

HEPATITIS B CLINICAL TRAINING SERIES

Hepatitis B Pre-Treatment Evaluation and Treatment Initiation

Frances Lee, MD

Assistant Professor of Medicine
Division of Liver Disease
Icahn School of Medicine



Housekeeping Notes

Have a question for the presenter

- Type the question into the chat box and Meg will read them aloud to the presenter at the end

Claiming CE

- After the training, you will receive an e-mail with instructions, the course number, and the access code
- CE certificate can be printed or stored in your account
- Questions about CEs, contact Joycambe@empireliverfoundation.org

For Additional Information

- Visit <https://empireliverfoundation.org/about-us/cme-accreditation/>

Disclosures

DISCLOSURE: In compliance with continuing education requirements, all planners and presenters must disclose all financial relationships, in any amount, with ineligible companies during the previous 24 months as well as any use of unlabeled product(s) or products under investigational use. CDC, our planners, and presenters/moderators wish to disclose they have no financial relationship(s) with ineligible companies with the exception of the following individuals: Dr. Sonal Kumar, MD, MPH (Presenter) and she wishes to disclose that she is a consultant and part of the Speaker's Bureau for Gilead, Helen Adams, PA-C and she wishes to disclose that she is on the Advisory board and speakers bureau for Abbvie Pharmaceuticals and Gilead Pharmaceuticals, Douglas Dieterich, MD (Planner) and he wishes to disclose that he is part of the Speaker's Bureau, he is also a consultant for Gilead, Abbvie, Arbutus Assembly, David (Dave) E. Bernstein, MD (Planner) and he wishes to disclosure that he is part of the Speaker's Bureau for Intercept, he is also a consultant for OcelotBio and Ipseb. All relevant financial relationships listed for these individuals have been mitigated.

Mitigation steps for planner:

- ☒ Recusal from controlling aspects of planning and content with which there is a financial relationship
- ☒ Peer review of planning decisions by persons without relevant financial relationships

Mitigation steps for presenter and others

- ☒ Peer review of content by persons without relevant financial relationships
- ☒ Attest those clinical recommendations are evidence-based and free of commercial bias (e.g., peer-reviewed literature or adhering to evidence-based practice guidelines)

Presentations will not include any discussion of the unlabeled use of a product or a product under investigational use. CDC did not accept financial or in-kind support from any ineligible company for this continuing education activity.

Disclosures

About Empire Liver Foundation and NYC Health Department



The Empire Liver Foundation is an association of NYS liver specialists dedicated to increasing community awareness of liver disease, providing education on liver disease to health care providers and patients and providing guidance to those who make policy decisions influencing the practice and science of liver disease.

- **CME Grand Rounds**
- **CME Clinical Training Series**
- **Live Preceptorship**
- **Mentoring**

www.empireliverfoundation.org



The New York City Health Department Viral Hepatitis Program conducts surveillance and develops and implements programs to build capacity to prevent, manage and treat hepatitis B and C in New York City.

- **Surveillance**
- **Community Coalitions**
- **Navigation Programs**
- **Clinical Practice Facilitation**
- **Training**

www.nyc.gov/health/hepatitis

Overarching Learning Objectives

By the end of this presentation, participants will be able to:

1. Describe the importance of interprofessional collaboration in effectively meeting the healthcare, educational, and psychosocial needs of patients living with hepatitis B
2. Describe the epidemiology and natural history of hepatitis B.
3. Use updated guidelines to identify patients at risk for hepatitis B infection and provide screening according to these guidelines.
4. Select appropriate antiviral treatments for people living with hepatitis including special populations such as people with advanced liver disease or HIV co-infection.
5. Explain the efficacy and safety of current and emerging therapies for hepatitis B including use in special populations such as people who use drugs or alcohol or have substance use disorders.
6. Illustrate how to counsel patients diagnosed with hepatitis B regarding risks and benefits of therapies and involve them in shared treatment decisions.

Learning Objectives

By the end of this presentation, participants will be able to:

- Describe the epidemiology of hepatitis B (HBV) infection
- Understand the natural history of HBV infection
- Identify candidates for HBV vaccination
- Identify patients who should be screened for HBV and interpret HBV serology
- Educate patients on preventing HBV transmission
- Recall the role of the primary care provider (PCP) in HBV care

Interpreting Hepatitis B Tests

Clinical state	HBsAg	anti-HBs	anti-HBc	Action
Chronic infection	+	-	+	Link to HBV-directed care
Acute infection	+	-	+	Provide or link to HBV-directed care
Resolved infection	-	+	+	Counseling, reassurance, monitor if undergoing Immunosuppressive Rx
Immune (immunization)	-	+	-	Reassurance
Susceptible (never infected or immunized)	-	-	-	Vaccinate
Unclear (maybe: false positive, resolved infection, “low level” chronic infection, or resolving acute infection)	-	-	+	Consider checking the HBV DNA

Pre-Treatment Evaluation



History and Physical Examination

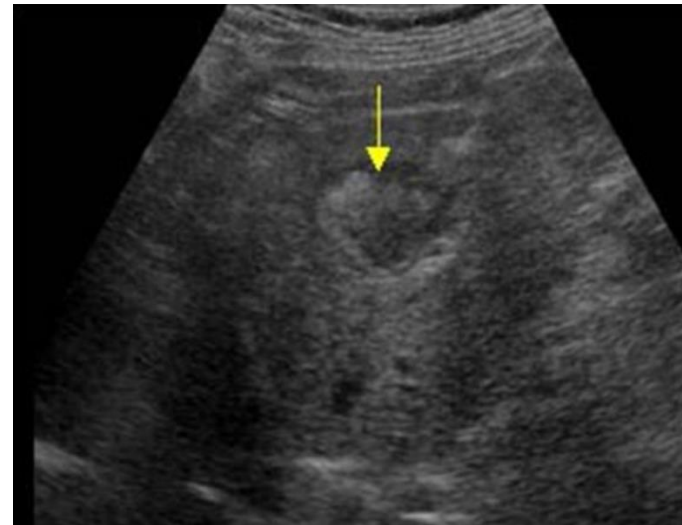
- Risk factors for viral hepatitis
- Risk factors for HIV co-infection
- Duration of infection
- Alcohol history
- Presence of comorbid diseases
- Family history of liver cancer
- Complete physical examination
 - Hepatomegaly
 - Splenomegaly
 - Jaundice
 - Distended abdomen
 - Spider angiomas

Pre-Treatment Blood Tests

- Serial testing of ALT and HBV DNA level for 6 months
- CBC, Liver enzymes, prothrombin time/INR
- HBeAg and anti-HBeAb
- Testing for other viruses:
 - hepatitis A virus Ig G (vaccinate as needed)
 - HCV Ab
 - HDV Ab
 - HEV Ab (particularly in acute hepatitis)
 - HIV Ab
- Testing for other liver diseases in patients with abnormal liver tests:
 - ANA, ASMA
 - Fe/TIBC/ferritin

Assessing Disease Severity

- Assess the severity of liver disease:
 - FIB-4, APRI, ELF
 - Transient elastography
 - MR elastography
- Screening for liver cancer
 - Ultrasound every-6-months
 - AFP every-6-months
 - **MRI with contrast in cirrhotics**



Non-Invasive Formulas to Assess Severity of Fibrosis

APRI

$$\text{APRI} = \frac{\frac{\text{AST Level (IU/L)}}{\text{AST (Upper Limit of Normal) (IU/L)}}}{\text{Platelet Count (10}^9\text{/L)}} \times 100 = \text{[Yellow Box]}$$

