



# Considerations for Use of HEPLISAV-B in Adults

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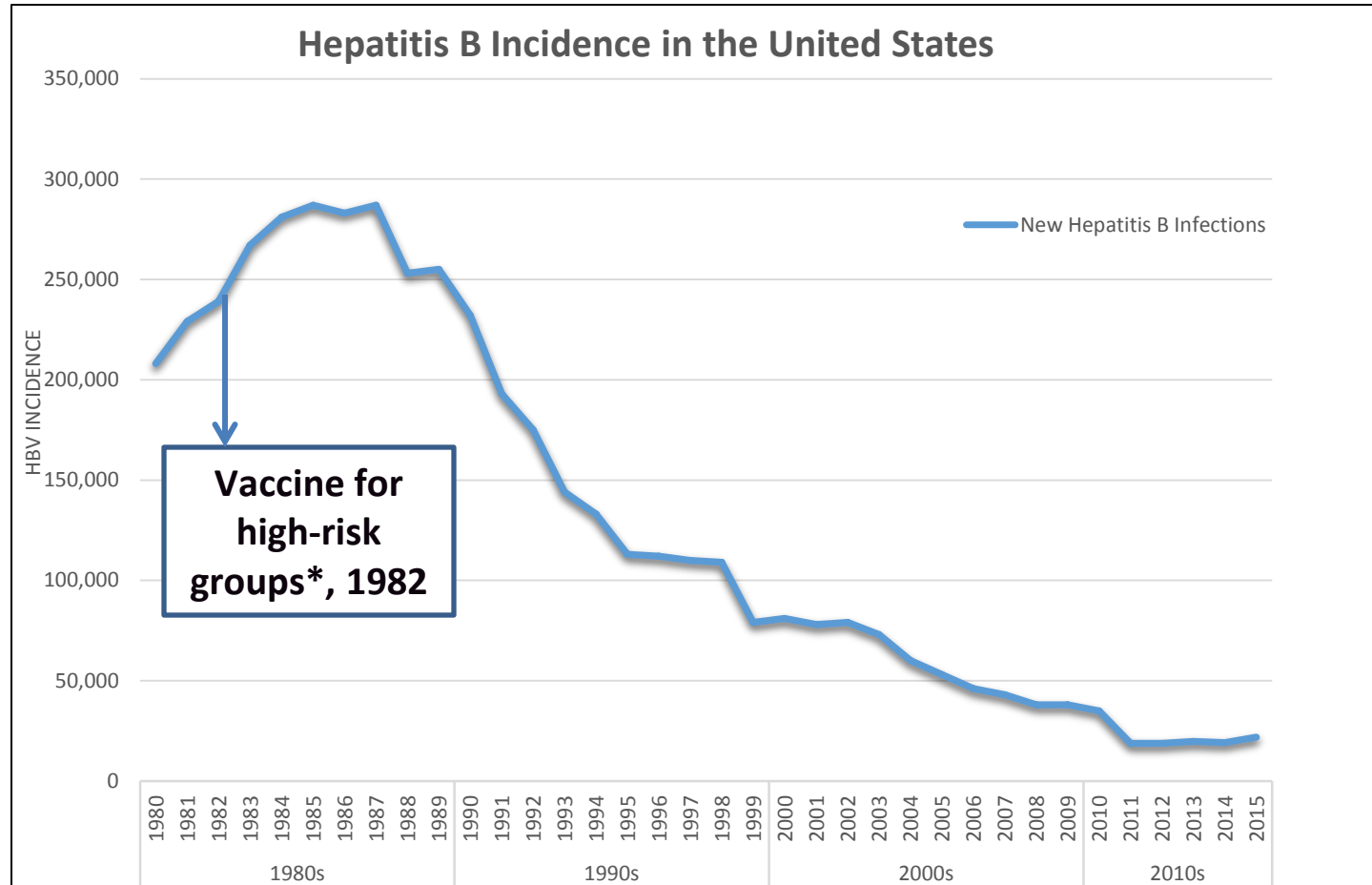
# Presentation Overview

- **Summary of data reviewed:**
  - Epidemiology and burden of hepatitis B in adults
  - Adult hepatitis B vaccination coverage
  - HEPLISAV-B immunogenicity
  - HEPLISAV-B safety
  - Cost-effectiveness
- **Policy options and Work Group considerations**

