Strategies and Implementation of the Hepatitis B Recommendations

Universal Recommendation for Adults <60 years

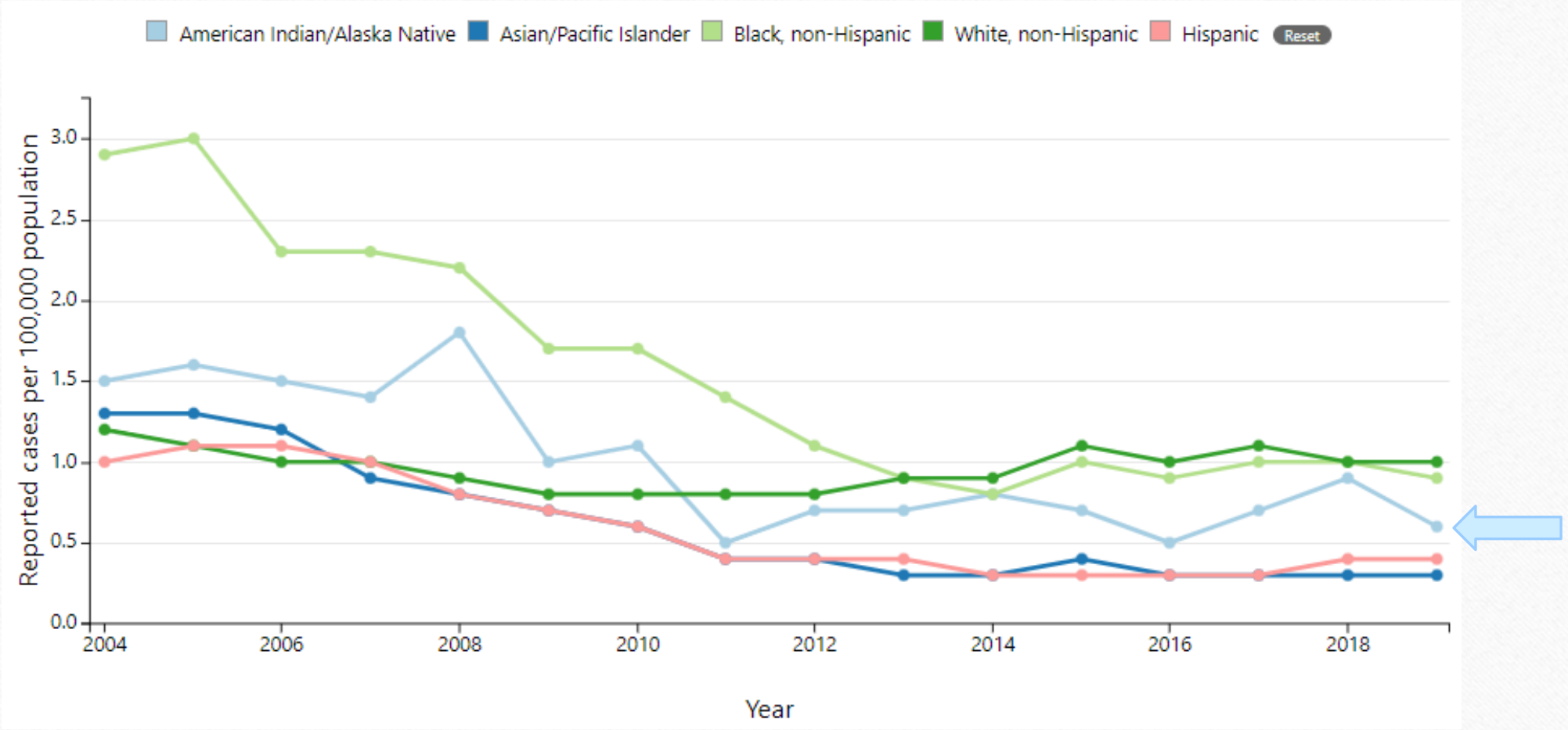
Risk Based Recommendations for Adults ≥60 years