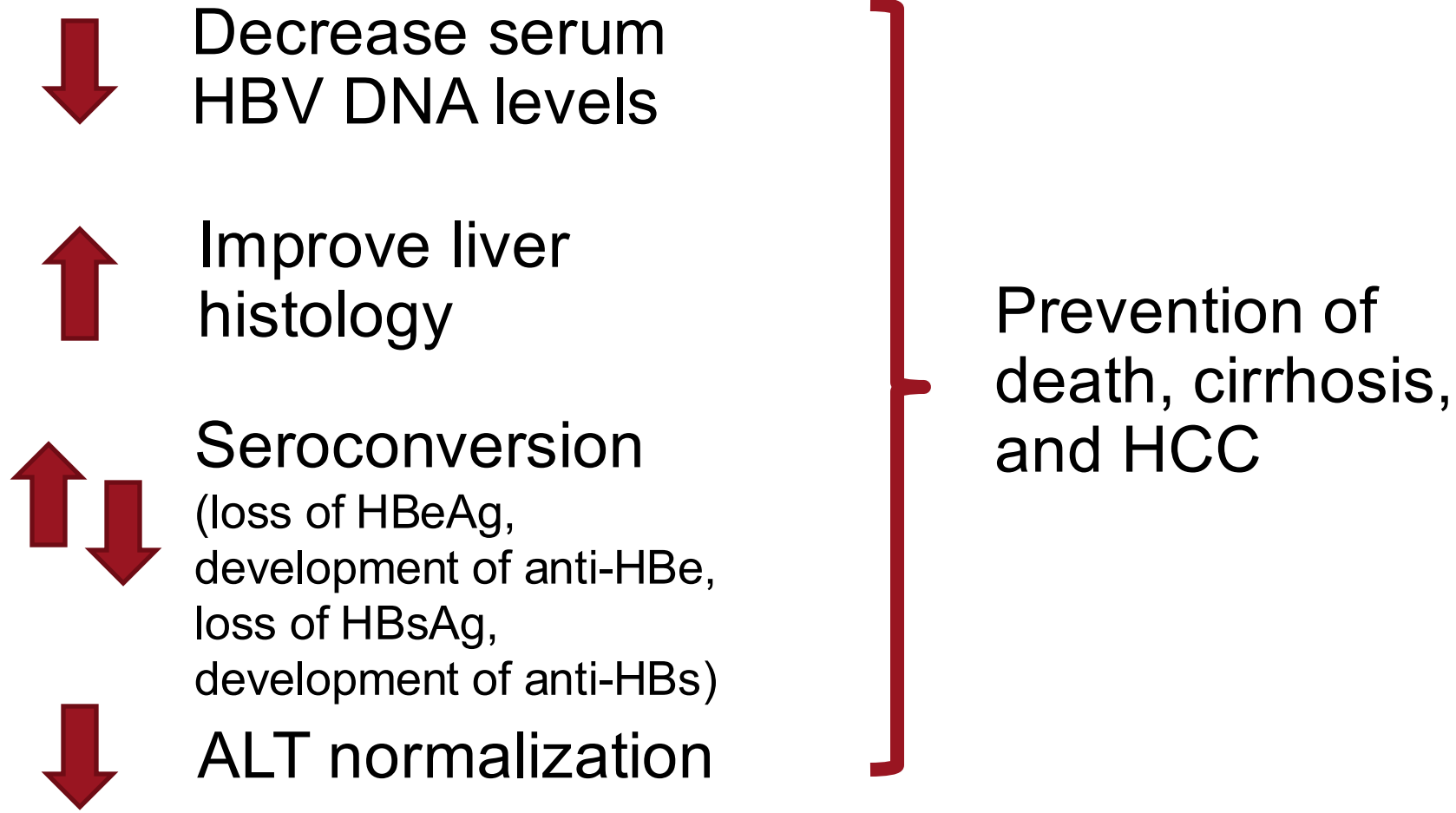
FIB-4

$$\text{FIB-4} = \frac{\text{Age (years)} \times \text{AST Level (U/L)}}{\text{Platelet Count (10}^9\text{/L)} \times \sqrt{\text{ALT (U/L)}}} = \text{[Yellow Box]}$$

Goals of HBV Therapy



Goals of HBV Therapy



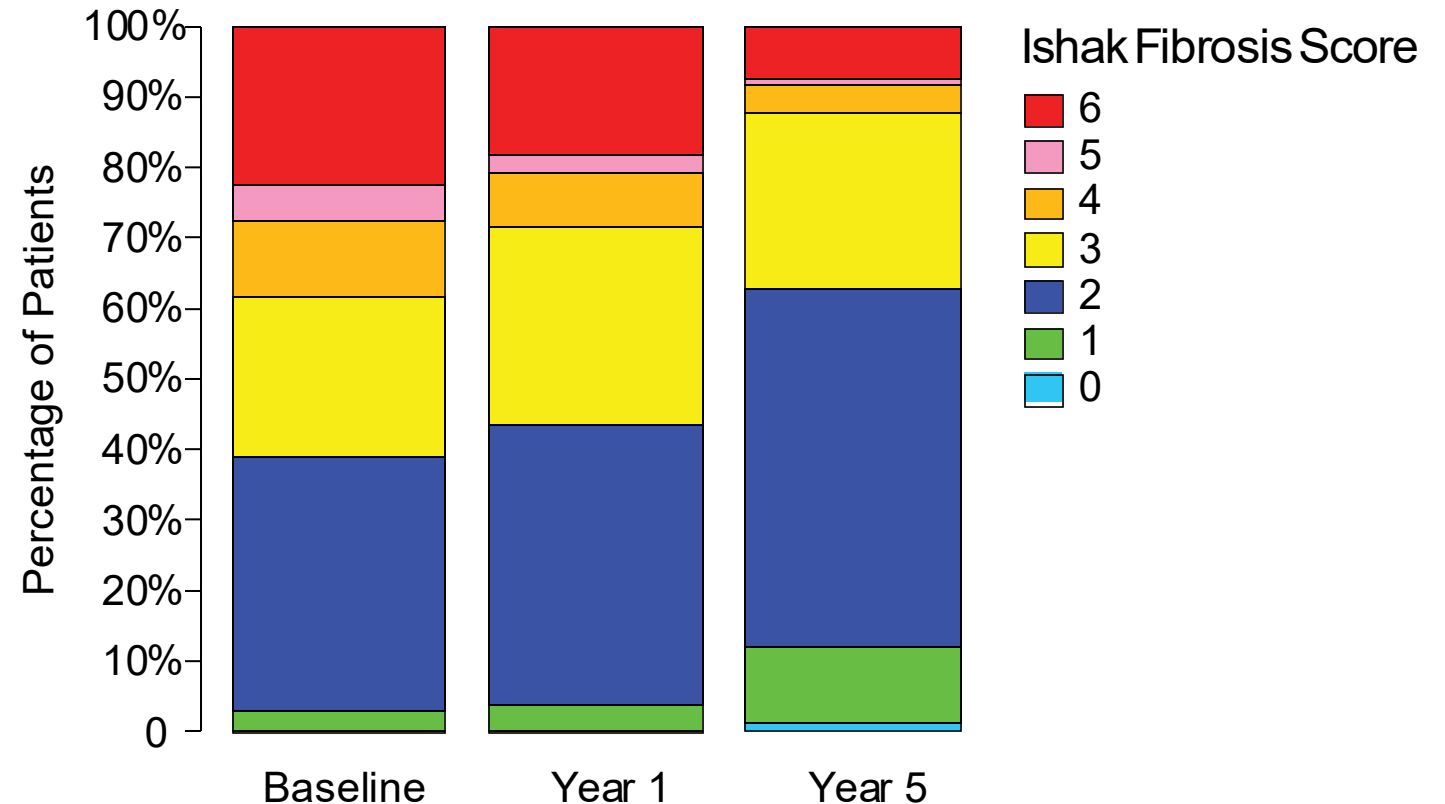
What About A Cure? Types Of HBV Cure

- Inactive state
 - Sustained, off drug
 - No inflammation – Normal ALT
 - HBVDNA low or undetectable
 - HBsAg positive
- Functional Cure (Clinical Resolution)
 - Sustained, off drug
 - No inflammation – Normal ALT
 - HBsAg loss
 - Anti-HBs gain sometimes
- Complete Cure (Sterilizing Cure)
 - All of the above plus
 - Loss of cccDNA in the liver
 - Loss of integrated HBV DNA in hepatocytes

