in the timing and subjectivity inherent in the scoring (e.g., in grading ascites or encephalopathy) are its major limitations.*

CHILD-PUGH POINTS				CHILD-PUGH SCORING		
	1	2	3	Class	Points	Survival
Encephalopathy	None	Grade 1-2	Grade 3-4 (or chronic)	Class A	5-6	95% 1 year survival 90% 2 year survival
Ascites	None	Mild/Moderate (diuretic-responsive)	Severe (diuretic-refractory)			
Bilirubin (mg/dl)	< 2	2-3	> 3	Class B	7-9	80% 1 year survival 70% 2 year survival
Albumin (g/dl)	> 3.5	2.8-3.5	< 2.8			
PT (seconds prolonged)	< 4	4-6	> 6	Class C	10-15	45% 1 year survival 38% 2 year survival
INR	< 1.7	1.7-2.3	> 2.3			

## ANALYSIS OF ASCITIC FLUID

Routine tests	Optional tests	Unusual tests
Cell count and differential	Glucose level	Tuberculosis smear and culture
Albumin level	LDH level	Cytology
Total protein level	Gram stain	Triglyceride level
Culture in blood culture bottles	Amylase level	Bilirubin level

*From UpToDate May 2011-Diagnosis and evaluation of patients with ascites*

## HEPATOCELLULAR CANCER SURVEILLANCE

Recommended surveillance of patient-inmates at risk for hepatocellular cancer (HCC) to determine if HCC is present is outlined below. This does not address other potential etiologies for liver masses in patient-inmates who are not at risk for HCC, nor does it address potential etiologies of liver masses other than HCC in patient-inmates who are at risk for HCC. Primary care providers should be alert to other potential etiologies for liver masses in patient-inmates with or without risk factors for HCC, and consider the patient-inmate's clinical presentation when deciding what, if any, additional management steps are appropriate.

### BACKGROUND

- Surveillance is considered cost-effective if the risk of HCC is > 1.5% per year in patients with hepatitis C virus (HCV), or > 0.2% per year in patients with hepatitis B virus (HBV).
- Liver (abdominal) ultrasound every six months is recommended for HCC surveillance in patients at increased risk for HCC.
- Alpha fetoprotein (AFP) testing lacks sufficient specificity and is no longer recommended for HCC surveillance.
- Patients at increased risk for HCC for whom surveillance is recommended include:
  - Patients with cirrhosis from any etiology.
  - Patients with HBV who have at least one high risk factor for HCC, including:
    - Asian men over the age of 40 years.
    - Asian women over the age of 50 years.
    - Africans and North American blacks.
    - Patients with family history of HCC.

### GUIDANCE

**Abdominal ultrasound (US) every six months is the recommended surveillance method for those at risk for HCC.**

Evaluation of liver mass (see algorithm page 8)		
Lesions < 1 cm	Follow with every three month ultrasound for 24 months.	<ul style="list-style-type: none"> <li>◆ If lesion remains &lt; 1 cm, resume every six month US screening.</li> <li>◆ No feasible way to definitively diagnose liver</li> </ul>
Lesions > 1 cm	Order contrast enhanced imaging study such as dynamic triphasic or quadriphasic CT, or MRI with gadolinium.	<ul style="list-style-type: none"> <li>◆ Look for arterial hypervascularization and venous or delayed washout as diagnostic of HCC.</li> <li>◆ If CT/MRI is not typical for HCC, a biopsy is needed</li> </ul>

#### How should AFP test results be interpreted in patients at risk for hepatocellular carcinoma?

**Remember: AFP measurement is not recommended for routine HCC Surveillance.**

- Despite not recommending checking AFP levels for HCC surveillance, some patients will have AFP levels drawn for various reasons. In these cases, if the AFP level is < 20 IU/ml, continue surveillance with every six month ultrasound. If AFP > 20 IU/ml and a follow-up AFP shows that the AFP level is rising, evaluate with a one time contrast enhanced imaging study. (See Guidance above for follow-up.)
  - If the AFP level is greater than 500 IU/ml, consultation with a specialist knowledgeable in the diagnosis and management of HCC is recommended.

