Chronic Hepatitis B/C Algorithm
Please review definition and pathophysiology when using the algorithm

Assess for the presence of risk factors:
See HIV risk factors
Exposure to contaminated blood through parenteral or sexual contact
Unvaccinated client with exposure to Hepatitis B virus pathogen
HIV co-infection
Perinatal transmission
persons who spent many years on dialysis for kidney failure
People who received body piercing or tattoos done with non-sterile instruments
http://www.cdc.gov/hepatitis/B/bFAQ.htm#bFAQ14

YES

Are Risk Factors Present?

Perform Hepatitis profile if risk is present

Negative

Monitor for presence of signs/ symptoms:
- Fever, Fatigue, Loss of appetite
- Nausea, Vomiting
- Abdominal pain
- Dark urine, Clay-colored bowel movements
- Joint pain
- Jaundice (yellow color in the skin or the eyes)
- s/s of cirrhosis or liver cancer

Are positive findings present?

Newly diagnosed?

Potentially unstable?

Follow collaborative plan of care for a client at risk for cirrhosis
See risk for infection transmission
See liver cancer algorithm

NO

Initiate client education for Health Seeking Behaviors to identify:
Avoid exposure to contaminated blood (see HIV infection)
The CDC recommends Hepatitis B vaccination for all infants, older children and adolescents who were not vaccinated previously, and adults at risk for HBV infection.
Reinforce standard precautions and safe sex practices
Avoid hepatotoxins that contribute to cirrhosis
Seek evaluation if you have known exposure to virus
Teach s/s of hepatitis to report

Initiate the plan of care for a Risk for Ineffective Therapeutic Regimen management:
- Review course and progression of disease
- Discuss sites of risk of chronic Hepatitis infection developing into cirrhosis and Hepatocellular cancer
- Discuss rationale, complications and post procedure instructions for liver biopsy of performed
- Explain to client that therapy is currently recommended for patients with evidence of chronic active disease (ie, high aminotransferase levels, positive HBV DNA findings, HBeAg) or in case of Hep C has elevated serum ALT levels who (1) are older than 18 years; (2) have positive findings for HCV antibody and serum HCV RNA;
- Review Interferon therapy and antiviral therapy to achieve suppression of virus
- Explain that transplantation may be necessary of cirrhosis and cancer develops.
- Discuss risk for infection transmission and alcohol & hepatotoxins avoidance
- Teach client s/s of hepatic failure, cirrhosis, liver cancer and s/s to report
- Periodic follow-up monitoring viral titers, LFTs and AFP levels

http://www.emedicine.com/med/TOPIO992.HTM#section-Medication
http://www.emedicine.com/MED/topic993.htm#section-Followup
## Collaborative Problem

### OUTCOMES/BENCHMARKS:
- No fever, fatigue, anorexia, nausea, vomiting, abdominal pain and jaundice
- No hepatosplenomegaly, no pruritis, no weight loss, no mental status changes, no GI bleeding, no ascites, no edema, No bone pain or myelosuppression, respiration even unlabored, no focal neurological deficits

### Potential Complication: Cirrhosis secondary to chronic active hepatitis

<table>
<thead>
<tr>
<th>ASSESS Cirrhosis secondary to chronic active hepatitis</th>
<th>Monitor for presence of Cirrhosis secondary to chronic active hepatitis</th>
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<tbody>
<tr>
<td>- Fever, Fatigue, Loss of appetite</td>
<td>- Monitor for high aminotransferase levels, positive HBV DNA findings HBeAg with Chronic active hepatitis B or elevated serum ALT levels &amp; positive findings for HCV antibody and serum HCV RNA with chronic active Hepatitis C</td>
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<tr>
<td>- Nausea, Vomiting</td>
<td>- Monitor for elevated LFTs, decreased albumin, and prolonged prothrombin time</td>
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<tr>
<td>- Abdominal pain</td>
<td>- Monitor results of liver imaging using ultrasonography, CT scanning, or MRI</td>
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<tr>
<td>- Dark urine, Clay-colored bowel movements</td>
<td>- Monitor results of liver biopsy</td>
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<tr>
<td>- Joint pain</td>
<td>- Monitor results of baseline workup before initiating antiviral therapy; CBC, BMP, Hepatitis profile, LFTs</td>
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<td>- Jaundice (yellow color in the skin or the eyes)</td>
<td>- Additional assessment includes monitoring from presence of complications</td>
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<tr>
<td>- s/s of cirrhosis</td>
<td>- Monitor for labs indicating acute liver failure and HCC</td>
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<tr>
<td>- encephalopathy</td>
<td>- Mon for I/O, increased abdominal girth, weight gain and ascites</td>
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<tr>
<td>- variceal bleeding</td>
<td>- Mon for elevated arterial or free venous serum ammonia level &amp; EEG changes indicating encephalopathy</td>
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<tr>
<td>- ascites</td>
<td>- Monitor for rising creatinine &amp; decreased urine output with development of hepatorenal syndrome</td>
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<tr>
<td>- hepatorenal syndrome</td>
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<tr>
<td>- bleeding</td>
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<tr>
<td>- s/s liver cancer</td>
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<td>- hepatosplenomegaly</td>
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### Assess for contributing factors:
- Hepatitis B/C infection

### DO
- Perform nursing actions that minimize cirrhosis secondary to Chronic Hepatitis infection
  - Administer prescribed antiviral therapy and monitor for viral suppression and tolerance of therapy (infections especially lung, myelosuppression, worsening liver function, chest pain
  - Provide supportive care, ensure adequate hydration and initiate energy conservation strategies
  - Avoid hepatotoxins and administer doses adjusted for hepatic disease (decreased doses and frequencies) if liver dysfunction is present
  - If cirrhosis is present:
    - Administer lactulose, neomycin in presence of encephalopathy and ensure a moderate protein diet
    - Administer diuretics, albumin and assist in therapeutic paracentesis in presence of ascites and ensure fluid and sodium restriction as ordered
    - Note client may require TIPS therapy
  - Administer beta blockers, Pitressin, and prepare for endoscopy in presence of variceal bleeding
  - Withhold agents that can prolong bleeding times and administer FFP & Vitamin K to correct coagulopathy if ordered
  - Administer antibiotics in presence of SBP (Infection can exacerbate encephalopathy)
  - Prepare client for liver transplantation if candidate

### CALL
- Monitor for worsening hepatic encephalopathy, hepatorenal syndrome, ascites, UGI bleeding, coagulopathy, infection, s/s of cancer
- If present, ensure adequate airway, breathing establish IV access and initiate shock management of bleeding is present, provide supportive care and contact ready response team and MD