AETC AIDS Education & Training Center Program Mountain West

Screening and Treating Viral Hepatitis: Primer for Primary Care

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Disclosures

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Data Considerations

Data in this presentation offer a limited perspective of how systemic, social, and economic factors impact health. We recognize that racism, not race, creates and perpetuates health disparities.

To Learn More:
https://www.cdc.gov/minorityhealth/racism-disparities

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Hepatitis B and Vaccines

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Hepatitis B Facts:

- Hepatitis B is a vaccine-preventable liver infection caused by the hepatitis B virus (HBV) that can lead to chronic infection causing cirrhosis, liver cancer and death.
- All medically stable infants weighing ≥2,000 grams are recommended to receive the hepatitis B vaccine within the first 24 hours following birth.
- All adults aged 19 through 59 years and adults ≥60 years with risk factors for hepatitis B or without identified risk factors but seeking protection are recommended to receive the hepatitis B vaccine.
- **All adults aged 18 years and older are recommended to be screened at least once in their lifetime using a triple panel test.**
- There is no cure for hepatitis B but there are treatments that can reduce the chance of developing serious liver disease and liver cancer.
- Progress toward hepatitis B elimination has stalled. Since 2012, the rate of reported acute hepatitis B cases has ranged from 0.9 to 1.1 per 100,000 population.
- New hepatitis B infections are highest among people aged 30-59 years because many people at risk in this group have not been vaccinated as recommended.

Hepatitis B Transmission

- BLOOD AND SEXUAL FLUIDS
  - Direct Contact with Infected Blood
  - Unprotected Sex
  - Injection drug use
  - Needles and other medical/dental equipment or procedures that are contaminated or not sterile
  - From an infected woman to her newborn during pregnancy and childbirth

  - Hepatitis B is NOT transmitted casually. It cannot be spread through toilet seats, doorknobs, sneezing, coughing, hugging or eating meals with someone who is infected with hepatitis B.

High Risk Groups

1. Health care providers and emergency responders
2. Sexually active individuals (more than 1 partner in the past six months)
3. Men who have sex with men
4. Individuals diagnosed with a sexually transmitted disease
5. Illicit drug users (injecting, inhaling, snorting, pill popping)
6. Sexual partners or those living in close household contact with an infected person
7. Individuals born in countries where hepatitis B is common (Asia, Africa, South America, Pacific Islands, Eastern Europe, and the Middle East)
8. Individuals born to parents who have emigrated from countries where hepatitis B is common (see #7)
9. Children adopted from countries where hepatitis B is common (see #7)
10. Adoptive families of children from countries where hepatitis B is common (see #7)
11. Anyone diagnosed with cancer prior to initiation of anticancer treatment
12. Kidney dialysis patients and those in early kidney (renal) failure
13. Inmates and staff of a correctional facility
14. Residents and staff of facilities for developmentally disabled persons
15. ALL pregnant women

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High and Intermediate HBV Endemicity

- Africa (all countries)
- North, Southeast, East Asia (all countries)
- Australia and South Pacific (all countries except Australia and New Zealand)
- Middle East (all countries except Cyprus and Israel)
- Eastern Europe (all countries except Hungary)
- Western Europe (Malta, Spain, and indigenous populations of Greenland)
- North America (Alaskan natives and indigenous populations of Northern Canada)
- Mexico and Central America (Guatemala and Honduras)
- South America (Ecuador, Guyana, Suriname, Venezuela, and Amazonian areas)
- Caribbean (Antigua-Barbuda, Dominica, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, and Turks and Caicos Islands)

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Screening

- Presence of HBsAg establishes the diagnosis of hepatitis B
- Initial testing should entail **HBsAg**/HBcAb/HBsAb
- All people from high or intermediate risk should be tested
- Those that are not immune should be vaccinated
- For those that are HBsAg positive they should be counseled regarding prevention and transmission of hepatitis B to others
- Universal precautions apply so no special arrangements needed for activities

