National Task Force on Hepatitis B

www.hepbtaskforce.org

Meeting Notes

Date: Wednesday, May 3, 2023 (every 1st Wednesday of the month)
Time: 3PM ET / 2PM CT / 1PM MT / 12PM PT / 9 AM Hawaii
Email: administrator@hepbtaskforce.org

Zoom Meeting registration link: https://us02web.zoom.us/j/81055483671?pwd=YjdPN2RybE03eGpwdVJCZWpSWFJ5Zz09

Attendance (at or after 3:05PM) are as follows:

Executive Board Members (Officers):

☒ **Co-Chair: Carol Brosgart, MD** (San Francisco, CA)
☒ **Co-Chair: Richard So, MPH,** Executive Director, SF Hep B Free – Bay Area (San Francisco, CA)
☐ **Secretary: Catherine Freeland, MPH**, Public Health Program Director, Hepatitis B Foundation (Doylestown, PA)
☒ **Administrator** (and notetaker)**: Amy Trang, PhD, MEd,** Founder and CEO, Social Capital Solutions (Northern VA)

Regional Directors:

☐ **Northeast Regional Director: Dr. Ponni Perumalswami, MD,** Associate Professor, University of Michigan and Director of the Liver Clinic VA Ann Arbor Healthcare System (Ann Arbor, MI)
☐ **Southeast Regional Director: Vacant**
☐ **North Central Regional Director: Vacant**
☒ **South Central Regional Director: Tzu-Hao "Howard" Lee, MD,** Assistant Professor, Baylor College of Medicine (Houston, TX)
☒ **Western Regional Director: Thaddeus Pham,** Viral Hepatitis Prevention Coordinator, Hawaii State Department of Health (Honolulu, HI)

Student Representation

☐ **APAMSA students**

Board Advisors:

☒ Richard Andrews, MD, MPH, Board Advisor (Houston, TX)
☐ Moon Chen, PHD, MPH, Board Advisor; one of the original founders of the Task Force in 1997 (UC Davis; Sacramento, CA)
☐ Chari Cohen, DrPH, MPH, Board Advisor (Hep B Foundation; Doylestown, PA)
☒ Robert Gish, MD, Board Advisor (Robert G. Gish Consultants; San Diego, CA)
☐ Lu-yu Hwang, MD, Board Advisory (Department of Epidemiology, University of Texas HSC; Houston, TX)
☐ Karen Jiobu, Board Advisor (Asian American Community Services; Columbus, OH)
☐ Amy Tang, MD, Board Advisor (North East Medical Services; San Francisco, CA)

General Members (open to all on listserv; please excuse any typos)**: Total Number of attendees: 19**

- ✓ Julia Freimund, University of Washington School of Medicine (Seattle, WA)
- ✓ Priyanka Kundu, Health Planning Specialist and Hepatitis B Coordinator, Santa Clara County Health Department (CA)
- ✓ Andrew Pham, APHF (San Diego, CA)
- ✓ Rene St. Vrain, Perinatal Hepatitis B Nurse Manager, City of St. Louis Department of Health (St. Louis, MO)
- ✓ Umaima Khatun, NYC DOHMH (New York, NY)
- ✓ Alma Chavez, Community Engagement Project Coordinator, New York City Health Department (New York, NY)
- ✓ Bryant Tufino, Communications and Engagement Intern, New York City Health Department (New York, NY)
- ✓ Julie Yoshimachi, MD, Charles B Wang Community Health Center (New York, NY)
- ✓ Justin Chen, Charles B Wang Community Health Center (New York, NY)
- ✓ Andrew Piotrowski, MA, MAHA (Chicago, IL)
- ✓ Sandra Ashford, Deputy Executive Director, HBI (Washington, DC)
- ✓ Howard Horwitz, Director of Continuing Medical Education for a research consortium

Note: There may be some members missing from this list of attendees; please excuse any omission.

Agenda:

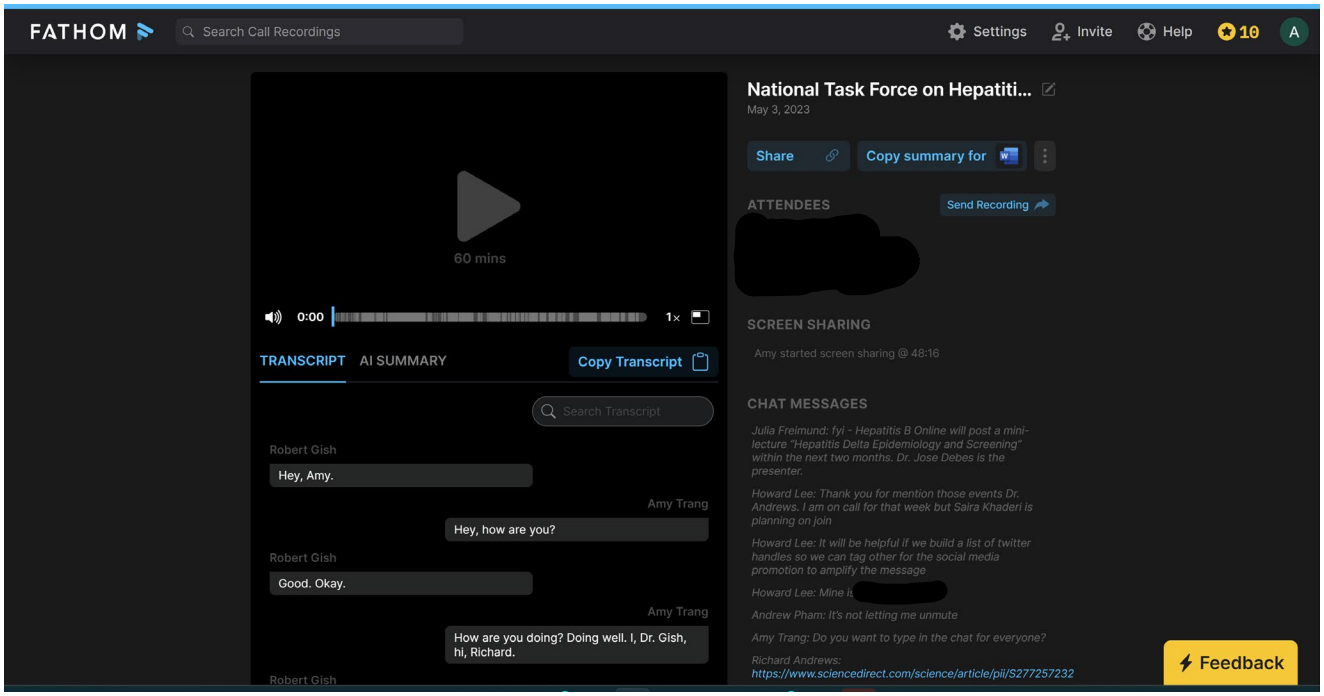
1) Welcome Task Force members
2) Note any changes to previous meeting's notes
3) Updates on hepatitis Delta screening guidelines
4) Strategic Planning Discussion (2024 – 2030 towards Elimination!)
5) Regional Updates (all Regional Directors)
6) Other items (all members)

Meeting format:

- strategic discussions and resource sharing to assist members with their local work
- Note: majority of those on the call for this meeting was engaged in the collaborative discussions, so not everyone's name was specifically mentioned in the notes.

Notes:

1) Welcome: Introduction / Roll Call of Officers and Regional Directors (Amy Trang)
   a) Opening remarks made by Dr. Carol Brosgart and Richard So
   b) Recognize any new members on the call: see list of attendees above
2) Note any changes to previous meeting's notes: None
3) This month, Amy Trang is testing "Fathom," an artificial intelligence (AI) service offered for free (for 12 months) through Zoom with a paid subscription. The service includes video recording of meeting, transcript (with who said what and when), links to playback notes (which Amy has deactivated), chat box log, and summary of questions asked in the meeting. The following notes were produced by Fathom. See screenshot of the service output below; personal emails have been hidden.



4) Meeting Summary (as provided by AI via Fathom); playback links have been deactivated:

   a) The group discussed the need for hepatitis B and Delta testing to be done routinely and for physicians to change their behavior. Dr. Gish provided an update on the availability of Delta antibody testing and the need for international organizations to make it automatic for everyone. - PLAY @0:03
   b) Dr. Gish provided updates on the testing, prevalence, and new therapies for hepatitis Delta. He also shared resources available on his website for downloading and sharing. There was discussion about the possibility of strategically including hepatitis Delta in standard of care recommendations without causing fear or resistance. - PLAY @12:26
   c) The group discussed the need to push out aggressive screening and linkage to care recommendations for hepatitis B and engage more providers in routine testing. They also shared updates on regional efforts, including a symposium in Houston focused on all forms of viral hepatitis. - PLAY @22:57
   d) The group discussed various events and initiatives related to hepatitis B awareness and screening in different regions, including a Twitter chat and in-person testing event in New York, physician education and outreach in California, a social media campaign and webinar in Seattle, and a vaccination event in Chicago. They also shared updates on their progress and challenges in promoting hepatitis B screening and vaccination. - PLAY @33:42
   e) The group discussed updates on their survey on calling past happy clients, featuring an article on hepatitis B testing day, collaborating with the Maryland Department of Health for free testing, and finalizing hepatitis elimination plans in Maryland and Virginia. Dr. Douglas Dietrich presented a simplified treatment guideline for primary care providers, which includes measuring viral load in a chronic TB patient. - PLAY @45:03
   f) Richard discussed with someone the possibility of convincing primary care providers to treat Hep B in a different way, emphasizing that it is treatable with only a few well-tolerated and effective medicines. The outcome of the discussion is unknown. - PLAY @48:18
   g) The group discussed the possibility of offering antiviral medication to individuals with chronic hepatitis B without necessarily looking at viral load or other criteria. They also acknowledged the need for guidance and resources for primary care physicians to safely and effectively manage chronic hepatitis B. - PLAY @49:00
   h) The group discussed various events and resources related to hepatitis B screening and education, including a virtual education event and a website promoting a train the trainer model. They also mentioned concerns about treatment costs and when to stop treatment, and shared information about a learning collaborative for community health centers. - PLAY @54:53