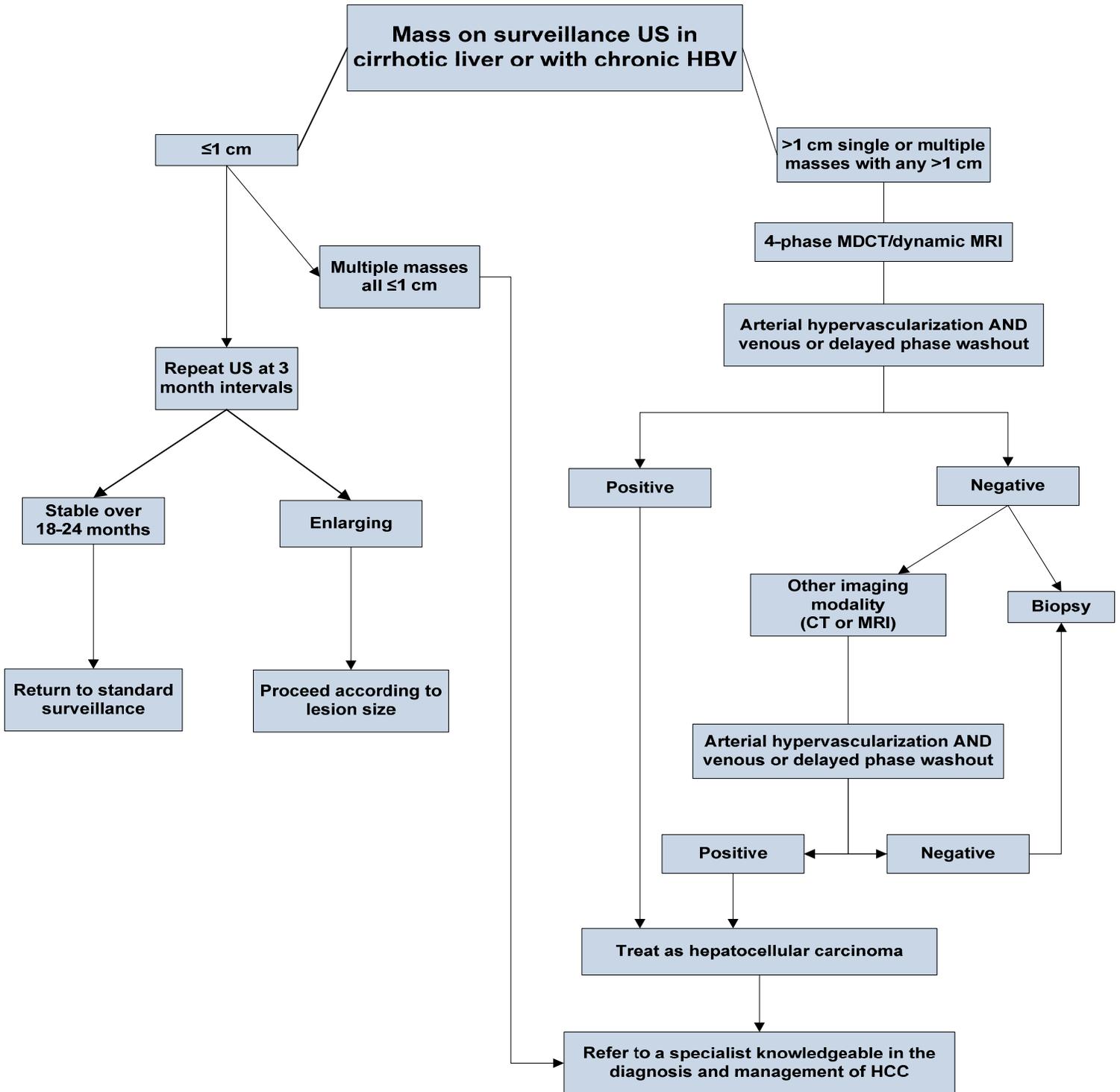
### TREATMENT OF SUSPECTED HCC

- Consultation recommended with a specialist knowledgeable in the diagnosis and management of HCC.
- Classification and diagnosis complements the Barcelona Clinic Liver Cancer (BCLC) staging and treatment criteria:
  - Very early to early stage disease– may be cured with ablation, resection, or liver transplant.
  - Intermediate Stage– usually treated with chemoembolization.
  - Advanced Stage- Sorafenib (trade name Nexavar®).
  - Terminal Stage-Child-Pugh C with liver biopsy evidence of stage 3-4 disease- supportive care is best treatment.

#### References:

Forner A, et al. Semin Liver Dis. Current Strategy for Staging and Treatment: The BCLC Update and Future Prospects. 2010 Feb;30(1):61-74  
 Bruix J, M. Management of Hepatocellular Carcinoma: an Update. Hepatology Vol 53, No. 3, 2011 pp 1020-1035  
 Rodriguez de Lope C, et al. J. Management of HCC. Journal of Hepatology. 2012/s75-87

## DIAGNOSTIC ALGORITHM FOR EVALUATION OF LIVER MASS



Adapted from the Journal of Hepatology, Bruix and Sherman (2011)[11]

## PATIENT EDUCATION



### WHAT YOU SHOULD KNOW

#### WHAT IS CIRRHOSIS? (SIR-O-SIS)

- ◆ Cirrhosis is when a healthy liver becomes damaged by scars and lumps.
- ◆ Cirrhosis can be caused by alcoholism, viral infections (like hepatitis B and C), or fatty liver disease, but there are many other possible causes.
- ◆ You can live several years with cirrhosis if you get medical care.

#### HOW DO YOU KNOW IF YOU HAVE CIRRHOSIS?

You could have cirrhosis if you have:

- ◆ Swollen legs or belly.
- ◆ Yellow colored skin.
- ◆ Frequent nosebleeds.
- ◆ Red palms.
- ◆ A tendency to bruise easily.
- ◆ Unexplained weight loss or weight gain.
- ◆ Belly pain.
- ◆ Frequent infections.
- ◆ Trouble thinking clearly or being confused.

You could be getting more sick if you:

- ◆ Have black tarry stools.
- ◆ Vomit blood or what looks like “coffee grounds.”
- ◆ Are feeling sleepy for long periods of time.
- ◆ Are having more trouble thinking or are more confused.
- ◆ Don't pee as much as you used to.
- ◆ Develop a fever.
- ◆ Have problems breathing.

#### WHAT YOU CAN DO TO HELP YOURSELF

- ◆ Eat from the CDCR “heart healthy” diet. Stay away from high salt, high fat food from the canteen and/or packages.
- ◆ Get regular exercise unless your health care provider tells you not to .
- ◆ Get vaccinated for Hepatitis A and B and pneumonia. Get a yearly flu shot.
- ◆ Do not drink any alcohol, including pruno, while you are in prison or after release.
- ◆ Avoid iron supplements.
- ◆ Discuss all medications with your health care provider.
- ◆ Take your medication as directed by your health care provider.
- ◆ Stay away from NSAIDs like Advil<sup>®</sup>, Motrin<sup>®</sup>, or Aleve<sup>®</sup> unless recommended by your health care provider.