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Hepatitis B Serologies

HBsAg **anti-HBc** **anti-HBs**	negative negative negative	Susceptible
HBsAg **anti-HBc** **anti-HBs**	negative positive positive	Immune due to natural infection
HBsAg **anti-HBc** **anti-HBs**	negative negative positive	Immune due to hepatitis B vaccination
HBsAg **anti-HBc** **IgM anti-HBc** **anti-HBs**	positive positive positive negative	Acutely infected
HBsAg **anti-HBc** **IgM anti-HBc** **anti-HBs**	positive positive negative negative	Chronically infected
HBsAg **anti-HBc** **anti-HBs**	negative positive negative	Interpretation unclear; four possibilities: 1. Resolved infection (most common) 2. False-positive anti-HBc, thus susceptible 3. "Low level" chronic infection 4. Resolving acute infection

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Phases of Hepatitis B Infection

Table 1 - Phases of CHB Infection

	ALT	HBV DNA	HBeAg	Liver Histology
Immune-tolerant phase	Normal	Elevated, typically >1 million IU/mL	Positive	Minimal inflammation and fibrosis
HBeAg-positive immune-active phase	Elevated	Elevated ≥20,000 IU/mL	Positive	Moderate-to-severe inflammation or fibrosis
Inactive CHB phase	Normal	Low or undetectable <2,000 IU/mL	Negative	Minimal necroinflammation but variable fibrosis
HBeAg-negative immune reactivation phase	Elevated	Elevated ≥2,000 IU/mL	Negative	Moderate-to-severe inflammation or fibrosis

AASLD guidelines

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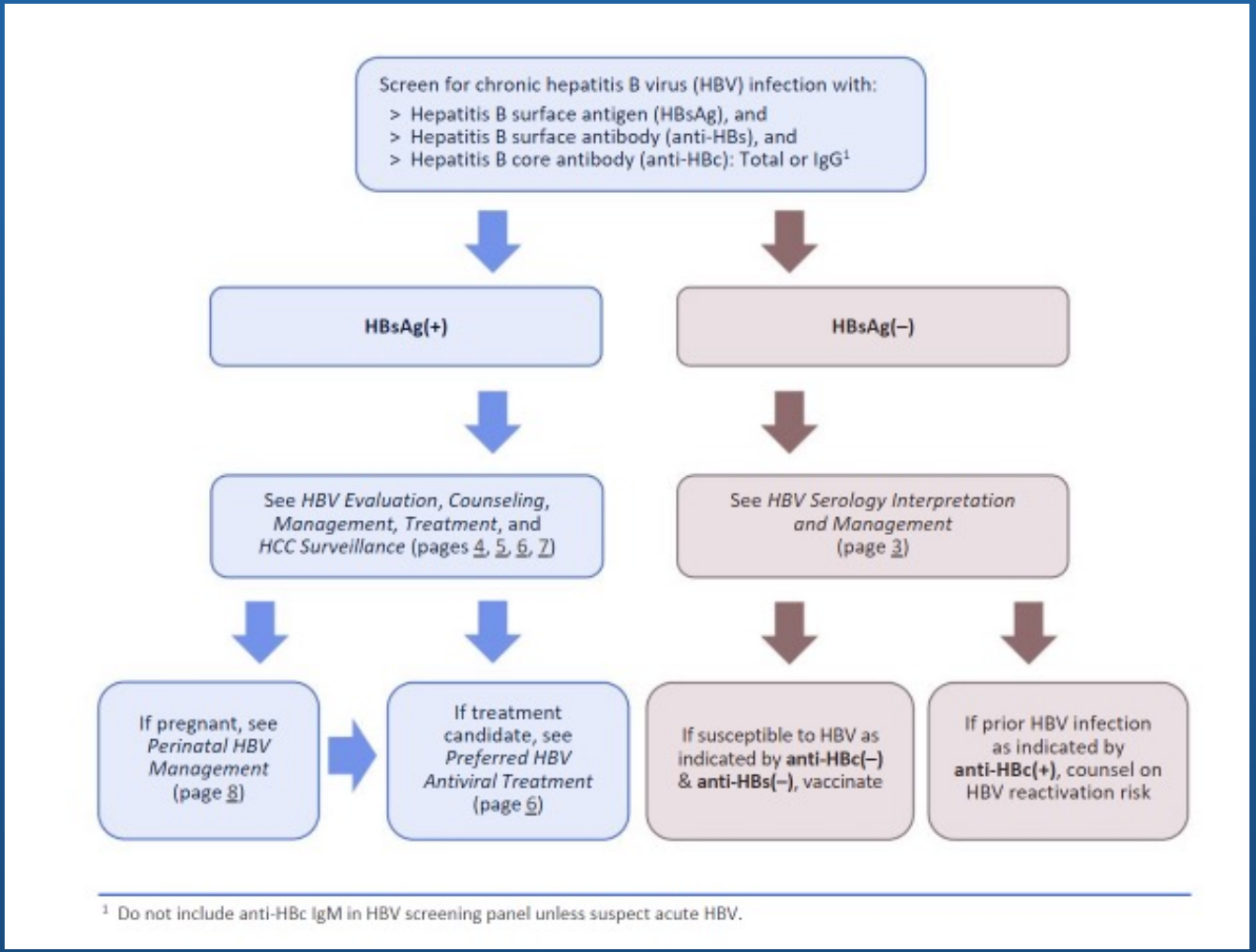
HBV Testing and Management Algorithm