Disclosures

- Nothing to disclose
- The views expressed in this presentation are the presenters and do not reflect the official policy or position of the U.S. Department of Health and Human Services, the Indian Health Services, or the U.S. Government

Hepatitis B Rates

Rates of reported acute hepatitis B virus infections, by race/ethnicity — United States, 2004–2019



Source: CDC, National Notifiable Diseases Surveillance System. Figure 2.6 of 2019 Viral Hepatitis Surveillance report | CDC

Chronic Liver Disease in AI/AN

Cause	AI/AN Rate: 2009-2011	US All Races Rate: 2010	Ratio: AI/AN to US All Races
Chronic liver disease and cirrhosis	42.9	9.4	**4.6**

(Age-adjusted mortality rates per 100,000 population)

8th leading cause of death in AI/AN

Reference: Mortality Disparity Rates American Indians and Alaska Natives (AI/AN) in the IHS Service Area 2009-2011 and U.S. All Races 2010

HBV Considerations in AI/AN

HBV prevalence– The rate of newly reported cases was 20.5 times higher in AI/AN patients compared with white patients between 2006 and 2015. AI/AN women are 50% more likely to die from viral hepatitis, as compared to non-Hispanic white women. [12 26]

Opioid epidemic – AI/AN had the second highest overdose rate from all opioids in 2017 among racial/ethnic groups in the US. Data indicate an increase in the rate of new HBV injections in the US, largely attributed to increasing injecting drug use [1 2]

Liver cancer – Liver cancer incidence rates were between 50% to over 3x higher for the AI/AN population compared with the white population. The most common risk factor for liver cancer is chronic infection with HBV [3 19]

Obesity – Almost 50% of AI/AN adults were obese in 2018, which has been demonstrated to worsen the outcome of chronic HBV.[5 6]

Diabetes – More than 16% have diabetes as of 2019, more than double the prevalence for the general U.S. population. People living with type 1 or 2 diabetes have higher rates of HBV than the general population [7 8]

HIV – HIV diagnoses increased 39% from 2010 to 2017, with AI/ANs having twice the rate of HIV infection compared to the white population [24 25]

Smokers – AI/AN adults have the highest prevalence of cigarette smoking compared to all other racial/ethnic groups in the US. Smoking dramatically increases the risk for liver cancer among those with chronic HBV and is linked to impaired vaccine response [9 10 11]

Health care workers – Many healthcare workers come into contact with blood and other bodily fluids with risk of infection between 10 and 30% if contact is made with blood or mucous membranes. IHS employs approximately 15,000 employees to deliver healthcare.[13 20]

Please see Select Important Safety Information throughout this presentation and accompanying full Prescribing Information.

Reference: Heplisav-B slide set, Dynavax, 2020

Hep B Recommendations

- Adults previously unvaccinated for hepatitis B **should** receive hepatitis B vaccination
  - Age Based:
    - All adults 19-59 years
  - Risk based recommendations:
    - All adults 60 years and older with risk factors for Hep B
  - Optional:
    - Adults 60 and older without risk factors for Hep B
- Recommendation accepted unanimously by ACIP
  - Awaiting ACIP Morbidity and Mortality Weekly Report (MMWR) publication

IHS National Core Formulary

- All ACIP recommended vaccines are on the IHS National Core Formulary
- Encourage local decision-making for product selection and vaccination strategy
- Many factors may impact decision making
  - Product availability
  - Efficacy
  - Simplicity
  - Cost and cost-effectiveness
  - Clinical decision support – utilization of RPMS/EHR forecast