5) The following notes hereafter were added by Amy Trang:

   a) Details on Dr. Gish's discussion on hepatitis Delta are provided at the end of the meeting notes. Specific issues discussed:

      i) Delta antibody tests are available, but have not yet been FDA-cleared. Two companies are producing them, i.e., Roche and Abbott.

      ii) Currently, if you want to test for hepatitis Delta, Quest, ARUP, and Mayo have them available. There's CPT code for, which insurance will pay for it. You have to do an ICD-9 for hepatitis B to attach to it. Tests currently not available through Labcorp; they anticipate offering it by this summer.

      iii) Delta has two new therapies that are evolving, i.e., one from Gilead and the other is from Eiger.

b) Links to other resources shared:

i) HepElimiNation to get the current report cards for each state
ii) Mapping Hepatitis Elimination in Action | HHS.gov; many of the recorded efforts are by Hep B Task Force and Hep B United members.
iii) Hepatitis Awareness Month | CDC social media Toolkit

c) Strategic Planning Discussion (2024 – 2030 towards Elimination!)

i) Amy will coordinate with Task Force members who will be attending the Hep B United Summit (July 24 – 26) to meet for dinner on one of those days to discuss the Task Force's strategic structure and activities moving forward (2024 – 2030) for supporting Task Force members in addressing viral hepatitis in their area by 2030.

ii) Moving forward, the Task Force's priority project will focus on promoting two things:

(1) Universal screening recommendations among providers, especially primary care providers

(2) Universal hepatitis B vaccination guidelines

6) Positions still available for nominations:
a) Regional Directors:
i) North Central Region (formerly the North Midwest Region; it's "Central" now based on time zone): still available for nominations.
ii) Mid-Atlantic Region + Southeast Region (combined position): still available for nominations.
b) Please continue to nominate and self-nominate to fill these positions.
i) Submit a short bio and headshot photo to share
ii) Email: administrator@hepbtaskforce.org
iii) More information about the roles and responsibilities of these volunteer positions can be found: https://hepbtaskforce.org/our-coalition/governing-structure
c) It's a great opportunity for anyone looking for larger networking and support for their local programs / project initiatives on hepatitis B; the Task Force helps you connect to resources

7) Regional Updates
a) Student Representative: no updates; Amy will coordinate with APAMSA students via email.

b) Western Region (Thaddeus Pham):
i) Hawai'i: will share via social media once events and activities are confirmed. Resource to share: *FQHC Learning Collab Registration now open! https://docs.google.com/forms/d/e/1FAIpQLSc_MvhgWcYXuL7VVsdHGY4pNgU4keY4SM182O13qTHfXq7Kfw/viewform*
ii) SF Hep B Free Bay Area: will share via social media once events and activities are confirmed; they are pushing forward their big project in San Mateo Co. that includes both physician education availability of hep B vaccines at pharmacies as well as the "big boots on the ground." They're on track with doing business to business outreach for effective education and awareness for screening and testing. They are also looking into ways to get health systems to standardize their EMR for screening and vaccination recommendations. They will also continue the outreach work among the Pacific Islander community with their "under the mango tree" series.
iii) University of Washington (Seattle): will send the training campaign info once it kicks off; also, Hepatitis B Online will post a mini-lecture within the next two months on "Hepatitis Delta Epidemiology and Screening" presented by Dr. Jose Debes.
iv) APHF (San Diego): The Community Education Mapping website just launched Asian Pacific Health Foundation (healthtransmission.org). This is the "train the trainer" resource site. Please take a look and provide APHF with your feedback and comments.

c) North Central Region (vacant):
   i) MAHA in Chicago: will be collaborating with other local organizations to celebrate Asian Heritage Month to offer a mini health fair to provide screenings and onsite vaccination and general education for the public. See flyers at the end of the notes.

d) South Central Region (Dr. Howard Lee):
   i) Houston:
      (1) Dr. Howard Lee has observed a lot of momentum and interest in viral hepatitis elimination since attending the AASLD meeting in Los Angeles, CA in March. Currently, as an advisory board member for EPIC (one of the largest EMR systems in the country), they are working on incorporating universal hep B screening recommendations to remind PCPs to test their adult patients at least once in their lives; this should make it easier for PCPs to order those tests.
      (2) Dr. Richard Andrews shared that the regional Houston area Viral Hepatitis Task Force will have their viral hepatitis symposium Event Information | SCAETC (unm.edu) on May 19 (National Hepatitis Screening Day) . Dr. Andrews also shared the link to the recently published It Is Time for a Simplified Approach to Hepatitis B Elimination - ScienceDirect.
   ii) St. Louis, MO: With limited resources, it will be hard to promote adult universal screening and vaccination. However, Rene will be developing some presentations for nursing schools and continue to work with the pregnant women population first to make sure that they at least get tested for hepatitis B.

e) Northeast Region (Dr. Ponni Perumalswami - absent):
   i) NYC Health Department: May 17th will be a #HepFreeNYC Twitter chat day for viral hepatitis. May 19th will be an awareness and testing day at Adam Clyton Powell Monument Plaza in New York City. These events are advertised at Hepatitis Awareness Month 2023 - Hep Free NYC. They are also currently looking for speakers, i.e., anyone who is interested in talking about their experience with hepatitis, either as a provider or patient. Contact Alma if you are interested.
   ii) Charles B Wang Community Health Center (NYC): will also be at the May 19th event in NYC and offer free screenings afterwards. They are also doing outreach in Queens, NY this coming month as well as promoting activities through social media for their center and patient stories to increase understanding through their awareness and screening activities.

f) Southeast Region (vacant):
   i) HBI (DC, MD, and VA): In collaboration with the University of Maryland, HBI is working on a project to increase awareness for hepatitis Delta among the hepatitis B positive population that they serve. They will also be collaborating with the Maryland Department of Health to offer free hepatitis screening and testing around National Hepatitis Testing Day.
   ii) Amy Trang shared that the Virginia Department of Health as well as the Maryland Department of Health have both indicated that they are aiming to publish their Viral Hepatitis Elimination Plan, which includes hepatitis B, on July 28, 2023 for World Hepatitis Day.

Meeting adjourned at 4:00PM Eastern Time.

8) Other items: (not discussed in the meeting)

- Next Hep B Task Force Zoom meeting date: **Wednesday, September 6, 2023 at 3PM Eastern Time** /2PM Central/ 1PM Mountain/ 12PM Pacific / 9 AM Hawaii (1st Wednesday of each month).
  - Other dates in 2023: October 4, and December 6
  - No meetings in June, July, August, and November; activities will continue to be shared via email

- Suggestions for the next agenda:
  - Share initial Task Force plans for promoting universal vaccination and screening campaign.

- The National Task Force on Hepatitis B is a volunteer-based national coalition and is independent from the state and local Task Forces or coalitions. Everyone is welcome to join the National Task Force on Hepatitis B by registering through our website. Newsletter - The National Task Force on Hepatitis B (hepbtaskforce.org). Promotion of the National Task Force on Hepatitis B is primarily through "word-of-mouth" and personal communication.

Upcoming HBV ECHO sessions: Free CME

Gulf Coast (Texas Heart Institute with Baylor St. Luke Medical Center): Project ECHO Interest Form (bcm.edu)

- Every 2nd and 4th Monday of the month
- 12:00PM to 1:00PM Central Time
- To register: Project ECHO Interest Form (bcm.edu)

East Coast (Hep B United Philadelphia): Hepatitis B ECHO Meeting Registration - Zoom

- Every 4th Thursday of the month
- 12:00PM – 1:00PM Eastern Time
- To register: Meeting Registration - Zoom

Other ECHO programs with HBV:

- The University of Washington Project ECHO Viral Hepatitis meets every Tuesday, 12 – 1:30 PM Pacific Time.
- To discuss if this ECHO program would be a good fit or if other training or consult options would better suit your interests/schedules, please email Pam Landinez, landinez@uw.edu.
- The sessions are geared towards individuals in the state of Washington and focus on hepatitis B or C is driven by the program participants.

Upcoming international HBV conferences:

- The European Association for the Study of the Liver (EASL) 2023
  - Vienna, Austria
  - June 21 – 24, 2023
  - Registration link: EASL Congress 2023 | 21-24 June 2023 | Vienna, Austria
- American Association for the Study of Liver Diseases (AASLD) Liver Meeting 2023
  - Boston, MA
  - November 10 – 14, 2023
  - No Registration link yet

Items shared via email:

From HHS Viral Hepatitis newsletter for Hepatitis Awareness Month:

Resources for Hepatitis Awareness Month

May is Hepatitis Awareness Month. It's a great time to focus on raising awareness of viral hepatitis, while encouraging testing and vaccination. This Hepatitis Awareness Month, the viral hepatitis team in the Office of Infectious Disease and HIV/AIDS Policy (OIDP) would like to highlight 5 actions you can take to help spread the word about viral hepatitis to your networks and encourage more people get tested, vaccinated, and linked to treatment.

1. **Join Us for A Webinar**

   On Tuesday, May 30, 1:00 – 2:30 PM EST, OIDP will host a webinar on the federal implementation of CDC's recently updated hepatitis B screening and testing recommendations . OIDP will be joined by a panel of federal leadership from across HHS to discuss how each agency plans to implement the recommendations as well as share lessons learned and integration with universal hepatitis C screening recommendations and universal hepatitis B

vaccination recommendations.

Get more information and register for the webinar here.