2020 HBV Primary Care Workgroup: Hepatitis B Management: Guidance for the Primary Care Provider.

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Management: Prevention of hepatocellular carcinoma

- All HBsAg-positive patients with cirrhosis should be screened with US examination with or without AFP every 6 months.
- HBsAg-positive adults at high risk for HCC (including Asian or black men over 40 years and Asian women over 50 years of age), persons with a first-degree family member with a history of HCC, or persons with HDV should be screened with US examination with or without AFP every 6 months.

Prevention Counseling

- Have household and sexual contacts vaccinated
- Use barrier protection during sexual intercourse if partner is not vaccinated or is not naturally immune
- Do not share toothbrushes or razors
- Do not share injection equipment
- Do not share glucose testing equipment
- Cover open cuts and scratches
- Clean blood spills with bleach solution
- Do not donate blood, organs, or sperm
- Limit or abstain from alcohol
- **Children and Adults Who Are HBsAg Positive:**
- Can participate in all activities, including contact sports
- Should not be excluded from daycare or school participation and should not be isolated from other children
- Can share food and utensils and kiss others

ACIP List of Approved Hep B Vaccines

	Dose (ug)	Vol (ml)	Schedule
Recombivax			
Adolescents (11–19 yrs)	5	0.5	3 doses at 0, 1 and 6 mos
Adults >= 20 yrs	10	1	Same
Engerix-B			
Adolescents (11–19 yrs)	10	0.5	3 doses at 0, 1 and 6 mos
Adults >= 20 yrs	20	1	Same
Heplisav-B			
Adults >=18 yo	20	0.5	2 doses at 0, 1 mos
Prehevbrio			
Adults >=18 yo	10	1	3 doses at 0, 1 and 6 mos
Twinrix			
Adults >=18 yo	20	1	3 doses at 0, 1, 6 mos (standard) or4 doses at 0, 7d, 21–30 d, 12 mos (accelerated)