HBV Therapy Reverses Fibrosis and Cirrhosis

489 patients complete 240 weeks (4.6 years) of treatment with tenofovir

- 348 patients have a biopsy at baseline and week 240
- 304 patients (87%) have histological improvement at week 240
- 176 patients (51%) have regression of fibrosis at week 240
- 71 / 96 (74%) with cirrhosis (Ishak Score ≥ 5) at baseline no longer had cirrhosis at week 240



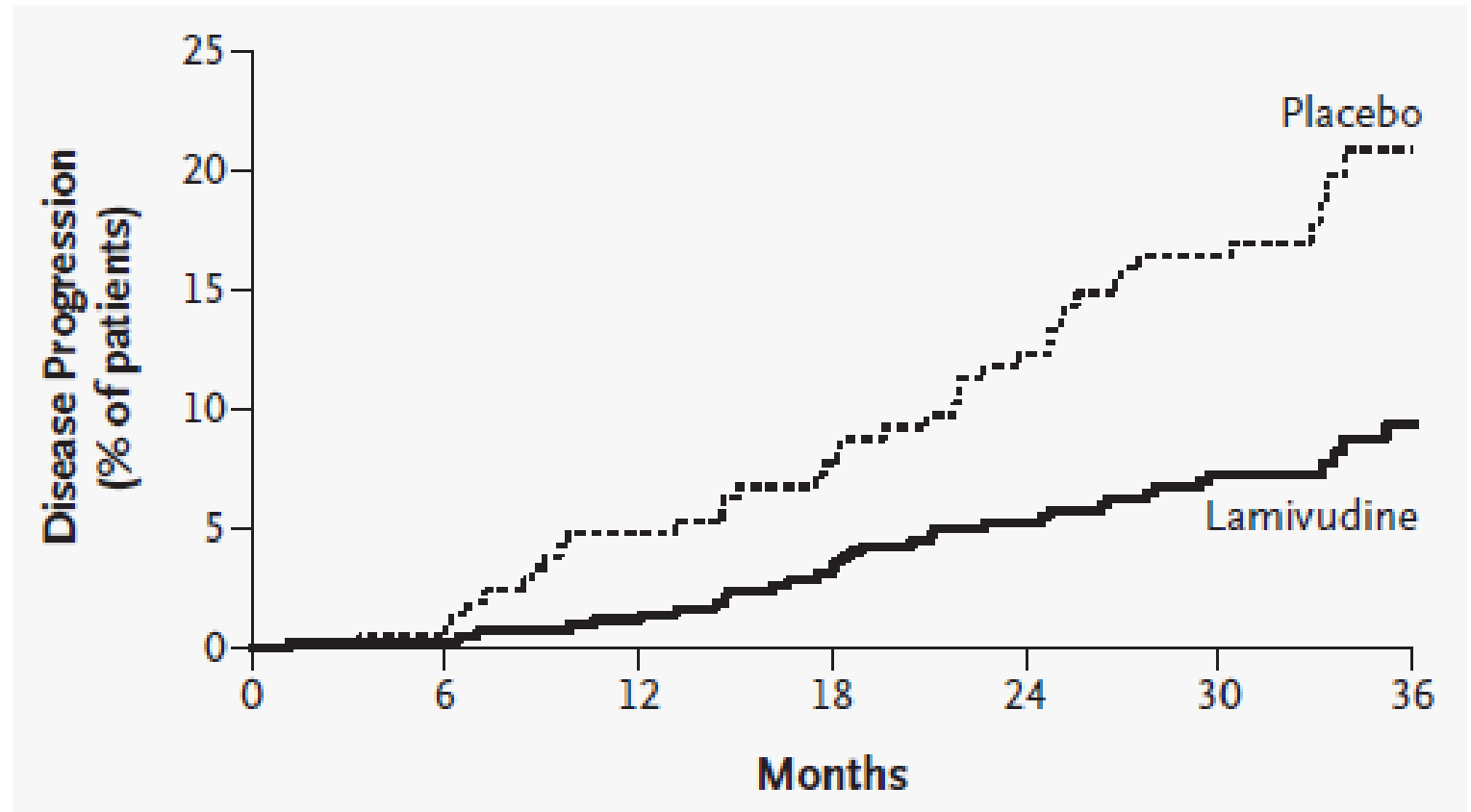
HBV Therapy Reduces Risk of Disease Progression

651 patients with HBV cirrhosis

- 436 receive lamivudine
- 215 receive placebo

Primary end point =
development of:

- Deteriorating liver function
- Variceal bleed
- Spontaneous bacterial peritonitis
- Hepatocellular carcinoma
- Death due to liver disease



HBV Therapy Reduces Liver Cancer Risk

Reference	Treated pts/ Untreated pts	Type of study	NUC used	Median follow-up	Incidence of HCC: % treated / % untreated	<i>P</i> value
Liaw, 2004	436/215	RCT, prospective	LAM vs. placebo	2.7 years	3.9% / 7.4%	0.047
Yuen, 2007	142/104	Prospective	LAM	8.2 years	0.7% / 2.4%	0.005
Papatheodo ridis, 2010	21 studies 3881/534	Systematic review	LAM	3.8 years	2.8% / 6.4%	0.003
Singal, 2013	49 studies 10025/3571	Meta- analysis	LAM, ADV, ETV, LdT, TDF	---	3.3 vs. 9.7 per 100 person years	< 0.0001

*Hepatic decompensation, HCC, spontaneous bacterial peritonitis, bleeding gastroesophageal varices, or death related to liver disease.



Making A Decision To Treat

New Nomenclature For Chronic Hepatitis B

	HBeAg positive		HBeAg negative		
	Chronic infection <i>Phase 1</i>	Chronic hepatitis <i>Phase 2</i>	Chronic infection <i>Phase 3</i>	Chronic hepatitis <i>Phase 4</i>	Resolved infection <i>Phase 5</i>
HBsAg	High	High/ intermediate	Low	Intermediate	Negative
HBeAg	Positive	Positive	Negative	Negative	Negative
HBV DNA	>10 ⁷ IU/mL	10 ⁴ –10 ⁷ IU/mL	<2,000 IU/mL*	>2,000 IU/mL	<10 IU/mL [‡]
ALT	Normal	Elevated	Normal	Elevated [†]	Normal
Liver disease	None/minimal	Moderate/ severe	None	Moderate/ severe	None [§]
Old terminology	Immune tolerant	<i>Immune reactive HBeAg positive</i>	Inactive carrier	<i>HBeAg negative chronic hepatitis</i>	<i>HBsAg negative /anti-HBc positive</i>

HBV Treatment and Monitoring: EASL Recommendations

- All patients with HBeAg-positive or -negative chronic hepatitis B, defined by HBV DNA >2,000 IU/ml, ALT >ULN and/or at least moderate liver necroinflammation or fibrosis, should be treated.
- Patients with compensated or decompensated cirrhosis need treatment, with any detectable HBV DNA level and regardless of ALT levels.
- Patients who are not candidates for antiviral therapy should be monitored with periodical assessments of serum ALT and HBV DNA levels as well as for liver fibrosis severity by non-invasive markers.