2. **Learn about OIDP's New Initiative on Addressing Reimbursement in Viral Hepatitis Integration of Prevention and Care Services**

OIDP identifies ways to address barriers to reimbursement for integrated viral hepatitis prevention and care services. This includes both clinical and non-clinical settings, such as syringe service programs, substance use treatment facilities, primary care, mental health facilities, correctional settings, and HIV and/or STI clinics. OIDP recently released a document, that presents an overview of preliminary findings that may inform final recommendations for financing models and/or policies that support integrated viral hepatitis service provision.

Read *Payment and Reimbursement Models for Integrated Hepatitis C Services* (PDF) to find preliminary findings from a comprehensive environmental scan.

3. **Use CDC's Hepatitis Awareness Month Social Media Toolkit**

The toolkit provides resources to share with your community about the importance of hepatitis prevention, testing, and treatment. Additionally, it serves as a guide to help improve everyone's understanding of viral hepatitis transmission and risk factors and to decrease social stigma against viral hepatitis.

4. **Use CDC's Hepatitis C Treatment Locator Widget**

The CDC recently released the Hepatitis C Treatment Locator Widget, making linkage to treatment more accessible by helping locate a hepatitis C treatment provider.

5. **Promote Syndemic Approaches**

Hepatitis Awareness Month is also a great time to start thinking about viral hepatitis as part of a syndemic of HIV, viral hepatitis, STIs, substance use disorders and mental health, as outlined in the Viral Hepatitis National Strategic Plan.

Read this blog to learn more.

Thank you for your continuous support and collaboration as we work towards viral hepatitis elimination in the U.S.

美亚健康协会

Midwest Asian Health Association

Partner: Chicago Department of Public Health

Vaccination Event

Address: 218 W. 26th St.
Chicago, IL 60616

Time: Monday, May 8th
9:00 AM - 12:00 PM

Vaccines: COVID, Flu, TDAP, Shingles, Hep A and B

- COVID, Flu, TDap vaccines are free
- $15 administration fee for other vaccines
- Please call MAHA at 312-225-8659 or 312-837-3188 to register

美亚健康协会
Midwest Asian Health Association

合作单位： 芝加哥公共卫生部门

疫苗接种活动

地址：218 W。26th St.
Chicago, IL 60616

时间: 5月8日星期一
早上9点至中午12点半

疫苗种类：新冠, 流感, 甲肝, 乙肝，
百日咳破伤风, 带状疱疹

- 新冠，流感，百日咳破伤风疫苗免费
- 其它疫苗收取 **$15** 行政费用
- 由于疫苗数量有限，请提前致电美亚注册
  312-225-8659/ 312-837-3188

美亚健康协会

Midwest Asian Health Association

Asian Heritage Month

Free Community Health Fair

Saturday, May 20
10:00am-2:00pm

Chinatown Square: 2130 S. Archer Ave, Chicago

Health Screenings

Blood Pressure Screening
Osteoporosis Testing
Diabetes Screening
Dental Health Screening
Vision Health Testing

Resource Tables

Hep B Education & screening
Mental Health Education
Family Counseling
Substance Use Treatment
Gambling Prevention
Insurance/Benefits
Employment Registration

Contact:
Andrew Piotrowski, Event Manager
andrewpiotrowski@maha-us.org (312-225-8708)

Special Thanks to Our Service Providers

Northwestern University , Midwestern University, UI Health
Michael Reese Foundation

美亚健康协会
Midwest Asian Health Association

美国亚裔月庆祝
免费健康服务日

5月20号（周六）

上午10时至下午2时

芝加哥华埠广场 2130 S. Archer Ave, Chicago

现场健康服务

血压测试
骨质疏松测试
糖尿病测试
牙齿健康检查
眼睛健康检查
免疫针注射

美亚服务项目介绍

乙肝检查和免疫针
心理健康/家庭咨询
毒品滥用/酗酒预防
赌博教育和预防
健康保险和福利咨询
工作介绍和培训登记
健康检查登记

联系人

Cindy Lee, 活动经理
Cindy Lee@maha-us.org（312-225-8659）

特别鸣谢下列健康服务机构

西北大学医学院, 中西部大学药物学院, 伊利诺州立大学芝加哥医学院
Michael Reese Foundation

Click here to register: [Event Information | SCAETC (unm.edu)]

Hepatitis Delta: Increasing Awareness and Treatment Competencies For Practicing Clinicians

Special Thanks to Dr Robert Gish, Medical Director, Hepatitis B Foundation and CLDF for creating some of the slides

UNIVERSITY OF LOUISVILLE
CONTINUING MEDICAL EDUCATION & PROFESSIONAL DEVELOPMENT

SC Liver Research Consortium
Your link to Successful Clinical Liver Research Centers

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Your Seminar Faculty

Robert G. Gish, MD

Dr. Gish is a Professor Medicine at Loma Linda University, an Adjunct Professor of Medicine at the University of Nevada School of Medicine in Las Vegas, a Clinical Professor at the University of Nevada Reno School of Medicine, and a Clinical Professor at the University of California Skaggs School of Pharmacy and Pharmaceutical Sciences. In addition, he is also the Medical Director of the Hepatitis B Foundation and Medical Director of the Asian Pacific Health Foundation.

Dr. Gish joined the consulting faculty at La Maestra in San Diego to establish a liver care program in the Federally Qualified Health Care clinic. He is currently seeing patients, both in-person and via telemedicine, at various clinics in San Diego, Folsom, San Jose, Santa Rosa, Valley Springs and via Telemed2U

Dr. Gish has been and continues to be very active with the National Viral Hepatitis Round Table (NVHR) a patient and community advocacy non-profit organization. In February of 2014, Dr. Gish joined the Hepatitis B Foundation, (HBF) as their Medical Director to lend his policy, advocacy and clinical science skills to their armamentarium

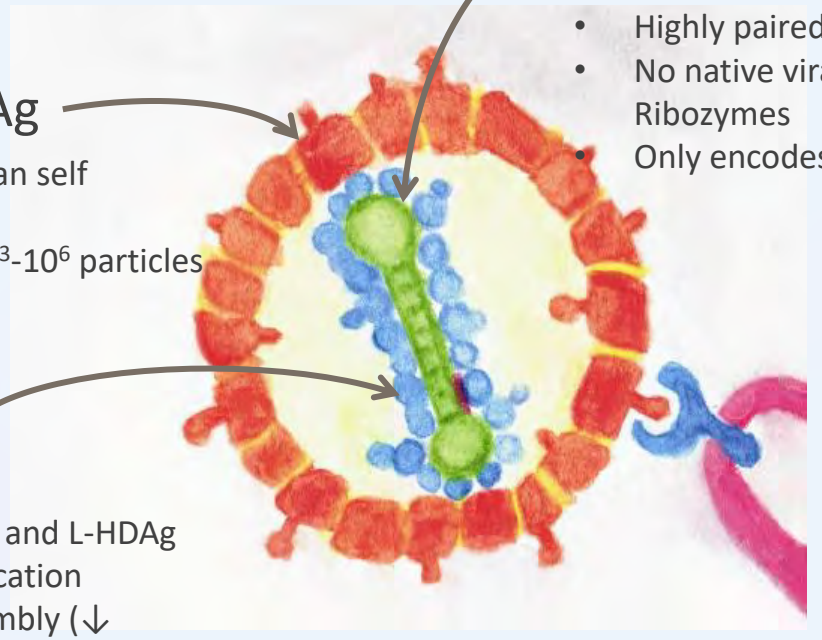
DISCLOSURE INFORMATION

Speaking or Consulting: AbbVie, Abbott, Altimunne, Antios, BMS, Dynavax, Eiger, Eisai, Enyo, Genentech, Genlantis, Gerson Lehrman Group, Gilead, Helios, HepaTX, HepQuant, Intercept, Janssen, Merck, Pfizer, Venatorx
Advisory Boards: AbbVie, Antios, Eiger, Enyo, Gilead, HepQuant, Intercept, Janssen, Merck, Prodigy
Minor Stock Holdings: RiboSciences, CoCrystal

The Hepatitis Delta Virus and Interaction with HBV

HDV-RNA

- The smallest of all animal viruses
- Highly paired – rod like structure
- No native viral enzymes but Ribozymes
- Only encodes S-HDAg