ACIP Approved Hep B Vaccines

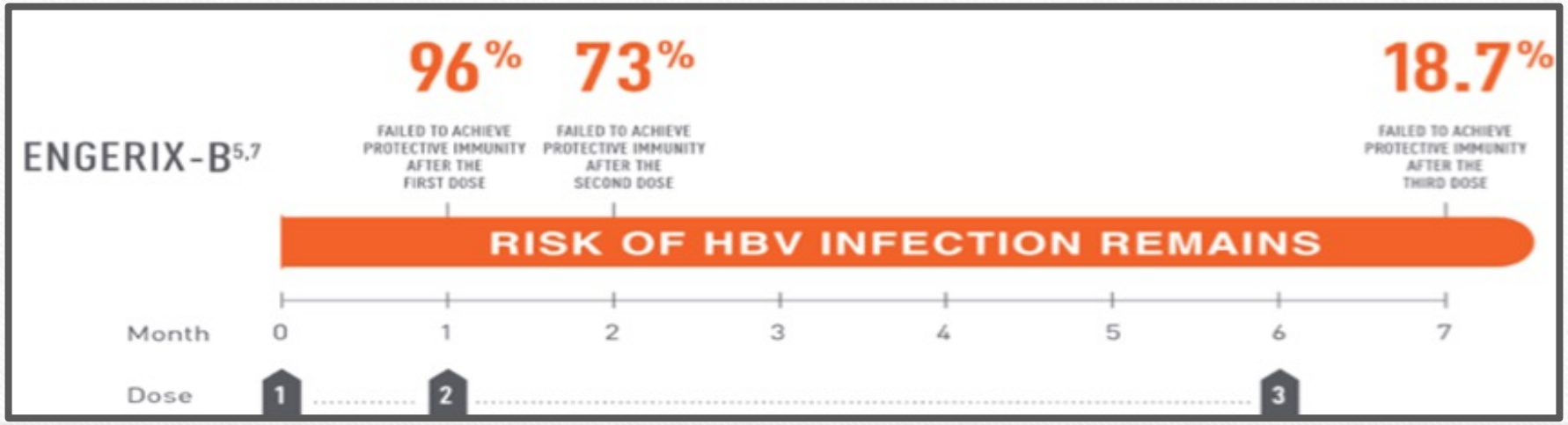
- ACIP Approved Hepatitis B Vaccines:
  - Traditional 3-dose Series
    - Engerix-B
    - Recombivax-B
    - Twinrix (combination Hep A + Hep B)
  - Novel 3-dose 3-Antigen Recombinant Vaccine (NEW in 2021)
    - PreHevBrio
  - 2-dose Novel Adjuvant (NEW in 2018)
    - Heplisav-B

Comparison

	Recombivax-HB (Adult)	Engerix-B (Adult)	Heplisav-B	PreHevBrio
Preparation	MDV or PFS	MDV or PFS	PFS	PFS
Doses & Schedules	3 Doses 0, 1-2, 6 months	3 Doses 0, 1-2, 6 months	2 Doses 0, 1 months	3 Doses 0, 1, 6 months
Volume	1 mL	1 mL	0.5 mL	1 mL
Surface Antigens	1	1	1	3
Efficacy	>90% Reduced in older age, underlying conditions	>90% Reduced in older age, underlying conditions	95%	91%
Side Effects – Similar	• Injection site pain • Malaise • Fatigue • Headache	• Injection site pain • Malaise • Fatigue • Headache	• **More local reactivity** • Injection site pain, **redness, swelling** • Malaise • Fatigue • Headache	• **More local reactivity** • Injection site **pain & tenderness** • **Myalgia** • Fatigue • Headache