Simplified approach to HBV Elimination

CONSULT WITH HBV SPECIALIST

- Cirrhosis and/or liver mass
- Platelets $< 100 \times 10^9/L$
- HDV, HCV, and/or HIV coinfection
- Pregnancy
- Lack of response to treatment or rebound of HBV DNA levels^j

SCREENING

Universal, one-time HBV screening in all adults^a
(HBsAg, anti-HBs, and total anti-HBc)

— HBsAg negative →

See Table 1

↓
HBsAg positive

DIAGNOSTIC WORKUP

At minimum (*see Table 2 for full evaluation*)



HBV: HBV DNA, ALT, AST, platelets

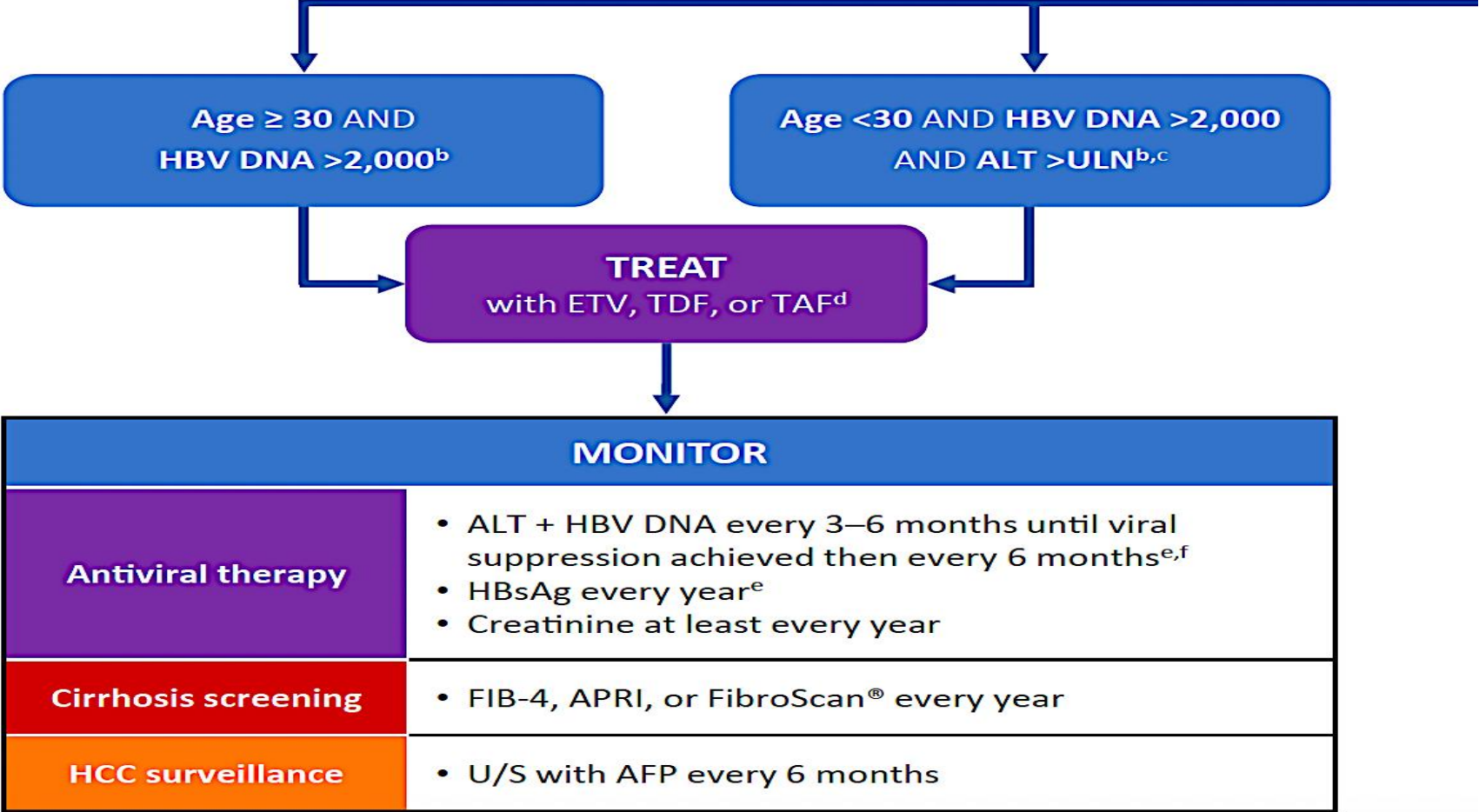


Cirrhosis screening: Noninvasive tests such as FIB-4, APRI, or FibroScan[®]