HBsAg

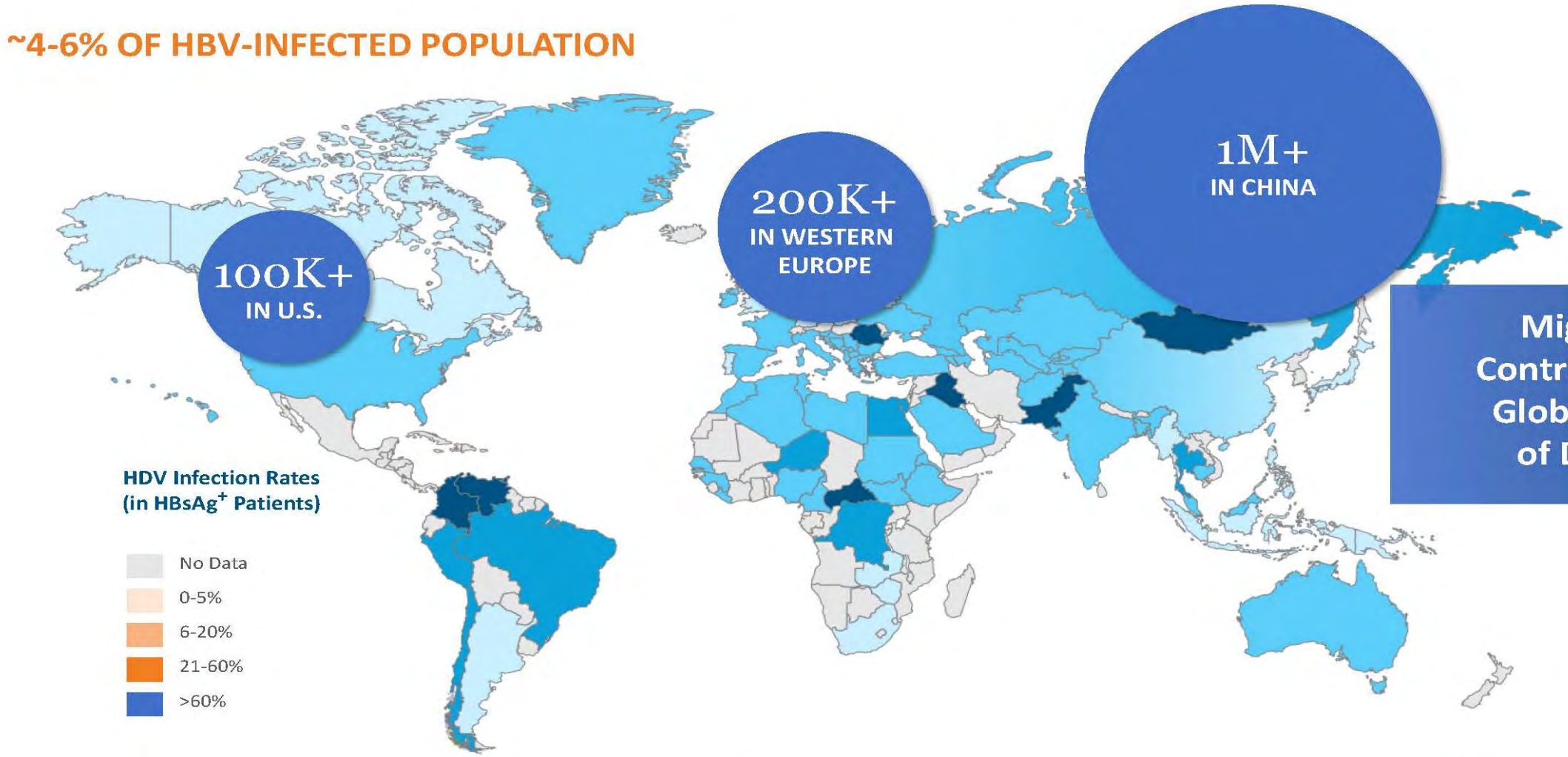
- HBsAg particles can self assemble
- HBV: 1 virion x 10^3-10^6 particles

HDAg

- 2 forms: S-HDAg and L-HDAg
- S-HDAg: ↑ replication
- L-HDAg: ↑ assembly (↓ replication)

Calle Serrano, Manns & Wedemeyer, Seminars in Liver Disease 2012

>12 Million HDV Patient Worldwide



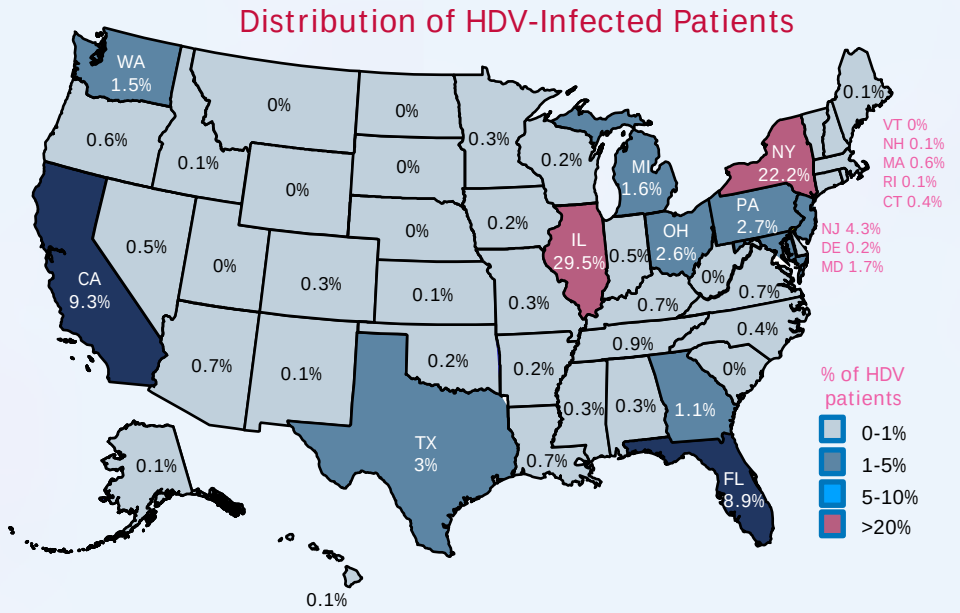
Migration Contributing to Globalization of Disease

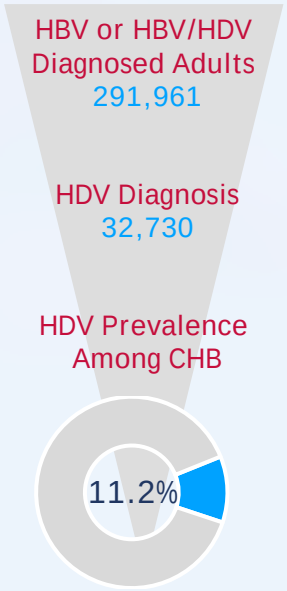
Stockdale et al, *J Hep* **2020**

Prevalence and Characteristics of HDV in the US

Retrospective all-**payer claims database (APCD) study of adult patients (≥18 years) with ≥1 claim** based on ICD-9/10 codes for HBV or HDV from January 2015 to December 2020

Baseline Characteristics	HDV patients n=23,456*
Mean age, years (SD)	51.5 (16)
Age category, %	
18-44 years	33
45-64 years	46
65+ years	22
Women, %	53
HIV infection, %	24
Compensated cirrhosis, %	14
Decompensated cirrhosis, %	9
HCC, %	2
Liver transplant, %	1
Insurance type, %	
Commercial	49
Medicare	23
Medicaid	23





HDV prevalence of 11.2% was observed among diagnosed HBV patients, with highest numbers of patients in IL, NY, CA and FL

*23,456 patients with HDV infection have at least 12 months of data capture prior to index date.

Gish R, et al. AASLD 2021. 698

Modes of Transmission- Similar to HBV

- Infection during early childhood
- Sexual transmission
- Percutaneous
- Blood transfusion
- Needlesticks
- Vertically
- IVDU, HemoDialysis, hemophilia

Risk Factors for Delta Hepatitis

- Sexual transmission with infected partner (high-risk sexual behavior)
- Injection Drug use
- Mother-to-child transmission (rare)
- Men who have sex with men
- Needle sticks/exposures
- Household contacts with HDV infection
- Hemodialysis patients

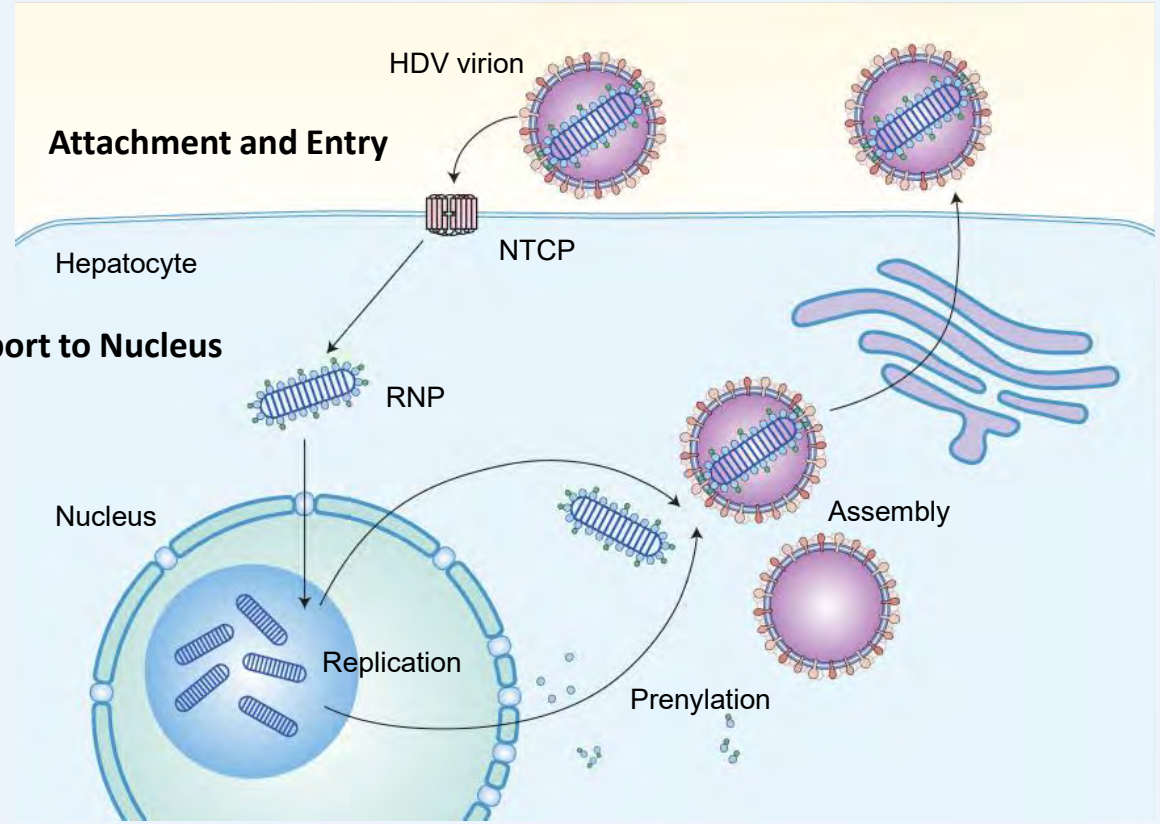
CDC. Updated March 9, 2020. Accessed March 2021. https://www.cdc.gov/hepatitis/hdv/hdvfaq.htm#section1.