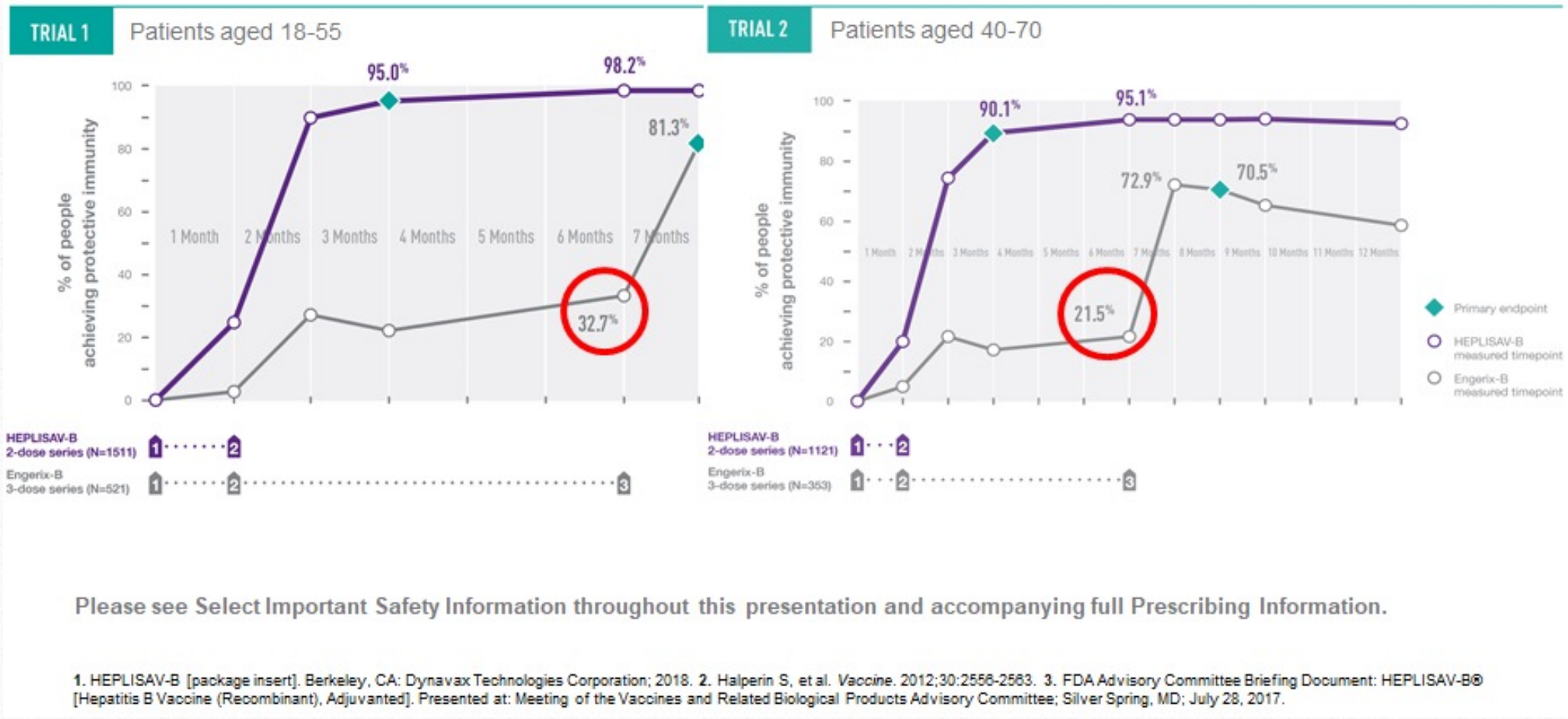
Dosing Schedules

- Traditional 3-dose series are difficult to complete
  - ~40% of HCPs did NOT receive all 3 doses
  - ~75% of adults 19+ did NOT receive all 3 doses
- Failed immunity after series completion
  - ~20-30% fail to achieve immunity
  - ~35% of diabetics fail to achieve immunity