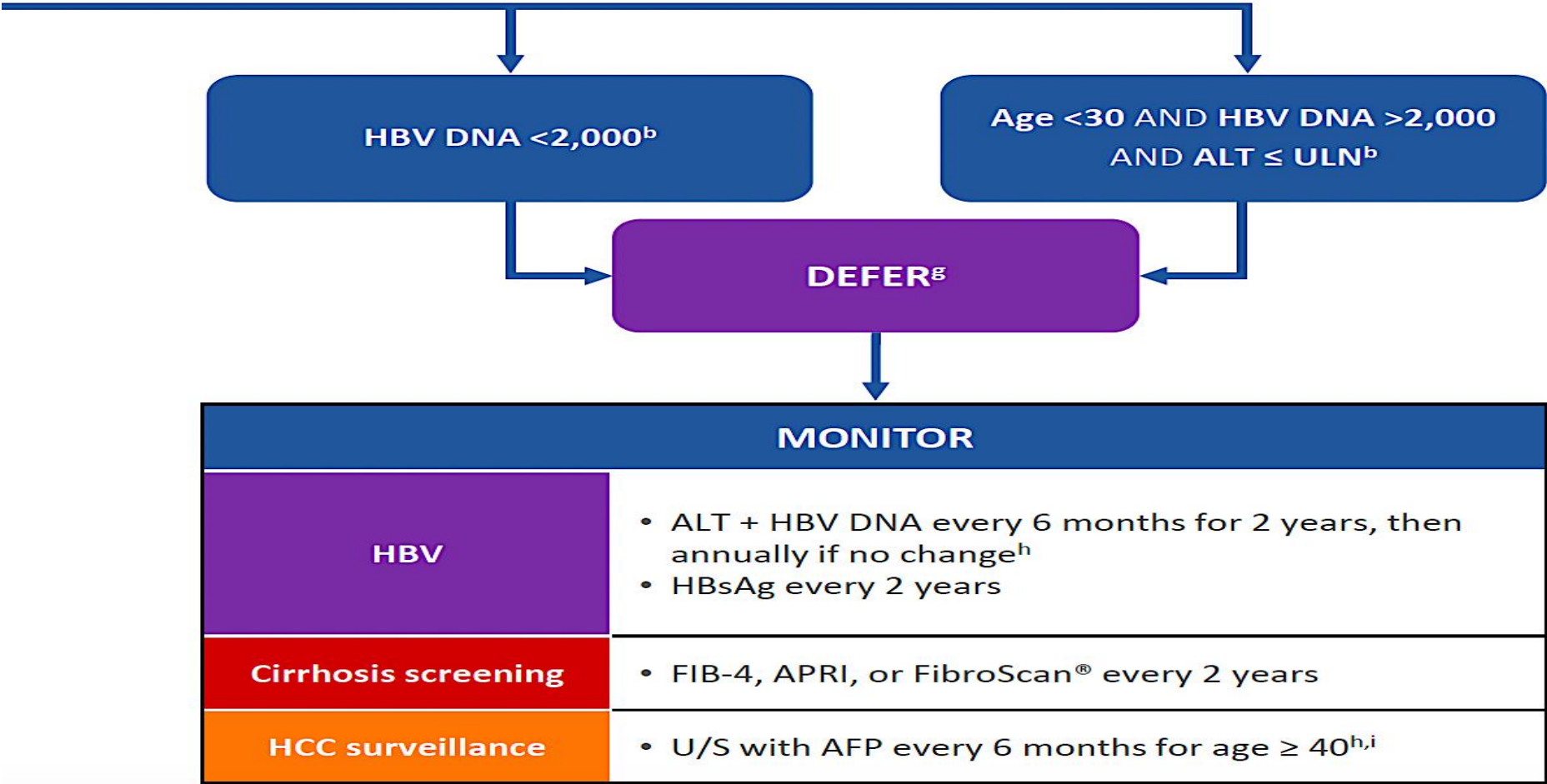


HCC surveillance: Baseline U/S of liver with AFP

Simplified approach to HBV Elimination



Simplified approach to HBV Elimination



HBV Management in Primary Care

Role of Primary Care and Specialists in HBV Management

What can be managed in primary care?	What should be referred to a liver specialist?
<ul style="list-style-type: none">• HBV screening and interpretation for all patients• HBV and HAV vaccination for all patients• Initial evaluation and counseling of the HBsAg(+) patients• Initiation of and monitoring on HBV antiviral treatment• Perinatal HBV management• Substance use screening/harm reduction counseling• Smoking cessation• Alcohol moderation/abstinence counseling• Management of metabolic syndrome risk factors• HBV lab monitoring every 6 months• Liver cancer surveillance	<ul style="list-style-type: none">• Liver lesion on imaging suspicious for HCC (e.g. US LI-RADS3, CT-MRI LI-RADS 5)• Compensated and decompensated cirrhosis• Hepatitis D co-infection• Persistent elevation of liver enzymes that do not correlate with HBV DNA levels or metabolic syndrome risk factors

HBV Primary Care Workgroup Recommendations: Assessing for Treatment Response

Assessing for treatment response

- After initiation of HBV antiviral therapy:
 - Recheck HBV DNA every 3 months until undetectable
 - Once undetectable, recheck HBV DNA every 6 months
- Refer to specialist or obtain expert consultation if:
 - Patient does not achieve undetectable HBV DNA after 1 year of antiviral therapy
 - HBV DNA levels are not trending down

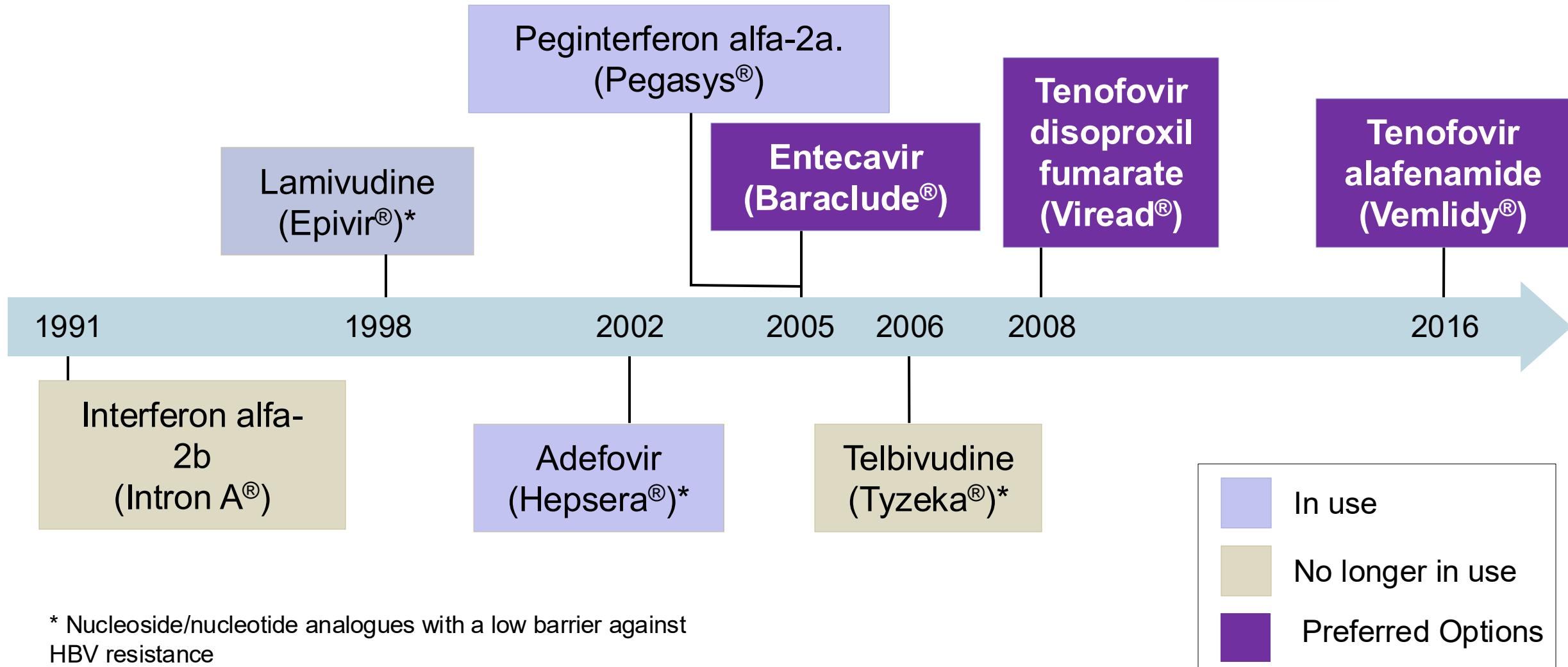
HBV Primary Care Workgroup Recommendations: Endpoints for Antiviral Discontinuation

Cirrhosis	HBeAg	Endpoint for Antiviral Discontinuation
Yes		Do not stop antiviral treatment, unless guided by expert consultation
No	Positive at baseline	Patients with the following may trial off antiviral treatment: <ul style="list-style-type: none">• persistent undetectable HBV DNA• normal ALT• persistent HBeAg(-) and anti-HBe(+) 1 year after HBeAg seroconversion [from HBeAg(+)/anti-HBe(-) to HBeAg(-)/anti-HBe(+)]
No	Negative at baseline	Continue antiviral treatment until HBsAg clearance