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Pregnancy and Hepatitis B

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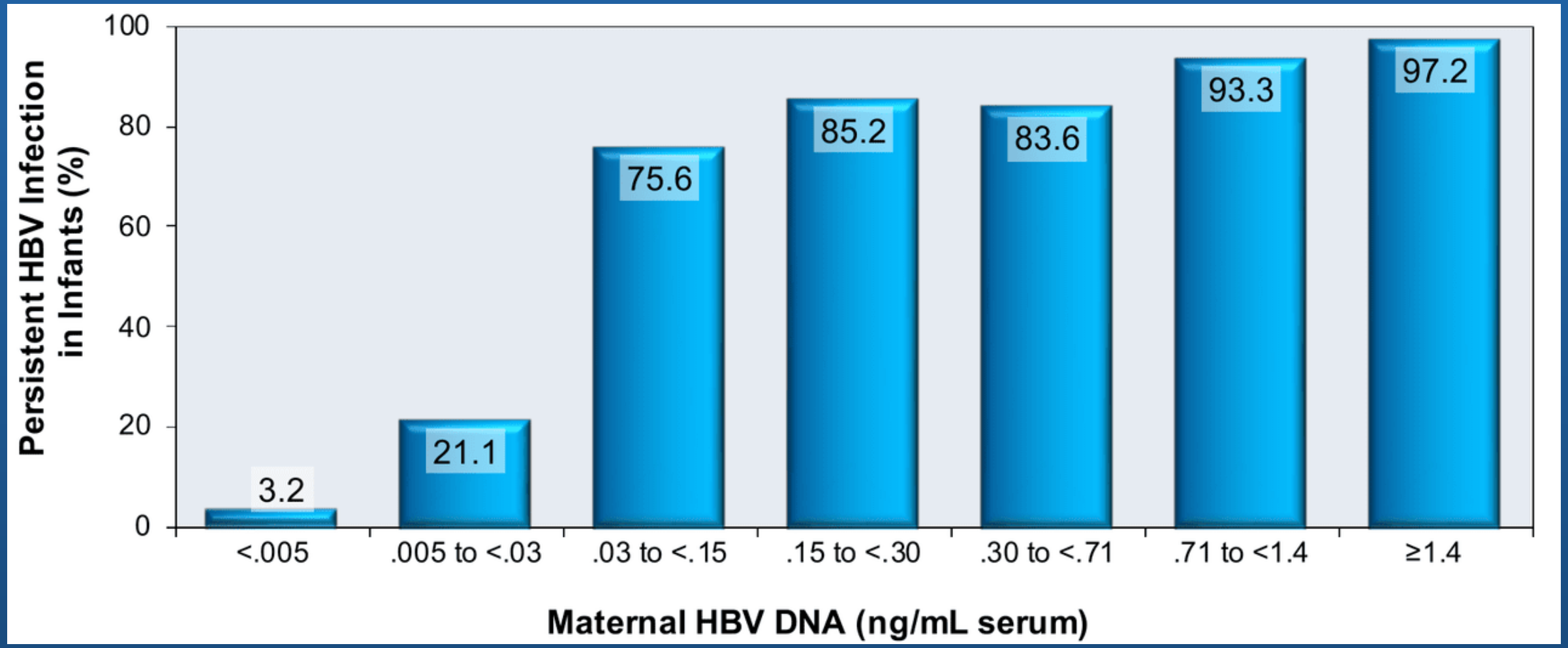
Universal Screening During Pregnancy

- **Pregnant Women with Positive HBsAg Screening Test**: Expectant mothers who screen positive for HBsAg should undergo additional laboratory testing for a hepatic alanine aminotransferase (ALT) level and a plasma quantitative HBV DNA level to evaluate if HBV treatment is indicated.
- **Pregnant Women with Negative HBsAg Screening Test**: Women who screen negative for HBsAg, anti-HBs, and anti-HBc upon enrollment into prenatal care should be offered vaccination against HBV.[2,3,5] Pregnant women can receive hepatitis B immunization during pregnancy, but the Heplisav-B and PreHevbrio hepatitis B vaccines should not be used during pregnancy due to lack of safety and efficacy data in pregnancy
- **Screening for HBV at the Time of Labor and Delivery**: Women who were not screened earlier in pregnancy, those with clinical or laboratory evidence of hepatitis, and those with ongoing risk factors for HBV acquisition should have screening for HBV performed at the time of labor and delivery

Schillie S, Vellozzi C, Reingold A, et al. Prevention of Hepatitis B Virus Infection in the United States: Recommendations of the Advisory Committee on Immunization Practices. MMWR Recomm Rep. 2018;67:1-31.
Terrault NA, Lok ASF, McMahon BJ, et al. Update on prevention, diagnosis, and treatment of chronic hepatitis B: AASLD 2018 hepatitis B guidance. Hepatology. 2018;67:1560-99.