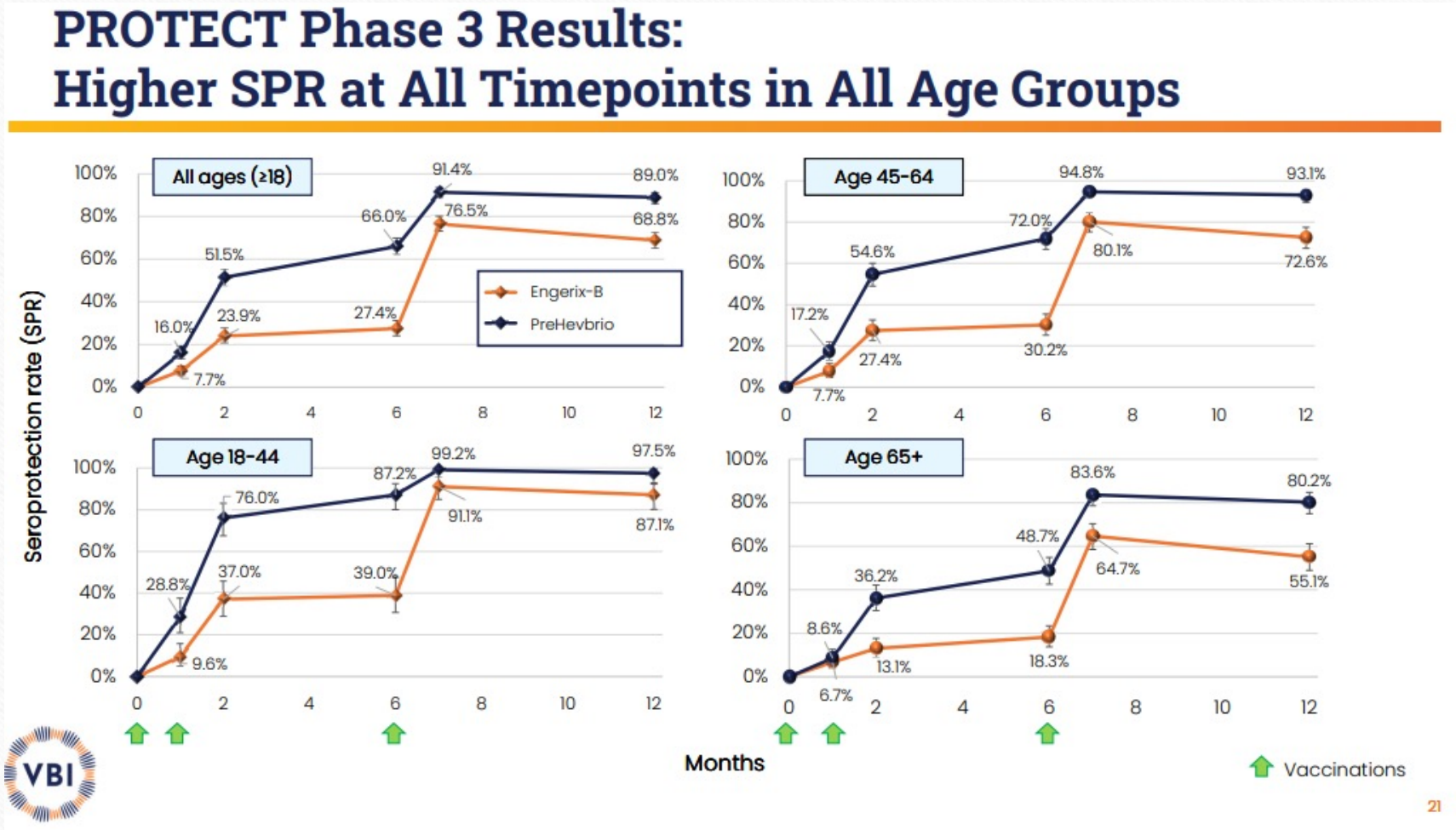
Reference: Williams WW, Lu PJ, O'Halloran A, et al. Surveillance of vaccination coverage among adult populations - United States, 2015. *MMWR Surveill Summ.* 2017;66(11):1-28._Schillie
Reference: S, Murphy TV, Sawyer M, et al. CDC guidance for evaluating health-care personnel for hepatitis B virus protection and for administering postexposure management. *MMWR Recomm Rep.* 2013;62(RR-10):1-19.

Heplisav-B vs Engerix-B



Reference: Heyward WL, Kyle M, Blumenau J, Davis M, Reisinger K, Kabongo ML, Bennett S, Janssen RS, Namini H, Martin JT. Immunogenicity and safety of an investigational hepatitis B vaccine with a Toll-like receptor 9 agonist adjuvant (HBsAg-1018) compared to a licensed hepatitis B vaccine in healthy adults 40-70 years of age. Vaccine. 2013 Nov 4;31(46):5300-5. doi: 10.1016/j.vaccine.2013.05.068. Epub 2013 May 30.