Natural History

- **Coinfection**
  - 2-10% fulminant
  - 60-80% recovery
  - 10-30% chronic
- **Superinfection**
  - 60-80% chronic infection
    - 70% liver failure, cirrhosis, HCC
- Course varies by HDV genotype
- Course may vary by HBV genotype

The HDV Life Cycle

HDV replication cycle[1]



- Unlike other RNA viruses, HDV does not encode its own polymerase, but uses the host RNA polymerase II for replication, which normally copies double-stranded DNA templates
- HDV has the unique ability to redirect this cellular enzyme to transcribe the HDV RNA genome
- Prenylation take place via farnasyl-N-transferase

NTCP = human sodium taurocholate cotransporting polypeptide; RNA= ribonucleic acid; RNP = ribonucleoprotein; RT = reverse transcriptase.

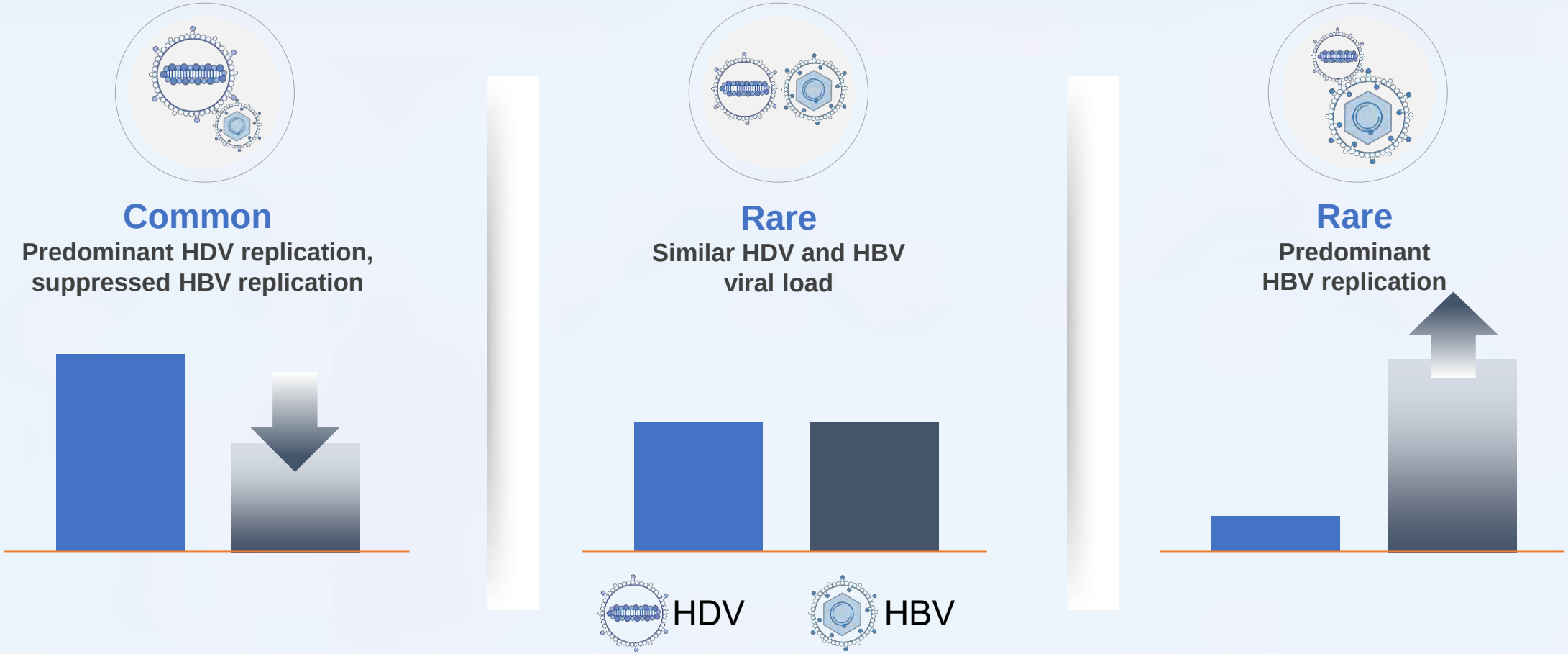
1. Adapted from Gilman C et al. *World J Gastroenterol*. 2019; 25(32): 4580–4597.

HDV Disease Course

- Can be **acute** or become a **chronic**, long-term illness with HBV
- Viewed as one of the **most severe** forms of viral hepatitis when compared to HBV monoinfection:
  - Higher risk for **more severe liver disease**
  - Associated with an **accelerated course of fibrosis** progression
  - **Increased risk** for hepatocellular carcinoma (HCC)
  - **Early decompensation** in the setting of cirrhosis

Puigvehi M et al. *JHEP Rep*. 2019; 1(2): 120–130.

HDV Suppression of HBV replication: 3 Patterns of Chronic Infection[1,2]



HBV viral load has no impact on HDV viral load and outcomes

1. Da BL et al. *Gastroenterol Rep (Oxf)*. 2019; 7(4): 231–245; 2. Lutterkort GL et al. *J Virol Hepatol*. 2018; 25(11): 1384–1394.

Patients With Chronic HDV Have Worse Patient-Reported Outcomes Than Those With Chronic HBV

Patients

Chronic HBV
n = 82

Chronic HDV n = 43

Methods

QUESTIONNAIRES MATCHED GROUP

Chronic liver disease questionnaire

Functional assessment of chronic illness therapy-fatigue

Work productivity and activity impairment

Findings

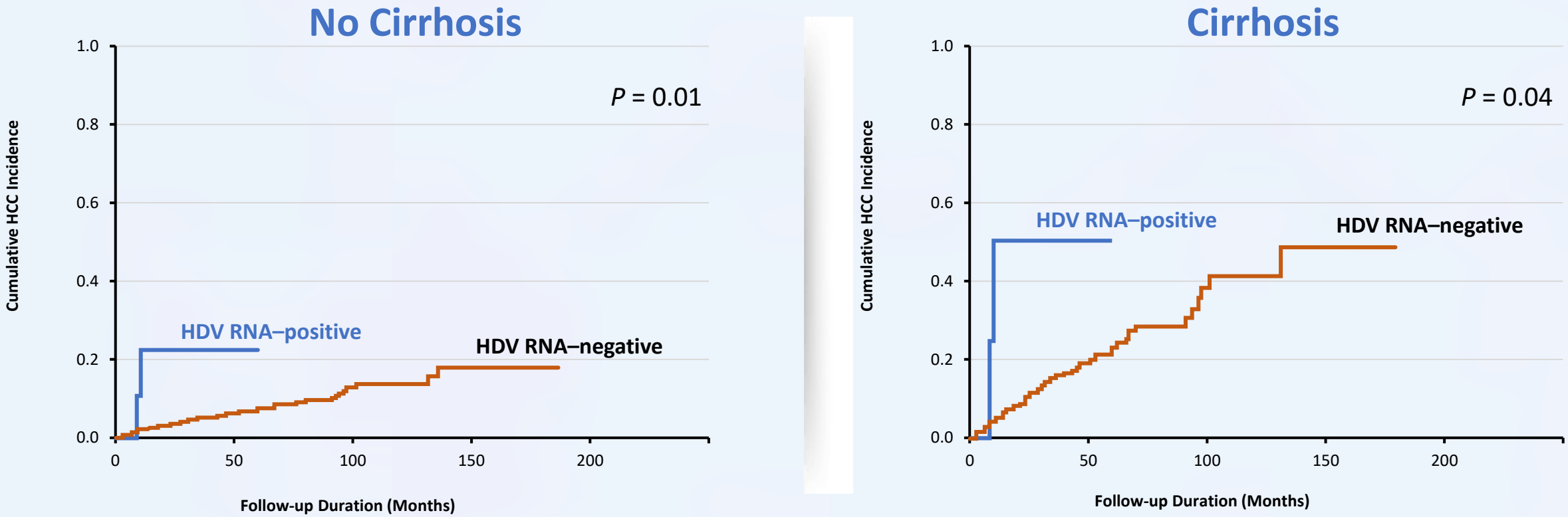
PATIENTS WITH CHRONIC HDV REPORTED WORSE SCORES:

- **Worry** ($P < 0.005$)
- **Abdominal symptoms** ($P < 0.05$)
- **Physical well-being** ($P < 0.005$)
- **Emotional well-being** ($P = 0.05$)
- **Higher activity impairment** ($P < 0.005$)

Buti M et al. *JHEP Rep.* 2021; 3(3): 100280.

Cumulative Incidence of HCC in Patients With Chronic HBV With or Without HDV

Retrospective analysis of treated patients with chronic HBV in Taiwan from 2000–2018 (N = 1349)



HDV viremia played a crucial role in indicating a risk for HCC development in HBV treated patients

Jang TY et al. *Sci Rep*. 2021; 11(1): 8184.

