Hepatitis B Virus (HBV)

**PRESENTATION**
- Medical History:
  - Previous history of HBV
  - On anti-HBV medications
- Risk factors associated with HBV infection:
  - Born in a country with a greater than or equal to 2% HBV prevalence (Appendix A)
  - Parents born in high prevalence region (Appendix A)
  - Household or sexual contact with HBV+ person
  - HIV+
  - Injection drug use
  - Men who have sex with men
- Patients awaiting other therapies should be screened at the discretion of their provider.

**TEST RESULTS**

- **HBsAg+/- anti-HBc+**
  - Conduct HBsAg and anti-HBc screening
  - **Any one positive condition?**
    - Yes
      - Anticipate immunosuppressive therapy associated with a high risk of HBV reactivation
    - No
      - No further intervention needed
  - **HBsAg-/- anti-HBc+**
    - Anticipate immunosuppressive therapy that is NOT associated with a high risk of HBV reactivation
  - **HBsAg-/- anti-HBc-**
    - Obtain baseline HBV DNA level
    - Consult HBV specialist
    - All patients should have a liver ultrasound at baseline with further recommendations per HBV specialists
    - Prophylactic antiviral therapy and monitor HBV DNA and ALT

**RECOMMENDED IMMUNOSUPPRESSIVE TREATMENT**

- Obtain baseline HBV DNA level
- Consult HBV specialist
- Patients with detectable HBV DNA levels should have a liver ultrasound at baseline with further recommendations per HBV specialists
- Prophylactic antiviral therapy or monitor HBV DNA and ALT with on-demand antiviral therapy

**NOTE:** If immunosuppressive treatment not chosen, risks of HBV reactivation should be discussed with patient/caregiver.

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**Medically significant conditions?**
- HBsAg: hepatitis B surface antigen
- anti-HBc: hepatitis B core antibody

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**Note:** Acute hepatitis manifested by an acute elevation in liver enzymes with jaundice, ascites, or encephalopathy in a patient without a history of hepatitis is reportable to the public health authorities, as is standard medical practice and aligned with Infection Control Services.
APPENDIX A: Geographic Regions with a Prevalence of Hepatitis B Surface Antigen greater than or equal to 2%

<table>
<thead>
<tr>
<th>Region</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>All</td>
</tr>
<tr>
<td>Asia</td>
<td>All</td>
</tr>
<tr>
<td>Australia and South Pacific</td>
<td>All except Australia and New Zealand</td>
</tr>
<tr>
<td>Middle East</td>
<td>All except Cyprus and Israel</td>
</tr>
<tr>
<td>Eastern Europe</td>
<td>All except Hungary</td>
</tr>
<tr>
<td>Western Europe</td>
<td>Malta, Spain and indigenous populations in Greenland</td>
</tr>
<tr>
<td>North America</td>
<td>Alaska natives and indigenous populations in northern Canada</td>
</tr>
<tr>
<td>Mexico and Central America</td>
<td>Guatemala and Honduras</td>
</tr>
<tr>
<td>South America</td>
<td>Ecuador; Guyana; Suriname; Venezuela; and Amazonian areas of Bolivia, Brazil, Colombia, and Peru</td>
</tr>
<tr>
<td>Caribbean</td>
<td>Antigua and Barbuda, Dominica, Grenada, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, and Turks and Caicos Islands</td>
</tr>
</tbody>
</table>

1 The regions with the highest prevalence (greater than 5%) are sub-Saharan Africa and central and Southeast Asia.

APPENDIX B: Antiviral Therapy

Anti-HBV medications (to be used as monotherapy):
- Entecavir (recommended)
- Tenofovir (recommended)
- Adefovir
- Lamivudine
- Telbivudine
- Pegylated interferon alfa-2a

Of these, Entecavir or Tenofovir are preferred due to low viral resistance and strong efficacy data on patients anticipated to receive immnosuppressive therapies associated with a high risk of reactivation (see page 1). Tenofovir has a low risk of nephrotoxicity. It is recommended that oncology providers seek assistance from HBV specialists about initiation and monitoring antiviral medications for optimal shared decision making of medical providers/teams with patients.

AASLD guidelines for treatment of chronic hepatitis B: [http://dx.doi.org/10.1002/hep.28156](http://dx.doi.org/10.1002/hep.28156)


1 The medications are currently available (as of 12/3/15).
Hepatitis C Virus (HCV)

**PRESENTATION**

Persons for whom HCV screening is recommended:
- All hematopoietic stem cell transplant candidates
- Other cancer patients as below

Risk factors associated with HCV infection:
- Persons born during 1945-1965
- Persons who have injected illicit drugs in the recent or remote past, including those who injected only once and do not consider themselves to be drug users
- Persons with conditions associated with high prevalence of HCV infection including:
  - Persons with HIV infection
  - Persons with hemophilia who received clotting factor concentrates prior to 1987
  - Persons who have ever been on hemodialysis
  - Persons with unexplained abnormal aminotransferase levels
- Prior recipients of transfusions or organ transplants prior to July 1992 including:
  - Persons who were notified that they had received blood from a donor who later tested positive for HCV infection
  - Persons who received a transfusion of blood or blood products
  - Persons who received an organ transplant
- Children born in HCV-infected mothers
- Health care, emergency medical and public safety workers after a needle stick injury or mucosal exposure to HCV-positive blood
- Current sexual partners of HCV-infected persons

**TEST RESULTS**

- **Any one positive condition?**
  - **Yes**
    - Conduct HCV antibody testing
  - **No**

**RECOMMENDED IMMUNOSUPRESSIVE TREATMENT**

- **Reactive**
  - Order HCV RNA
- **Non-reactive**
  - No further intervention needed

1 Extrapolated from recommendation in patients without cancer
2 Although the prevalence of infection is low, a negative test in the partner provides reassurance, making testing of sexual partners of benefit in clinical practice
3 Infectious Diseases Department
4 See Appendix C for Antiviral Therapy for anti-HCV

**Note:** Acute hepatitis manifested by an acute elevation in liver enzymes with jaundice, ascites, or encephalopathy in a patient without a history of hepatitis is reportable to the public health authorities, as is standard medical practice and aligned with Infection Control Services.
APPENDIX C: Antiviral Therapy

Anti-HCV medications (do not use as monotherapy):

- Sofosbuvir
- Daclatasvir
- Ledipasvir
- Ombitasvir
- Paritaprevir/Ritonavir
- Simeprevir
- Ribavirin

HCV therapy should be undertaken by providers experienced in management of HCV in cancer patients in close collaboration with oncologists.

Treating physicians should be mindful of potential drug interactions and/or side effects between cancer therapies and direct acting antivirals (DAAs), although these have not been extensively studied in HCV-infected patients with cancer. The potential drug-drug interactions between DAAs and cancer therapies have been summarized elsewhere (see below citations).

http://www.hcvguidelines.org; http://www.hep-druginteractions.org

1 The medications are currently available (as of 12/3/15).
**SUGGESTED READINGS**


DEVELOPMENT CREDITS

This practice consensus algorithm is based on majority expert opinion of Hepatitis B Virus and Hepatitis C work groups at the University of Texas MD Anderson Cancer Center. It was developed using a multidisciplinary approach that included input from the following:

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