HBV Treatment Options

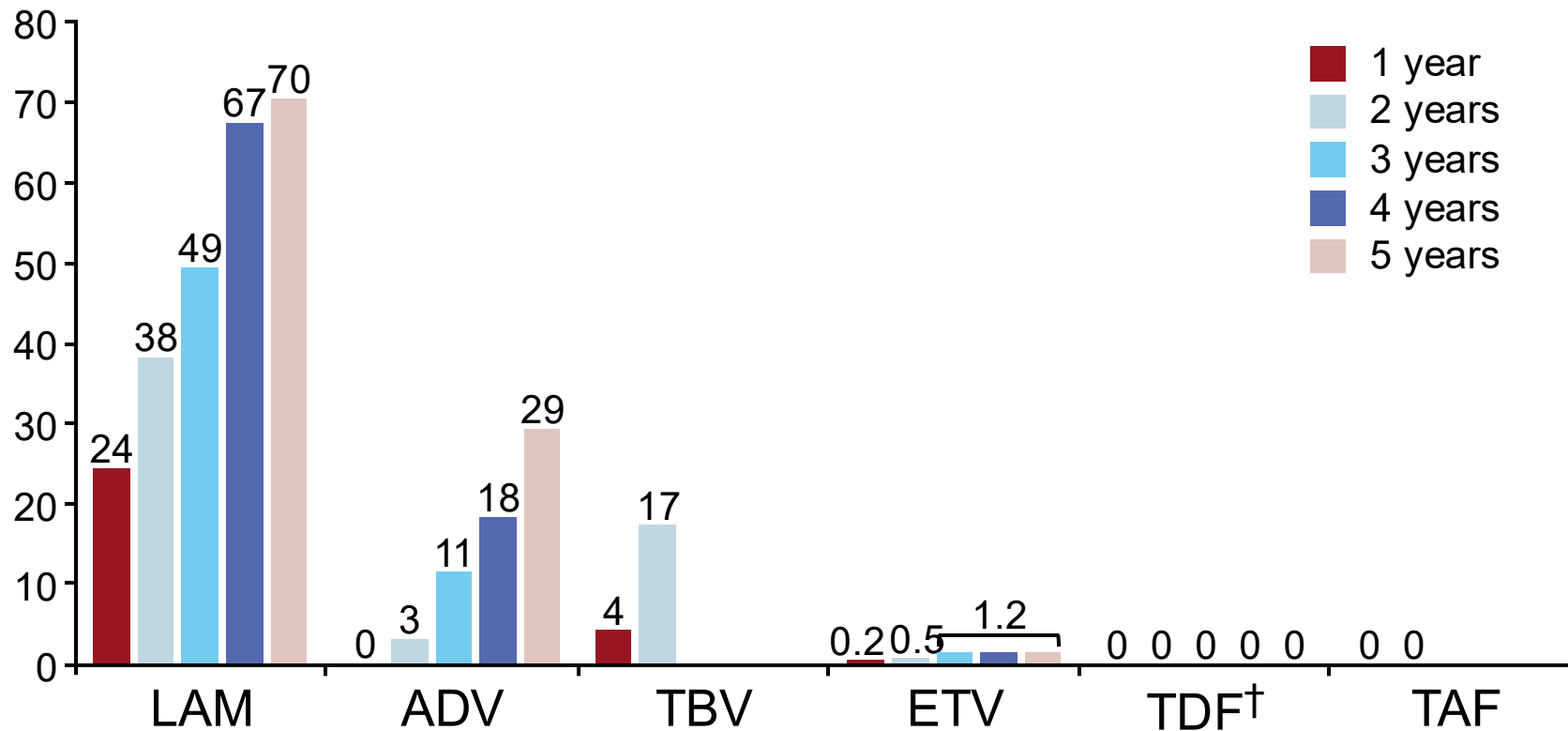


Evolution of Hepatitis B Therapy



HBV Resistance To Nucleoside / Nucleotide Analogues

Cumulative incidence of HBV resistance to NAs in pivotal trials in NA-naïve patients with chronic hepatitis B[†]



*Evidence level I, grade of recommendation 1; [†]Collation of currently available data – not from head-to-head studies;

[‡]No evidence of resistance has been shown after 8 years of TDF treatment

Selecting A Medication

**Prior exposure to a nucleoside/
nucleotide analogue**



Prefer TAF to
ETV

Bone disease

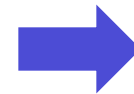
- Chronic steroid use
- Osteoporosis
- History of compression fracture



Prefer ETV or
TAF to TDF

Renal dysfunction

- GFR < 60 ml/min/1.73m²
- Albuminuria > 30 mg/24 h
- Low phosphate (< 2.5 mg/dL)
- Hemodialysis



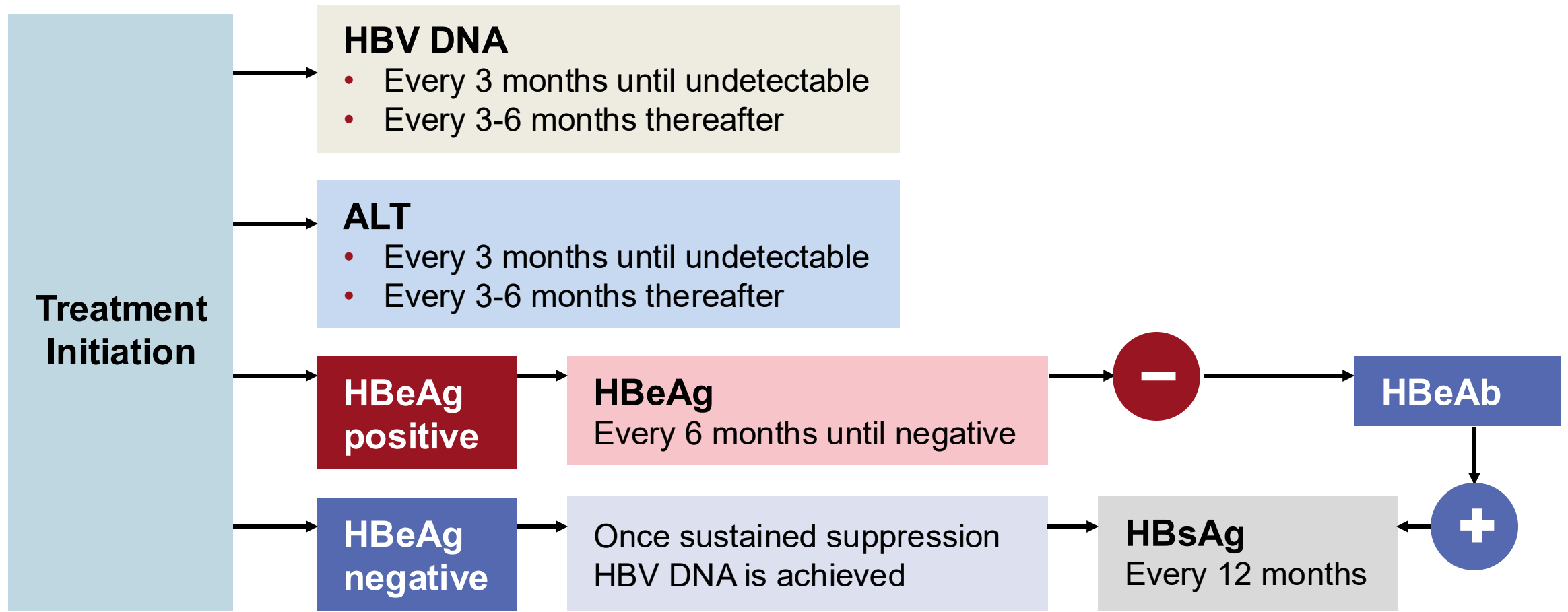
Prefer ETV or
TAF to TDF

? Age > 60 years ?



Prefer ETV or
TAF to TDF

Monitoring of CHB Patients on Treatment



Monitoring of Renal Function

- No formal recommendations at this time
- Renal dysfunction can be seen in patients on NAs, particularly for patients on tenofovir disoproxil fumarate (TDF).
- Consider every 6 month check of:
 - Serum phosphorus
 - Serum uric acid
 - Urinalysis

When To Stop Treatment

HBeAg positive

- Can consider stopping therapy if eAg-/eAb+ seroconversion occurs but only after further consolidation therapy for at least 1-2 years
- If stopping therapy, monitor for relapse:
 - Seroconversion to HBeAg positivity
 - Reappearance of HBV DNA
 - ALT elevation

HBeAg negative

- Continue antiviral therapy for life
- Treatment may be stopped if:
 - If HBsAg becomes negative and HBsAb becomes positive following a year of consolidation therapy
 - If HBV DNA is undetectable for ≥ 3 years.*
- Monitor closely for relapse