Risk of Perinatal Transmission



Maternal & Fetal Risks of HBV

- Possible increase in pre-term labor but studies are mixed
- Increased risk of gestational diabetes but no effect on pregnancy outcomes
- ALT flares during pregnancy usually self- limiting
- MTCT: Mother to Child Transmission
- Low when viral load < 200,000IU
- Substantial when viral load >7 log
- Vaccination:

  HBV vaccination is safe in pregnancy, and pregnant women who are not immune to or infected with HBV should receive this vaccine series

Terrault NA, Levy MT, Cheung KW, Jourdain G. Viral hepatitis and pregnancy. *Nat Rev Gastroenterol Hepatol*. 2021;18(2):117-130. doi:10.1038/s41575-020-00361-w

MTCT Prevention

- Timely neonatal HBIG and vaccine birth dose w/in 24 hours of birth followed by standard course vaccine
- Maternal antiviral prophylaxis with TDF at week 28-30 weeks
- No role for cesarean section
- Possible post partum maternal antiviral prophylaxis
- Breastfeeding is not prohibited
- Infant follow-up
  - Check serology 3 months after completing vaccinations usually around 9 months

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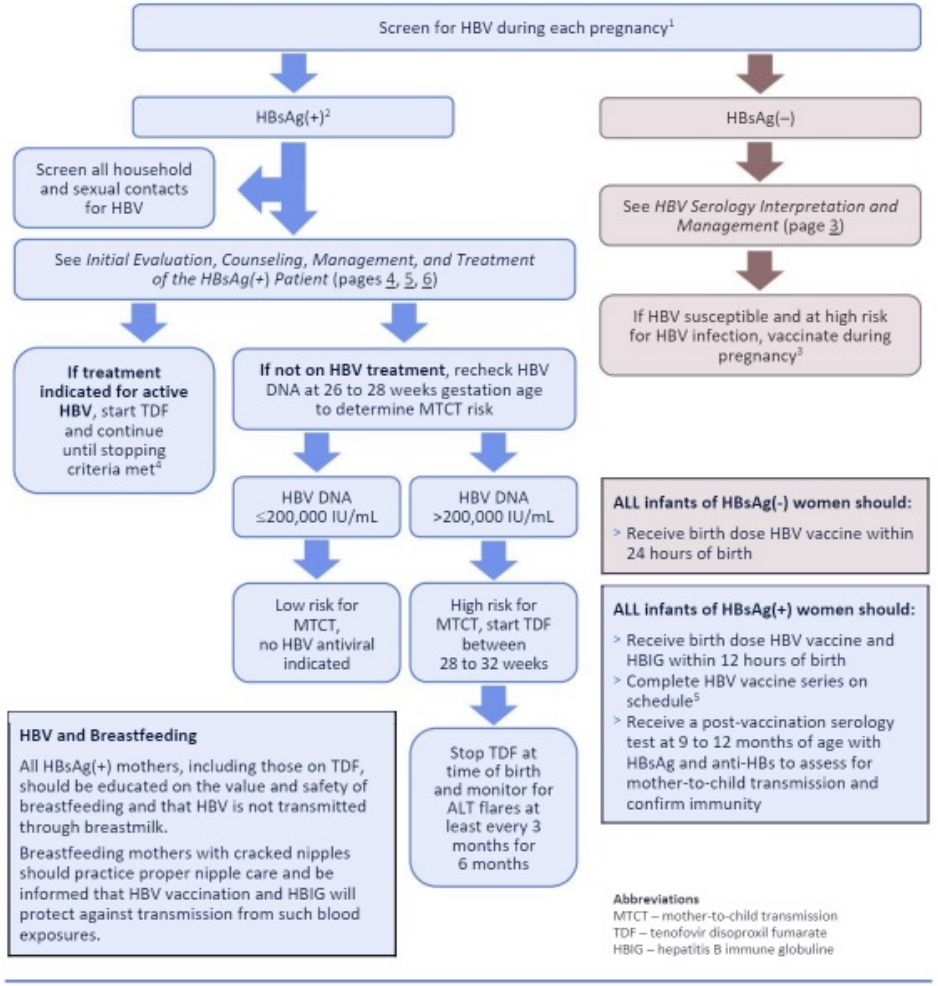
Perinatal HBV Management