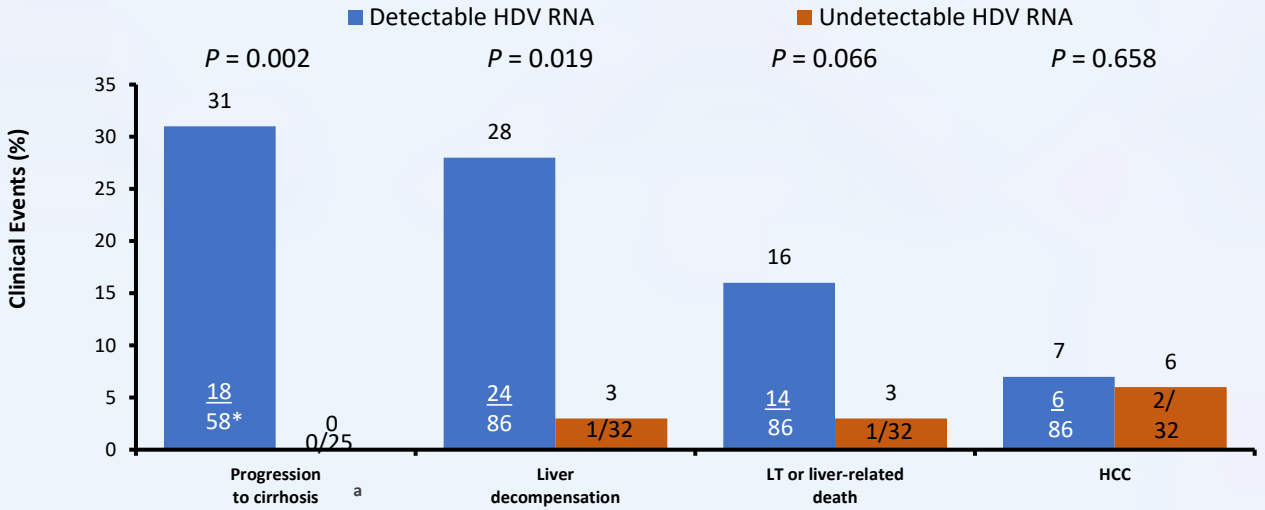
Persistent Viremia Impact on Clinical Outcomes

Multicenter study of HBsAg+, anti-HDV+ patients at 4 academic hospitals in Spain followed for ≥ 12 months (n = 118)

Baseline Characteristics

Parameters	All Cases (N = 118)	Detectable HDV RNA (N = 86)	Undetectable HDV RNA (N = 32)	P-Value
Male sex	68 (58%)	51 (59%)	17 (53%)	0.676
Age, y	49 (35–54)	47 (36–54)	50 (34–53)	0.227
Ethnicity				0.151
Caucasian	93 (79%)	71 (83%)	22 (69%)	
Black	23 (19%)	14 (16%)	9 (28%)	
Other	2 (2%)	1 (1%)	1 (3%)	
Risk Factors				0.844
IV drug users	23 (19%)	16 19%)	7 (22%)	
Vertical	12 (10%)	10 (12%)	2 (6%)	
Sexual	4 (3%)	3 (3%)	1 (3%)	
Unknown	79 (68%)	57 (66%)	22 (69%)	
ALT, IU/mL	55 (33–96)	65 (44–105)	21 (17–30)	< 0.001
Liver cirrhosis	35 (30%)	28 (33%)	7 (22%)	0.003
HBV DNA log IU/mL	2.2 (1.3–3.1)	2 (1.3–3)	2.8 (2.1–3.2)	0.158
Anti-HCV-positive	22 (19%)	17 (20%)	5 (16%)	0.428

Clinical outcomes based on detectable vs undetectable HDV RNA levels



Subjects with persistently positive HDV RNA had a worse prognosis in terms of clinical events

[a]Progression to cirrhosis was assessed only in patients without initial liver cirrhosis. Palom A et al. *Aliment Pharmacol Ther.* 2020; 51(1): 158–166.

Current Screening Recommendations for HDV

	WHOM TO TEST?	HOW TO TEST?
AASLD	• HBsAg+ patients with HDV risk factors • Low/undetectable HBV DNA and high ALT	• Anti-HDV • HDV RNA
EASL	• All patients infected with HBV	NO RECOMMENDATION
The Asian Pacific Association For The Study of Live	• Patients with chronic HBV and chronic liver disease	• HDAg or Anti-HDV • HDV RNA
World Health Organization	NO RECOMMENDATION	• Anti-HDV • HDV RNA

1. Terrault NA et al. *Hepatology*. 2018; 67(4): 1560–1599; 2. EASL. *J Hepatol*. 2017; 67(2): 370–398; 3. Sarin SK et al. *Hepatol Int.* 2016; 10(1): 1–98; 4. WHO. March 2015. Accessed March 30, 2021. https://apps.who.int/iris/bitstream/handle/10665/154590/9789241549059_eng.pdf?sequence=1

Diagnosis of Different Stages of HDV Infection[1–4]

Diagnostic Marker	Acute HDV/HBV Coinfection	Acute HDV Superinfection	Chronic HDV Infection
HBsAg	+	+	+
Anti-HBc, IgM	+	–	–/+
Serum HDAg (by EIA/RIA)	Early and short-lived, and frequently missed	Early and transient, and frequently missed	Transient and may not be detected
Serum HDV RNA (by RT-PCR)	+	+	+
Anti-HDV, total/IgG	Late, low titers	Rapidly increasing titers	High titers
Anti-HDV, IgM	+	Rapidly increasing and persistent titers early and decline late	Variable titers, usually low titers

Note: HDV genotyping is not done routinely in clinical practice. EIA = enzyme immunoassay; HBc = hepatitis B core; HBV = hepatitis B virus; HBsAg = hepatitis B surface antigen; HDAg = hepatitis delta antigen; HDV = hepatitis delta virus; IgM = immunoglobulin M; RIA = radio immunoassay; RNA = ribonucleic acid; RT-PCR = reverse transcription polymerase chain reaction.

1. Terrault NA et al. *Hepatology*. 2018; 67(4): 1560–1599; 2. Sarin SK et al. *Hepatol Int*. 2016; 10(1): 1–98; 3. WHO. March 2015. Accessed March 30, 2021. https://apps.who.int/iris/bitstream/handle/10665/154590/9789241549059_eng.pdf?sequence=1; 4. Cheung A, Kwo P. *Clin Liver Dis*. 2020; 24(3): 405–419.

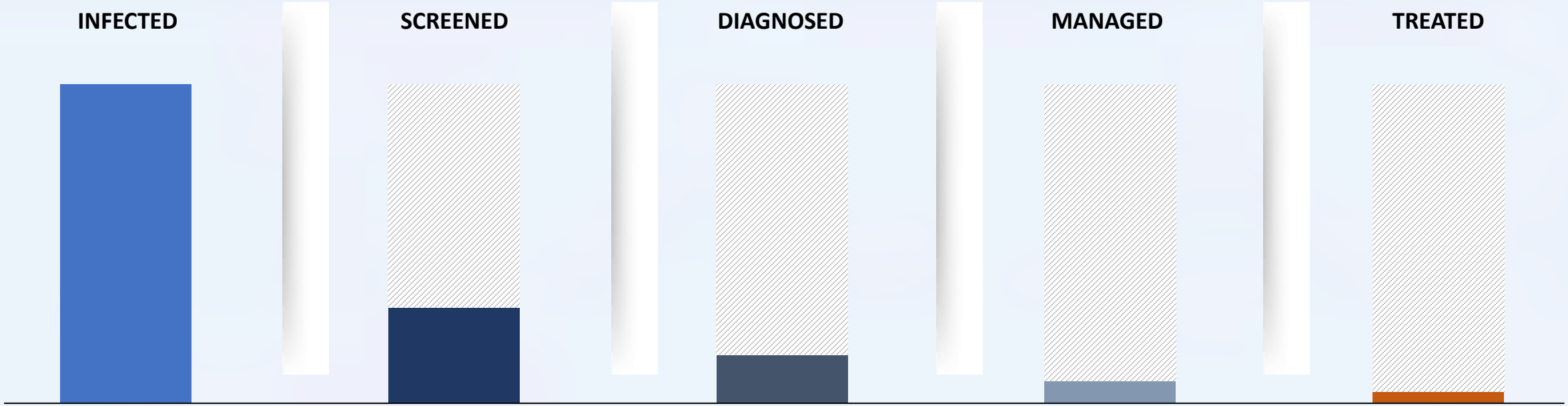
Non-invasive Fibrosis Assessment in HDV

Consecutive HBV, HCV, and HDV patients underwent VCTE: diagnosis of cirrhosis was made using liver biopsy or clinical findings, 2006-2019 (HDV cohort, n = 75/319)

Non-invasive Tests	Cut-offs for Cirrhosis	Patients With Cirrhosis (n=18)	Patients Without Cirrhosis (n=57)	Correctly Classified	Se (%)	SP (%)	PPV (%)	NPV (%)	LR+	LR–	AUROC
VCTE – Ideal Cut-off (kPa)	≥ 14.0	14	8	63 (84.0%)	77.8%	86.0%	63.6%	92.5%	5.55	0.26	0.90
	< 14.0	4	49								
VCTE (kPa)	≥ 12.5	14	10	61 (81.3%)	77.8%	82.5%	58.3%	92.2%	4.45	0.27	0.90
	< 12.5	4	47								
FIB-4	> 3.6	10	6	42 (56.0%)	90.9%	84.2%	62.5%	97.0%	5.75	0.11	0.88
	NC	7	19								
	< 1.6	1	32								
APRI	> 2.0	11	7	46 (61.3%)	84.6%	83.3%	61.1%	94.6%	5.1	0.19	0.83
	NC	5	15								
	< 1.0	2	35								

Value expressed as n or n (%). APRI = aspartate aminotransferase (AST) to platelet ratio index; AUROC = area under the receiver operating characteristic; FIB-4 = Fibrosis-4; LR = likelihood ratio; NC = not categorized; NPV = negative predictive value; PPV = positive predictive value; Se = sensitivity; SP = specificity; VCTE = vibration-controlled transient elastography (FibroScan®). Da BL et al. *J Virol Hep.* 2020; 27(4): 428–436.