# Adults Recommended to Receive Hepatitis B Vaccination

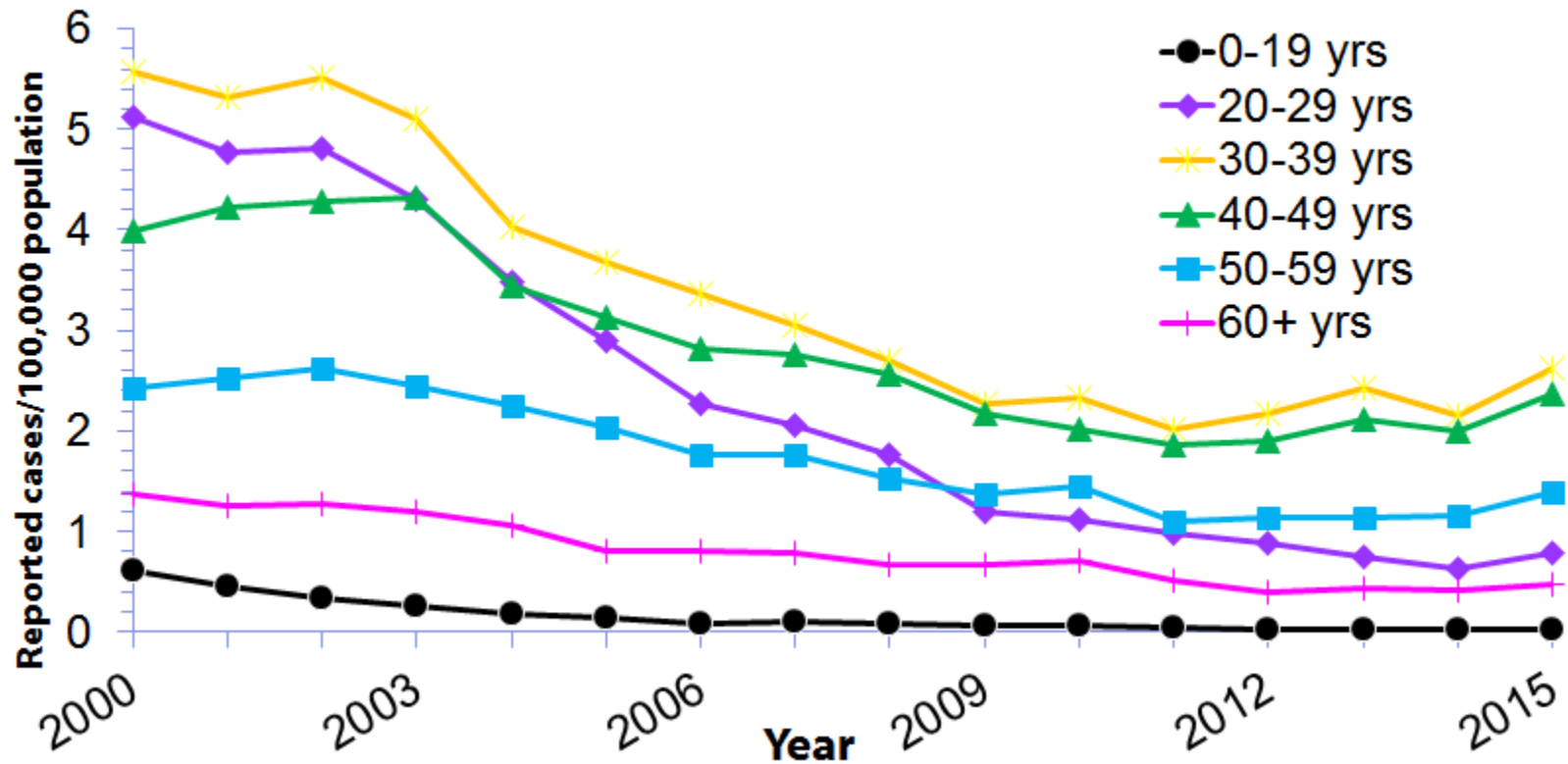
- **Household contacts of HBsAg-positive persons**
- **Sexual: sexual contact of HBsAg-positive persons, multiple partners, persons seeking evaluation for a sexually-transmitted infection, men who have sex with men**
- **Other**
  - Injection drug users
  - Residents and staff of facilities for developmentally-disabled persons
  - Healthcare and public safety personnel
  - Hemodialysis patients and persons with end-stage renal disease
  - International travelers to regions with high or intermediate HBV endemicity ( $\geq 2\%$ )
  - Persons with chronic liver disease (including hepatitis C virus)
  - Persons with HIV infection
  - Adults with diabetes mellitus\*