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Hepatitis C

Risk Factors for Hepatitis C

- Injection drug use remains the most common risk factor for acquiring HCV in the United States, accounting for more than 60% of all cases.
- The role of noninjection drug use, such as snorting crack cocaine, powder cocaine, methamphetamines, or heroin, as a risk factor remains controversial
- The risk of acquiring HCV through sexual contact with a person who has HCV infection remains highly controversial.
- The prevalence of HCV infection in persons receiving hemodialysis is approximately 8%, which is nearly 5-fold higher than the general United States population

Risk Factors for Hepatitis C

- In the late 1970s through the mid-1980s, most persons with hemophilia acquired HCV infection via the receipt of contaminated plasma clotting factor concentrates
- In the 1960s, the risk of acquiring HCV from a blood transfusion was approximately 33%. The universal screening of blood and organ donors with routine use of second-generation HCV antibody tests in 1992 nearly eliminated subsequent risk of transfusion-associated HCV.
- Scattered cases and outbreaks of HCV transmission via gamma globulin have occurred in the United States and in Europe
- Due to the opioid epidemic, there has been a significant increase in HCV infection in recent years among women of childbearing age raising concerns for significant increase in perinatal HCV infections

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Screening for Hepatitis C

- One-time, routine, opt-out HCV screening is recommended for all individuals aged 18 years or older
- Annual HCV testing is recommended for all persons who inject drugs and for men with human immunodeficiency virus (HIV) infection who have unprotected sex with men.
- One-time HCV testing should be performed for all persons younger than 18 years old with behaviors, exposures, or conditions or circumstances associated with an increased risk of HCV infection
- Periodic repeat HCV testing should be offered to all persons with behaviors, exposures, or conditions or circumstances associated with an increased risk of HCV exposure