There Are Unmet Needs Across the HDV Cascade of Care[1-3] and Implications for Disease Under Estimation



- Lack of robust data
- Number of patients with HDV unknown

- Test availability
- Standardized screening tests needed
- Standardized screening policies needed

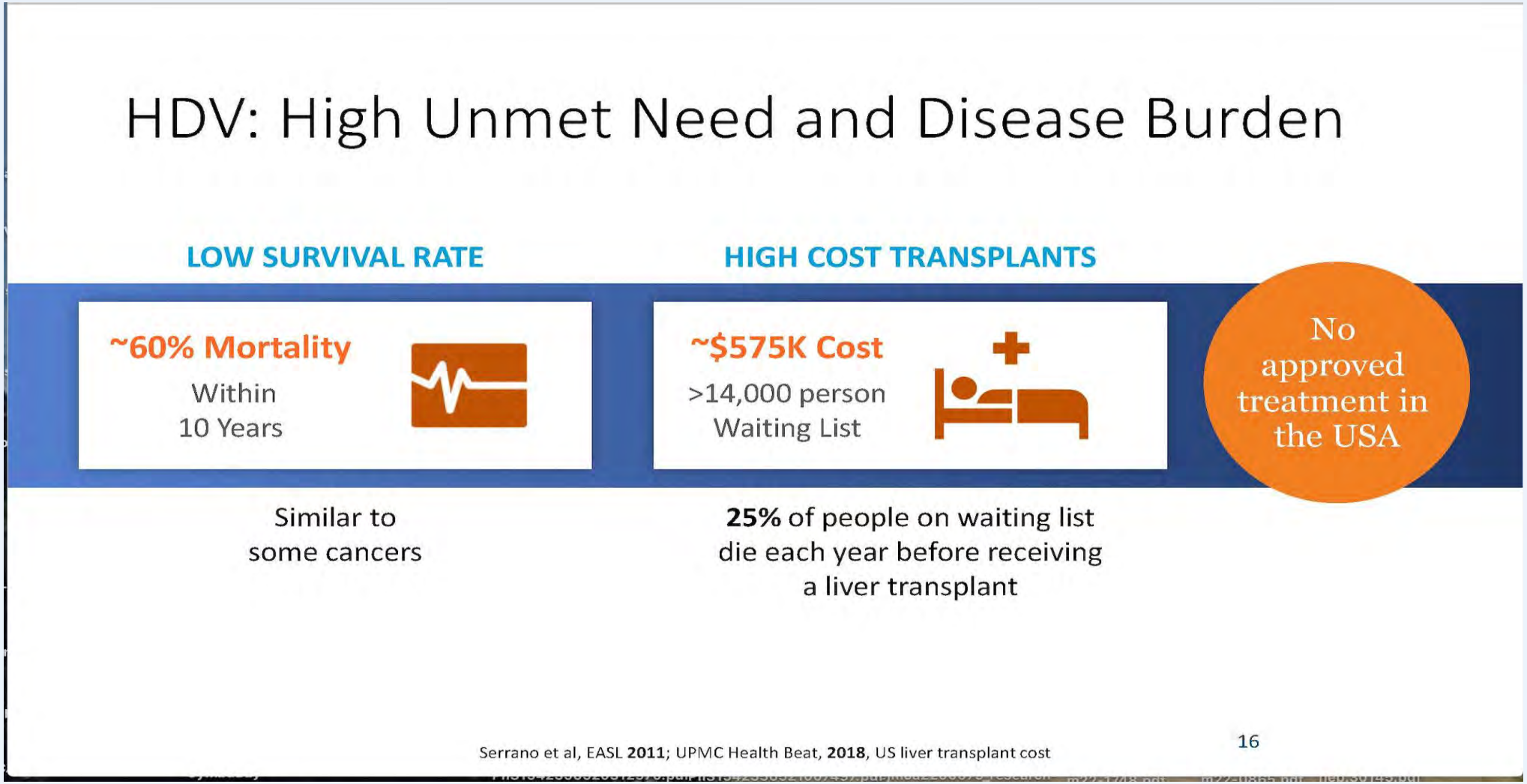
- Protocol for testing HDV in HBsAg-positive patients needed
- Protocol for HDV confirmation in HBsAg-positive patients needed

- Surveillance protocols to detect rapid disease progression needed

- Lack of effective and specific treatment options
- Clarity on which stage of disease to treat patients needed

1. Stockdale AJ et al. *J Hepatol*. 2020; 73(3): 523–532; 2. Miao Z et al. *J Infect Dis*. 2020; 221(10): 1677–1687; 3. Shah PA et al. *Gastroenterol Rep (Oxf)*. 2019; 7(6): 396–402.

SUMMARY OF UNMET NEED AND DISEASE BURDEN OF DELTA



Treatment Recommendations for Management of HDV

	Treatment options	Treatment endpoint	Management
AASLD[1] (2018)	• PEG-IFNα for 1 year • Patients with elevated HDV RNA and ALT elevation	• Undetectable HDV RNA • ALT normalisation/ improved histology	• Test for HDV relapse if ALT increases • Manage in specialist centres
APASL[2] (2016)	• PEG-IFNα for ≥ 1 year • Optimal duration of therapy not well defined	• Undetectable HDV RNA	• Monitor for ≥ 6 months post-treatment
EASL[3] (2017)	• PEG-IFNα for ≥ 48 weeks • HDV/HBV patients with compensated liver disease	• Undetectable HDV RNA	• Long-term HDV RNA monitoring required
WHO[4] (2015)	• PEG-IFNα for ≥ 1 year	• Undetectable HDV RNA	No recommendation

NOTE: Treatment of HDV with PEG-IFNα is off-label. AASLD: American Association for the Study of Liver Diseases; ALT: alanine aminotransferase; APASL: Asian Pacific Association for the Study of the Liver; EASL: European Association for the Study of the Liver; HDV: hepatitis D virus; PEG-IFN: pegylated interferon; RNA: ribonucleic acid; WHO: World Health Organization.

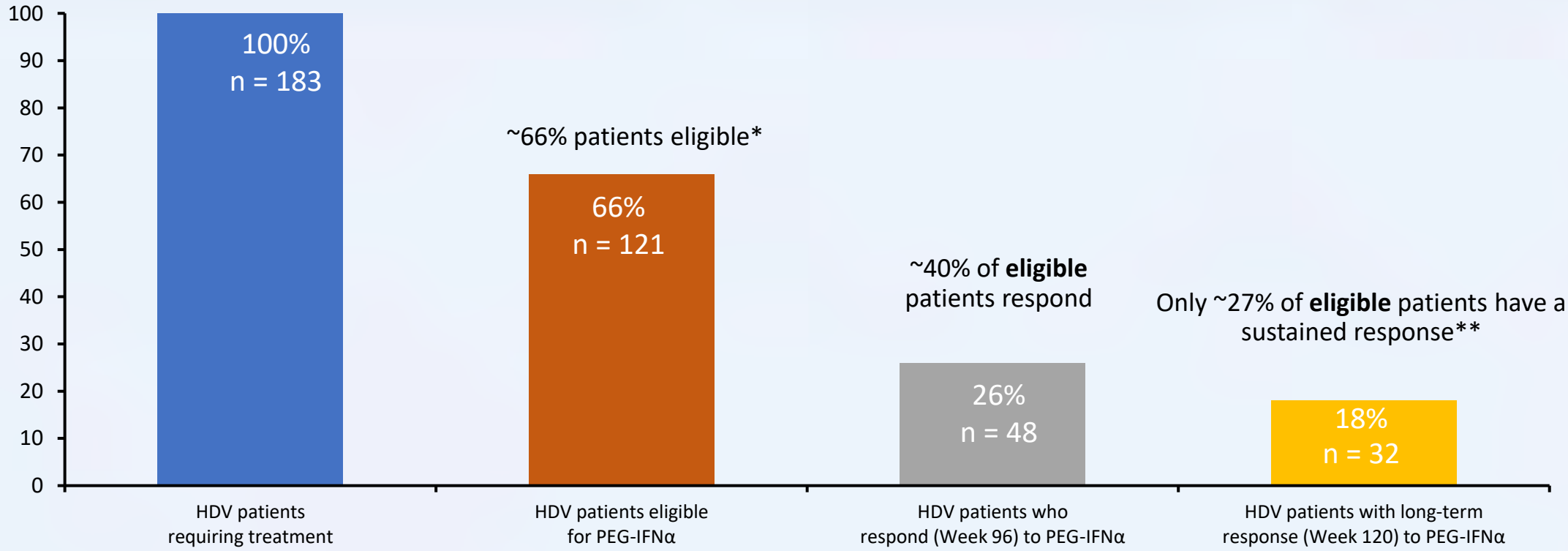
1. Terrault N et al. *Hepatology*. 2018; 67: 1560–99; 2. Sarin SK et al. *Hepatol Int*. 2016; 10: 1–98; 3. European Association for the Study of the Liver. *J Hepatol*. 2017; 67: 370–98; 4. WHO HBV guidelines. March 2015. Available at: https://apps.who.int/iris/bitstream/handle/10665/154590/9789241549059_eng.pdf?sequence=1 (Accessed March 2021).

HDV RNA negative at week 24 post-treatment is not SVR or a cure

Best term in MVR, maintained virologic response if log reduction or viral clearance is maintained

Updated from: Heidrich et al. Hepatology. 2014 Jul;60(1):87-97.

Response to PEG-IFNα Treatment



Only a subset of patients are treated with PEG-IFNα, of which a small proportion respond to treatment

*Ineligibility based on contraindications, intolerance and presence of advanced liver disease in HIDIT-II (62 of 183 screened did not meet inclusion criteria or met exclusion criteria) **Response defined as undetectable HDV RNA after 120 weeks of treatment.

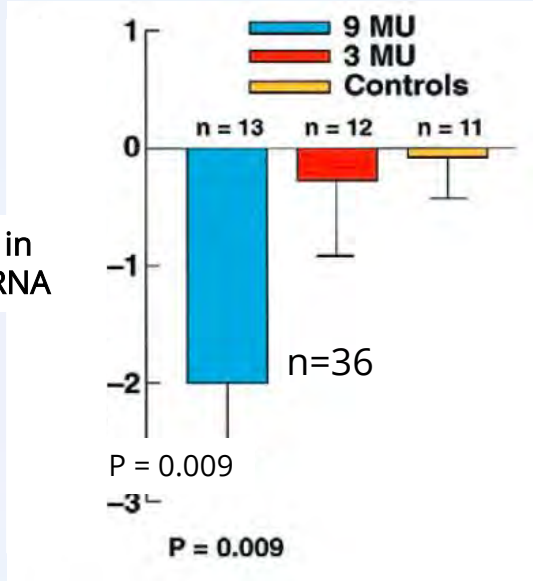
HDV: hepatitis D virus; PEG-IFNα: pegylated interferon alpha. Wedemeyer H et al. *Lancet Infect Dis*. 2019; 19: 275–86.