Cirrhosis

- Continue antiviral therapy for life

Case Study

- 36 year old Asian women
- History of hepatitis B with risk factor pre-natal transmission
- Feels well
- ALT 55
- HBV DNA 120,000 IU
- Platelet count 185,000
- HBsAg+
- HBeAg+
- F1 on transient elastography
- What do you do now?
 - Initiate HBV anti-viral therapy
 - Recheck HBV DNA every 3 months until undetectable
 - Once undetectable, recheck HBV DNA every 6 months
 - Monitor ALT
 - Contact screening and vaccination

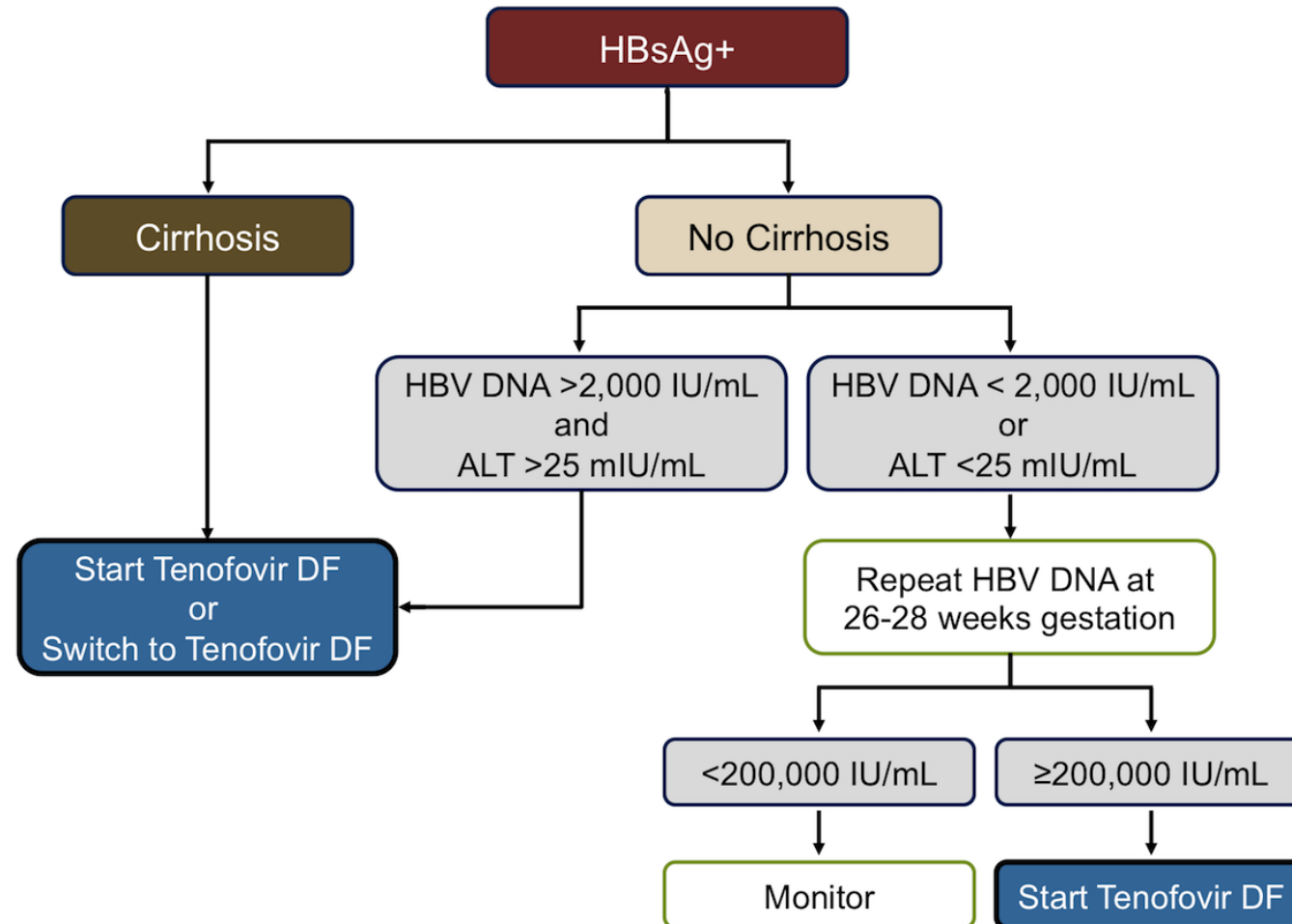
HBV Treatment Access

- Uninsured or underinsured patients may not be able to afford costs of specialty care, including co-payment and co-insurance
- Uninsured or underinsured patients may benefit from HBV patient assistance programs: <https://www.hepb.org/treatment-and-management/treatment/patient-assistance-programs-in-the-u-s/>
- HBV patient navigators can help uninsured or underinsured patients access treatment
 - Check Hep B Patient Navigation offers multilingual patient navigation services to people living with HBV in NYC: <https://hepfree.nyc/check-hep-b-patient-navigation-program/>

HBV Treatment During Pregnancy



Treatment Approach to HBsAg-Positive Mothers During Pregnancy



Perinatal HBV Treatment and Monitoring

Patients who do <u>not</u> meet criteria for antiviral therapy for maternal benefit	Patients who meet criteria for antiviral therapy for maternal benefit
<ul style="list-style-type: none">• Monitor ALT for hepatitis flares due to pregnancy-associated immunologic changes<ul style="list-style-type: none">- Every 3 months during pregnancy and for 6 months postpartum• Check HBV DNA at 26 to 28 weeks gestation to determine need for antiviral (Tenofovir DF) initiation which may be discontinued following delivery	<ul style="list-style-type: none">• Continue on therapy<ul style="list-style-type: none">- Treatment endpoints for pregnant people is same as for nonpregnant people• Tenofovir DF preferred agent as safe during pregnancy and for breastfeeding<ul style="list-style-type: none">- After breastfeeding stops, consider switching to either tenofovir alafenamide or entecavir if indicated or preferred

New HBV Guidelines coming out to support TAF during pregnancy and in breastfeeding

Prevention of Secondary HBV Transmission During and After Pregnancy

Contact	Prevention strategy
Newborn	<ul style="list-style-type: none">• Treatment of mother (if HBV DNA >200,000 IU/mL)• HBIG and HBV vaccine first dose within 12 hours• Can complete full vaccination series at 6 months• Post-vaccination serology testing at 9 months or after
Other children and household contacts	<ul style="list-style-type: none">• Screen for HBV susceptibility• Full vaccination series
Sexual partner(s)	<ul style="list-style-type: none">• Screen for HBV susceptibility• Full vaccination series• Safe sex methods until immunity confirmed
Drug sharing partner(s)	<ul style="list-style-type: none">• Screen for HBV susceptibility• Full vaccination series• Harm reduction

Utilize the NYC Health Department Perinatal HBV Prevention Program to support case management of contact screening and vaccination: <https://www1.nyc.gov/site/doh/providers/health-topics/hepatitis-b-and-pregnancy.page>.



Prevention of HBV Reactivation During Immunosuppressive Drug Therapy

Patients Undergoing Immunosuppressive Therapy or Chemotherapy

Case:

- 40-year-old woman with rheumatoid arthritis has an inadequate response to anti-TNF agents.
- Rheumatology plans to start rituximab in combination with methotrexate next week.
- Labs:
 - Liver chemistries: normal.
 - HBcAb (total): positive.
 - HBsAg: negative.
 - HBsAb: negative.
- What is your response?

Monitoring HBV-Exposed Patients on Immunosuppression: Treat Prophylactically?