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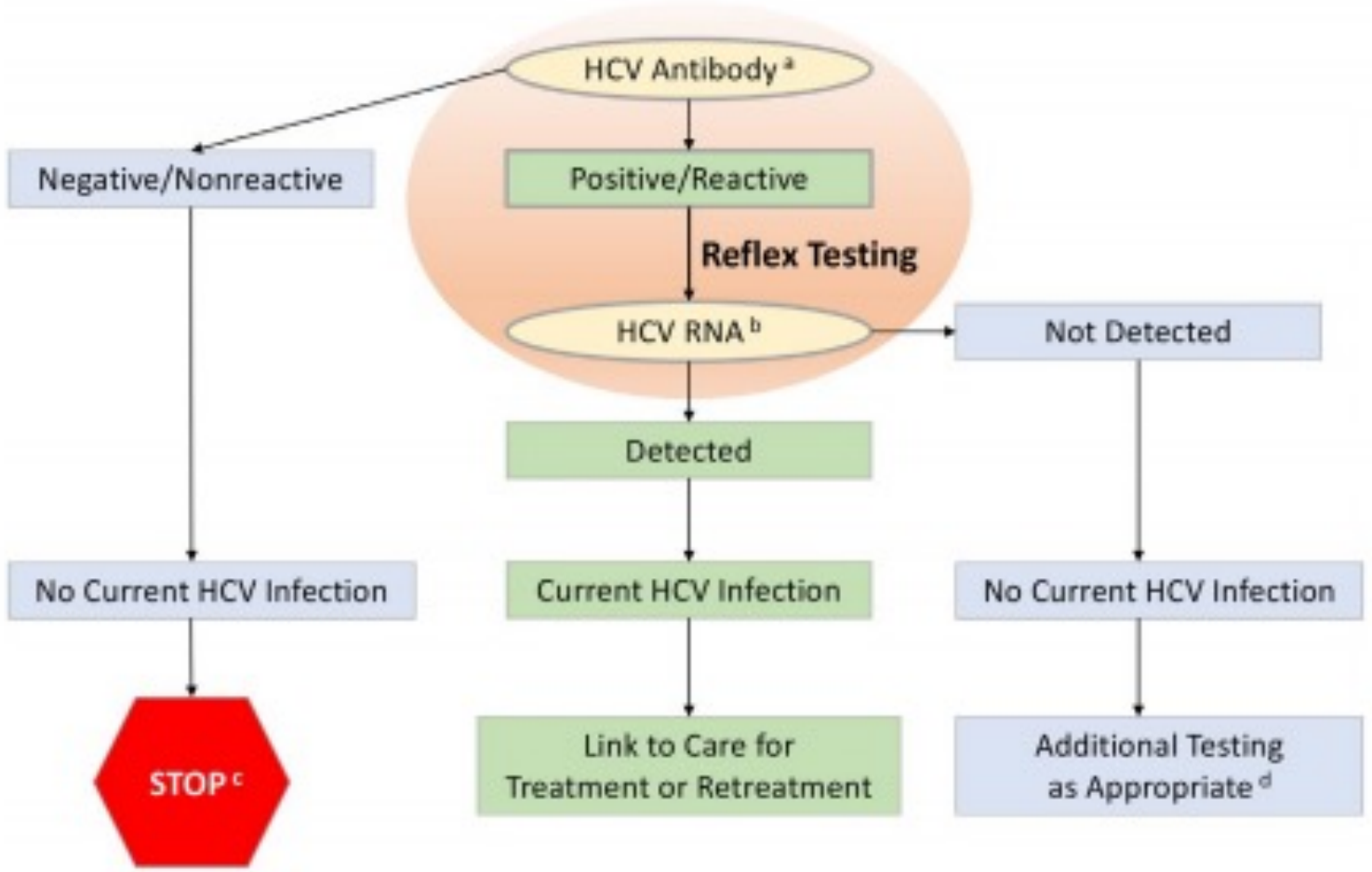
HCV Testing Algorithm



AASLD guidelines

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Counseling Patients with HCV

- Patients with chronic HCV infection without cirrhosis may take up to 2 grams per day of acetaminophen, if have cirrhosis should limit daily intake of acetaminophen to 1 gram per day. Those with excessive alcohol intake should not take acetaminophen.
- In general, NSAIDS are safe for patients with hepatitis C, except for those with cirrhosis, in which case they should be avoided.
- Patients can take a multivitamin without iron, but excess iron intake in the absence of iron deficiency can promote hepatic injury.
- Vitamin D levels should be checked and replenished if less than 20 ng/mL.
- No complementary or alternative medications have shown a definite benefit for patients with hepatitis C. St. John's wort should be avoided in persons receiving treatment for HCV given its potential to interact with DAA medications.

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Counseling Patients with HCV

- Drinking 3 or more cups of coffee per day may have beneficial effects for the liver.
- A balanced, low-fat (less than 30% of total calories) diet is recommended. Patients with cirrhosis should limit sodium intake to less than 2 grams per day and consume at least 6 ounces per day of protein.
- Obese patients are encouraged to lose at least 3 to 5% of their body weight, with a goal body mass index of less than 25, primarily to reduce the risk of fatty liver disease, but also for general health benefits.
- Ideally, persons with chronic HCV infection should abstain from alcohol for liver health, but persons with past or present alcohol use should not be excluded for consideration of HCV treatment.