Reducing HDV-RNA with IFNα Improves Survival

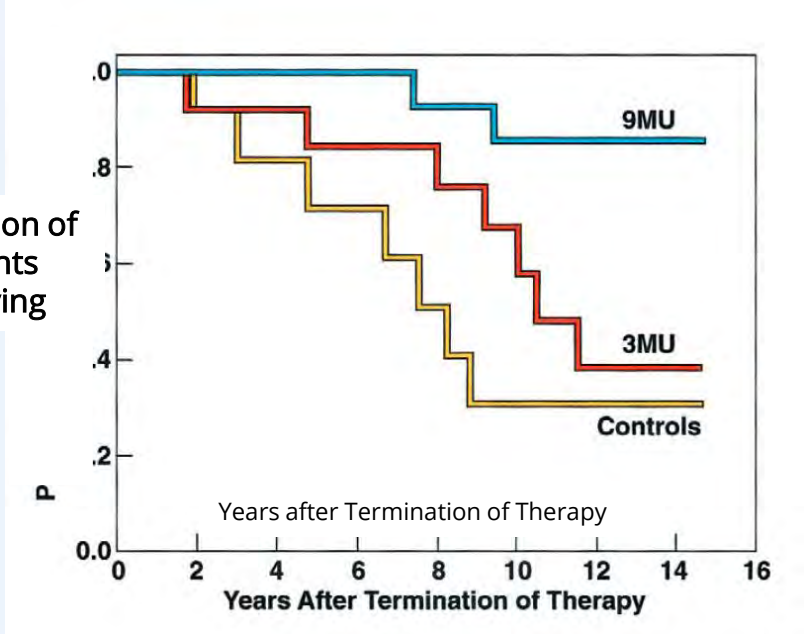
Improved Clinical Benefit without Clearance of HDV-RNA

Interferon-α for 48 weeks with 15 year Follow Up

Change in HDV-RNA

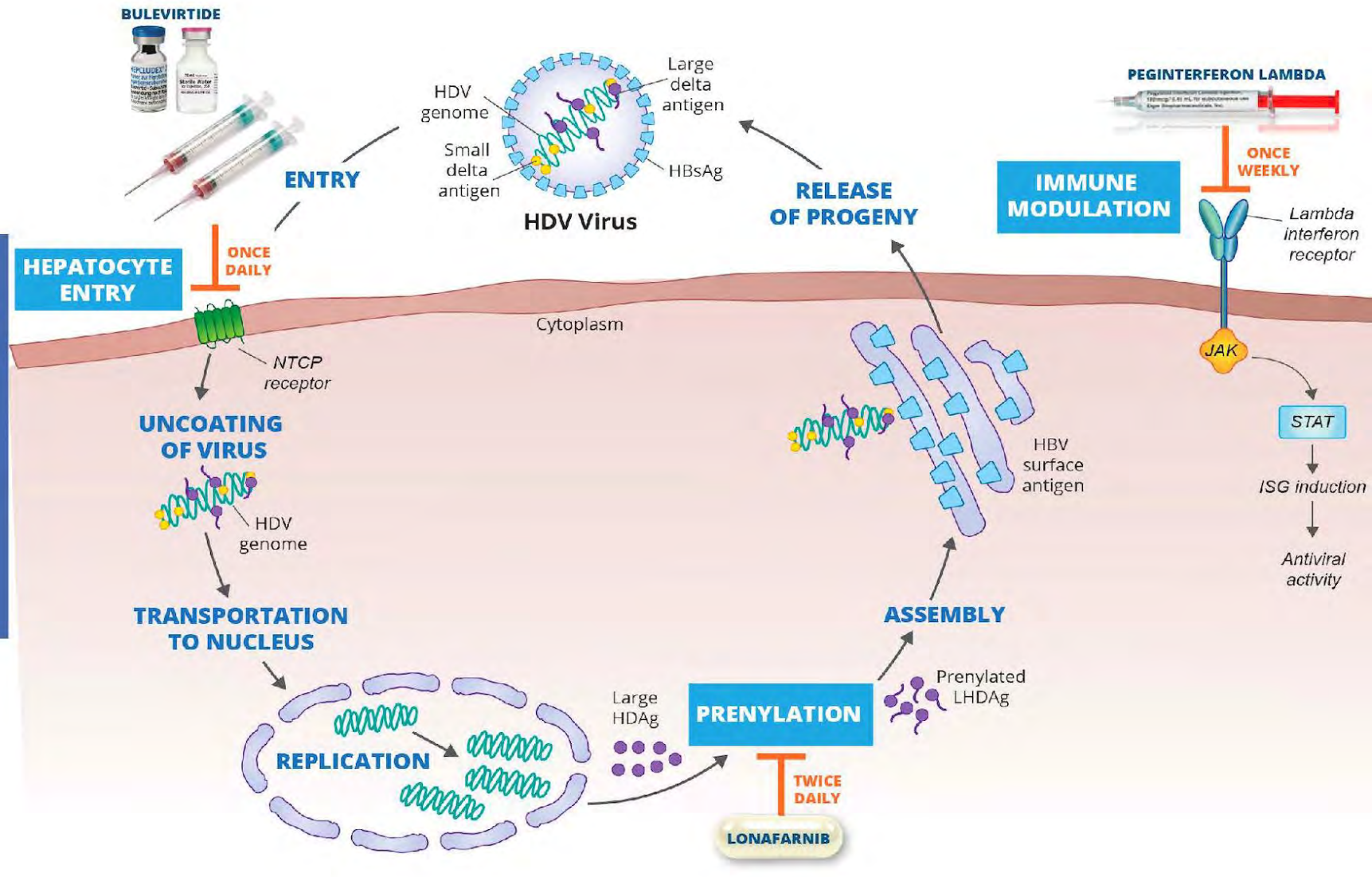


Survival



Farci et al, *Gastroenterology* 2004: Long-Term Benefit of Interferon-α Therapy of Chronic HDV: Regression of Advanced Hepatic Fibrosis

Complementary Mechanisms of Action to Treat HDV in Development



Conclusions

- HDV is underdiagnosed but prevalent in HBV infected patients
- HDV has poor testing frequency and very low linkage to care
- All HBsAg+ patients should be tested for HDV by total antibody testing and linked or reflexed to HDV RNA quant by PCR
- HDV is in need of rapid test or POC tests on the global market
- Best current treatment is INF with MVR rate of 20%, this does not define cure of HDV
- Major need for new therapies to result in at least a 2 log reduction of viral load = reset of disease activity
- New HDV therapies will have MVR of 40% with additional 20% with ”reset” of virus levels by 2 logs
- Primary care clinicians can play a vital role in diagnosis and treatment

MVR=maintained virologic response; SVR=sustained virologic response

Questions and Discussion

IMPROVE YOUR DIAGNOSTIC AND TREATMENT SKILLS FOR LIVER DISEASE

By Taking this Complementary CME seminar

"Hepatitis Delta: Increasing Awareness and Treatment Competencies"

Web-based Enduring Material

There is No Charge for this Seminar and CME Credit is Available

Hepatitis D is an inflammation of the liver caused by the hepatitis D virus (HDV), and it requires HBV for its replication. Hepatitis D infection cannot occur in the absence of hepatitis B virus. HDV-HBV co-infection is considered the most severe form of chronic viral hepatitis due to more rapid progression which can lead to hepatocellular carcinoma and liver-related death.

HDV infection is diagnosed by high levels of anti-HDV immunoglobulin G (IgG) and immunoglobulin M (IgM), and confirmed by detection of HDV RNA in serum.

However, HDV diagnostics are not widely available and there is no standardization for HDV RNA assays, which are used for monitoring response to antiviral therapy

Learn more about the transmission, vaccination, and prevention approaches to stop this emerging threat to liver health.

This seminar will:

- Explain how and why HBV infected individuals are at risk for HDV
- Prepare your practice to screen patients and increase sensitivity to populations at risk
- Increase awareness of current and emerging therapies for Delta Hepatitis
- Develop patient and staff education modules to reduce hepatitis outbreaks and improve awareness of prevention methods
- Translate the lessons of clinical cases to improve you diagnostic and treatment skills

Those who complete this activity will better understand how to screen, diagnose and effectively treat their patients and be more confident of when and how to refer to Hepatology for more advanced care.

For More Information and to Register:
https://bit.ly/HepD22

Your Course Faculty

Robert G. Gish, MD
Medical Director
Hepatitis B Foundation

Joint Provider Statement

This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of the University of Louisville School of Medicine and SC Liver Research Consortia. The University of Louisville School of Medicine is accredited by the ACCME to provide continuing medical education for physicians.

ACCME ACCREDITED WITH COMMENDATION

Designation Statements

Physicians - The University of Louisville Office of Continuing Medical Education & Professional Development designates this live activity for a maximum of ***1.0 AMA PRA Category 1 Credit(s)™***. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Nurses - This program has been approved by the Kentucky Board of Nursing for 1.5 continuing education credits through University of Louisville Hospital, provider number4-0068-12-22-1303. The Kentucky Board of Nursing approval of an individual nursing education provider does not constitute endorsement of program content.

Nurse Practitioners and Physician Assistants - AANP and AAPA accept Category I credit from ***AMA PRA Category 1 Credit(s)™*** organizations accredited by ACCME

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