■ High-risk (>10%)

■ Moderate-risk (1-10%)

■ Low-risk (<1%)

	HBsAg+/ HBcAb+	HBsAg-/ HBcAb+
B cell-depleting agents (eg, rituximab, ofatumumab)	High-risk	High-risk
Anthracycline derivatives (eg, doxorubicin, epirubicin)	High-risk	Moderate-risk
High-dose (> 20 mg prednisone daily or equivalent) corticosteroids daily for ≥ 4 weeks	High-risk	Moderate-risk
Moderate-dose (10–20 mg prednisone daily or equivalent) corticosteroids daily for ≥ 4 weeks	High-risk	Moderate-risk
TNF alpha inhibitors (eg, etanercept, adalimumab, certolizumab, infliximab)	Moderate-risk	Moderate-risk
Cytokine or integrin inhibitors (eg, abatacept, ustekinumab, natalizumab, vedolizumab)	Moderate-risk	Moderate-risk
Tyrosine kinase inhibitors (eg, imatinib, nilotinib)	Moderate-risk	Moderate-risk
Low-dose (< 10 mg prednisone daily or equivalent) corticosteroids for duration of ≥ 4 weeks	Moderate-risk	Low-risk
Any dose of oral corticosteroids daily for ≤ 1 week	Low-risk	Low-risk
Intra-articular corticosteroids	Low-risk	Low-risk
Traditional immunosuppressive agents (eg, azathioprine, 6-mercaptopurine, methotrexate)	Low-risk	Low-risk

AGA Guideline on Prophylaxis of HBV Reactivation During Immunosuppressive Drug Therapy

	High-Risk	Moderate-Risk	Low-Risk
Anticipated incidence of HBVr	> 10%	1 – 10%	< 1%
AGA Recommendation	Antiviral prophylaxis during IS & for at least 6–12 months after D/C of IS therapy	Antiviral prophylaxis during IS & for at least 6 months after D/C of IS therapy	No antiviral prophylaxis

- AGA suggests to use antiviral drugs with a high barrier to resistance
- No recommendation for a strategy of HBV DNA monitoring followed by rescue therapy as an alternative to antiviral prophylaxis

HBVr, hepatitis B virus reactivation; D/C, discontinuation; IS, immunosuppressive

High-risk group: HBsAg+/HBCAb+ or HBsAg-/HBCAb+ treated with B cell-depleting agents, or HBsAg+/HBCAb+ treated with anthracycline derivatives, moderate- or high-dose corticosteroids daily for ≥ 4 weeks

Moderate-risk group: HBsAg+/HBCAb+ or HBsAg-/HBCAb+ treated with TNF alpha inhibitors, other cytokine or integrin inhibitors, tyrosine kinase inhibitors, HBsAg+/HBCAb+ treated with low-dose corticosteroids for duration of ≥ 4 weeks, HBsAg-/HBCAb+ treated with moderate- or high-dose corticosteroids daily for ≥ 4 weeks or anthracycline derivatives

Low-risk group: HBsAg+/HBCAb+ or HBsAg-/HBCAb+ treated with traditional immunosuppressive agents, intra-articular corticosteroids, any dose of oral corticosteroids daily for ≤ 1 week, or HBsAg-/HBCAb+ treated with low-dose corticosteroids for ≥ 4 weeks

Reddy KR, et al. *Gastroenterology*. 2015;148:215–219.

Case Study

- 43-year-old Asian woman sent to specialist for chronic HBV and liver lesions
 - Diagnosed with chronic HBV at prenatal checkup 9 years ago. Mother died of liver cancer at age of 58. Patient started on TDF in 2015 at outside facility but took it irregularly. On TDF for 8 months and self-discontinued in 2016 when she ran out of medications and felt fine.
- Patient was hospitalized (1/30-2/2/2017) for abdominal pain
 - Abdominal MRI revealed 7.2 cm LI-RADS 4 left hepatic mass, additional satellite lesions
 - Labs: AST 51, ALT 24, HBsAg positive, eAg negative, anti-HBe positive, HBV DNA 26 (IU/ml), AFP 387,800, INR 1.0, WBC 8.4, Hb 15.7, platelets 246,000, anti-HCV negative, and HCV RNA negative, immune to HAV

Case Study

- Restarted on TDF, seen by surgical oncology, IR, and oncology, scheduled for left trisegmentectomy for multifocal bilobar HCC.
 - At ex-lap, it showed additional segment 7 lesion; patient deemed inoperable.
 - Segment 6 wedge resection revealed moderately differentiated HCC and liver biopsy showed chronic HBV with focal bridging fibrosis.
 - Patient was referred to liver transplant for evaluation.

Summary

- Effective therapies are available to treat chronic HBV infection
- HBV is not a curable disease at this time
- Appropriate patients should be placed on HBV therapy
- HBV therapy is usually lifelong
- All patients, whether on therapy or not, should be monitored for the development of HCC
- Hepatitis B therapy may be indicated in pregnant people to prevent parent-to-child transmission

Hepatitis B Treatment Guidelines and Resources

- Treatment Guidelines - [AASLD](#)
- Drug-Drug Interactions - <https://www.hep-druginteractions.org/>

Hepatitis B Resources

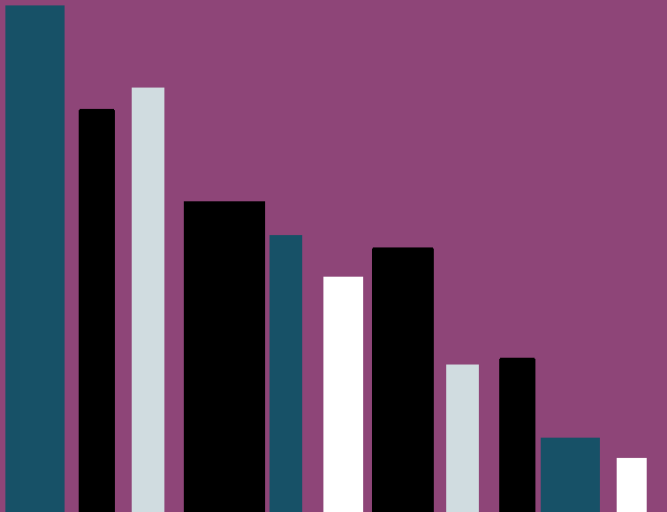
- www.HepFree.NYC
 - [Hep B Coalition](#)
 - [Clinical Resources](#)
 - [Capacity building tools](#)
 - [Advocacy Committee](#)
- Hepatitis B patient information page: www.nyc.gov/health/hepb
 - Free or low-cost testing and treatment

Elimination Plan and Annual Report

Plan to

Eliminate Viral Hepatitis

as a Major Public Health Threat
in New York City
by 2030




The bar chart consists of 12 vertical bars of varying heights and colors. From left to right, the colors are: teal, black, light blue, white, black, teal, white, black, light blue, black, teal, and white. The heights of the bars vary, with the first bar being the tallest and the last bar being the shortest.

Working Toward a

Hep Free NYC

2023 Hepatitis A, B and C in NYC Report



The illustration shows a suspension bridge with two towers and numerous cables. The bridge is rendered in white lines against a dark blue background. The perspective is from a low angle, looking up at the bridge structure.

Contact Us

For CMEs or educational opportunities, contact:

Meg Chappell, MPH
Program Manager
Empire Liver Foundation

megchappell@empireliverfoundation.org
www.empireliverfoundation.org



For questions about resources, contact:

Marie P. Bresnahan, MPH
Director, Training, Policy, and
Administration
Viral Hepatitis Program
Bureau of Communicable Disease
mbresnahan@health.nyc.gov
www.nyc.gov/health/hepatitis



How to Stay Connected

Social Media

Connect on  Twitter | Connect On 

@hepfreenyc



HepFreeNYC

@LiverEmpire



Empire Liver Foundation
(ELF)

Join Us

To stay up-to-date on viral hepatitis opportunities and events around New York City

Subscribe to the
Hep Free NYC Mailing List:

<http://bit.ly/HepFreeNYCSubscribe>