Screening for Hepatocellular Carcinoma

- Potentially curative therapies for earlystage HCC include locoregional ablative therapy, hepatic resection or liver transplantation. The primary goal of HCC surveillance is to detect disease in an early stage and therefore increase the likelihood of potentially curative therapy.
- The 2018 AASLD HCC Guidelines recommend screening for HCC in all adults with cirrhosis and those with hepatitis B without cirrhosis using every 6-month abdominal ultrasound, with or without AFP. AFP should not be used as a solitary screening tool.
- In persons with advanced fibrosis or cirrhosis, successful HBV or HCV treatment can lower HCC risk by 71 to 79%.
- Despite the greatly reduced HCC risk from a treatment response, the risk is not eliminated and clinicians should not stop HCC screening in persons after SVR is achieved.

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Pregnancy and Hepatitis C

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Maternal and Fetal Risks

Maternal Risks:

Increased rates of gestational diabetes mellitus, antepartum hemorrhage, post partum hemorrhage, and premature rupture of the membranes have been reported

Fetal Risks:

Increased rates on intrauterine fetal death, preterm deliver, small gestational age, and low birthweight have been reported

MTCT:

Cure reproductive age women prior to conception with DAAs

DAA during pregnancy is probably effective but lacks sufficient data

Cesarean delivery not recommended but avoid intrapartum monitoring

Maternal Follow- up

- Mothers with HCV viremia should be offered treatment with DAAs after delivery and breastfeeding are complete

Infant Follow-up

- Early HCV testing after 2 months, but there are transient false positives due to transient viremia
- Delay HCV testing until 12-28 months to avoid false positives transferred from maternal antibodies.

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Implementation Challenges:

- Universal screening is better than risk factor screening
- Ensuring follow-up and testing of babies born to mother with HCV

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Case Studies

- **A 24-year-old female graduate student from China comes to your office complaining of fatigue for the past month. She has also had a poor appetite and has lost about 3 lb over this period. She reports that she was told that she had "hepatitis" when she was about 10 years old, but does not recall what type. She is otherwise healthy and takes no medications. She has no history or percutaneous exposures or blood transfusion. Her grandfather died of liver cancer.**
- **Physical examination reveals a thin, tired-appearing woman. The liver edge is palpable 2 cm below the right costal margin and is slightly tender. There is no ascites, splenomegaly, or cutaneous stigmata of chronic liver disease.**
- **Laboratory studies are remarkable for anemia (hemoglobin 9.1 g/dL). Liver tests reveal elevated aminotransferases (ALT 289 IU/L, AST 158 IU/L), albumin 3.2 g/dL, and total bilirubin 1.5 mg/dL (normal 0.2–1.0 mg/dL).**

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Case Study

- **PD is a 45-year-old Caucasian male who presents seeking treatment for his chronic hepatitis C infection.**
- **He states that he was diagnosed with the disease a few years ago, but he's not sure when he contracted it. He doesn't remember having any symptoms related to the infection. He has never received any treatment for his hepatitis C.**
- **He has a history of alcohol and drug use quit both about 4 years ago.**
- **He is housed, although he lives in a clean and sober that is not always clean and sober so finds himself couch surfing or sleeping outside maybe 2-3 days a week.**
- **Recently tested for HCV and is positive with no clear evidence of cirrhosis by labs**
- **What are your next steps?**

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Case Study

- **A 36-year-old woman is seen in clinic for consultation regarding hepatitis C virus (HCV) treatment. She is treatment naïve.**
- **During the visit she mentions that she and her husband are hoping to get pregnant soon, and she is not currently on any form of birth control.**
- **Baseline labs reveal she has genotype 1b HCV, with an HCV RNA level of 1,467,354 IU/mL. Her complete metabolic panel, including liver function testing, is normal. A FibroScan reveals F2 fibrosis**
- **What are you going to do?**

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