PreHevBrio



Reference: ACIP Committee Presentation Safety & Immunogenicity of a 3-Antigen Hepatitis B Vaccine, PreHevBrio. January 12,2022.

Cost Comparison

Vaccine	Cost per dose ($)	Cost per series ($)
Recombivax-HB (Adult)	$29	$87
Engerix-B (Adult)	$32	$96
Heplisav-B	$71	$142
PreHevBrio	Unknown Not Available	Unknown Not Available

Series Cost Difference = $46-$55

(Heplisav-B vs. Recombivax-B and Engerix-B)

Prices obtained from IHS Prime Vendor, McKesson as of 21 March 2022

Heplisav-B Cost Effectiveness

- Economic analysis demonstrated Heplisav-B is cost-saving compared to the baseline strategy of Engerix-B
  - Cost saving in 6 of the 7 adult populations
    - Diabetes, CKD, obesity, HIV, older adults, PWID
  - Not cost saving in 1 population: Higher cost per person ($14) for non-responders
  - Higher efficacy of Heplisav-B results in better health outcomes
    - Increased QALYs, reduced HBV infections, more HBV-related deaths averted
  - Improved adherence with a 2-dose series may be especially relevant for populations with expected poor adherence to series completion

EM Rosenthal, EW Hall, ES Rosenberg, et al. Assessing the cost-utility of preferentially administering Heplisav-B vaccine to certain populations. Vaccine 2020; 38 (51): 8206-8215. https://doi.org/10.1016/j.vaccine.2020.10.067

Benefits	Disadvantages
Simplicity of dosing	Long-term data lacking
Fewer visits/health care utilization	Higher incidences of side effects, mild overall
Achieve seroprotection earlier than traditional HepB vaccines • Critical factor with high-risk individuals • HIV, Hep C, sex workers • HCPs	Minor logistical considerations • No barcode on the syringe (for BCMA), but sticker included • Boxes of 5 doses – more fridge space

Cost differences
• Direct
  • Acquisition cost additional $46-$55 for Heplisav-B series
• Indirect
  • Patient & Clinic
• Cost Effective in all but non-responders
	Acquisition cost difference exists
	• Additional $46-$55 for Heplisav-B series

Interchangeability with traditional products	Interchangeability with traditional products (complex at times)
Forecasting issues resolved in RPMS/EHR	Not well known in the market
Less volume per injection – 0.5mL	Multiple brands on campus (VFC Hep B vaccine)

PIMC Formulary Conversion

- Approached by the Center of Excellence provider
  - HIV, Hep C, Diabetes clinic
  - Recent ECHO presentation on Heplisav-B
  - Extensive review of Heplisav-B
  - Considered adding for "high-risk" individuals only
- Proposed formulary conversion in April 2019
  - P & T voted to add Heplisav-B to the local formulary
  - Complete product switch for anyone 19 yrs and older
  - Kept traditional Hep B vaccine for 18 yrs and younger as part of VFC program with pediatric dosing

PIMC Formulary Conversion

- Preparation for conversion
  - Minimized ordering of traditional HepB vaccine
  - Education campaign initiated with pharmacists, nurses, providers approximately 2 weeks prior to roll out
  - Competency exams distributed, email sent out, 1 pager handout created
- Day of Conversion
  - All traditional Hep B doses were “unloaded” from all fridges & pyxis machines before work hours
  - Heplisav-B loaded, reminder email sent
- Overall successful roll out
  - Initial struggles with EHR/RPMS forecaster not working correctly
  - Forecaster issues resolved with newest patches

Vaccine Education Campaigns

- Incorporate vaccinations into routine care
  - CDC Standards for Adult Immunization Practice
    - Assess immunizations at EVERY visit
    - Strongly recommend needed vaccines
    - Administer or refer
    - Advise individuals of future needs (other vaccines, next doses)
- Coordinate outreach to address all vaccine needs at once
  - COVID-19 vaccines and boosters
  - Pnuemococcal vaccines (New recommendations)
  - Zoster (expanded recommendations)
  - Routine seasonal or age-based vaccines (flu vaccine, tetanus boosters)

Thank You!

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