# Reported Number of Acute Hepatitis B Cases – United States, 2000-2015

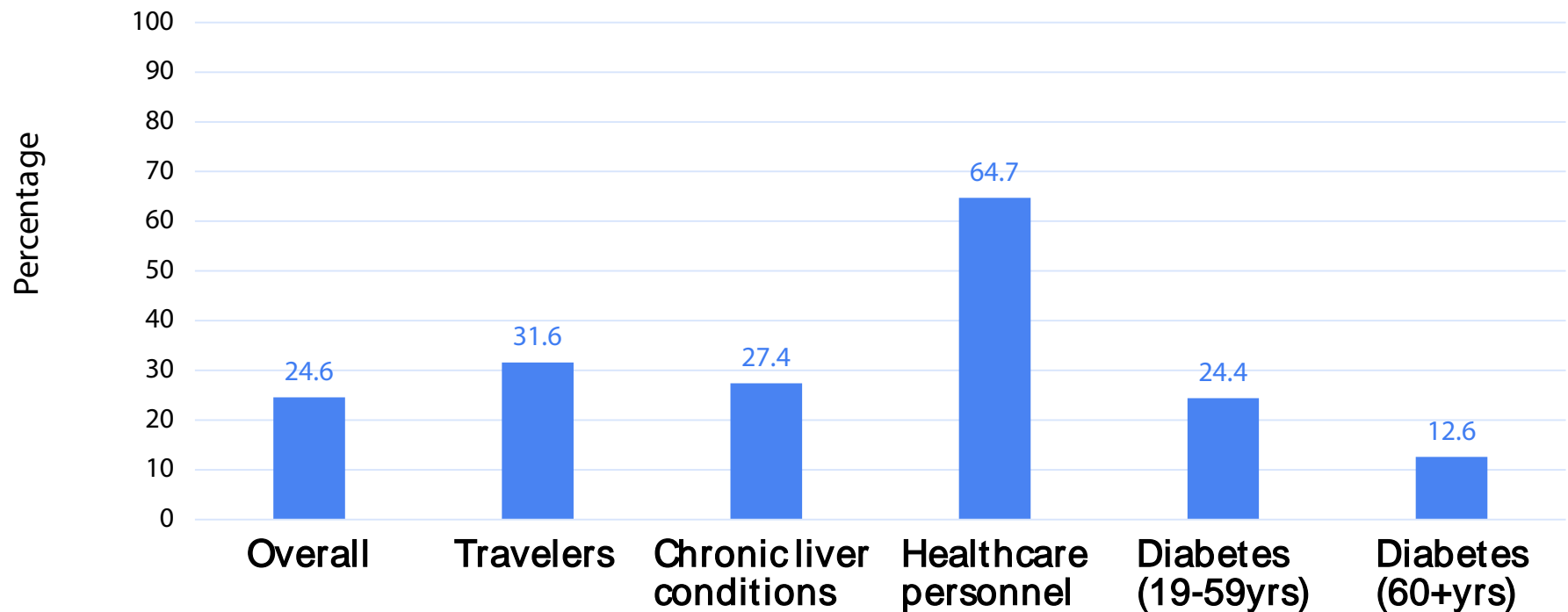


\*Health care providers, MSM, IDU, hemodialysis patients, household & sexual partners of persons with chronic HBV, persons in certain institutional settings, e.g., inmates of long-term correctional facilities.

# Rates of Reported Acute Hepatitis B by Age Group – United States, 2000-2015



# Hepatitis B Vaccine Coverage ( $\geq 3$ doses) Among Adults age $\geq 19$ years<sup>1</sup>, National Health Interview Survey (NHIS) – United States, 2015



<sup>1</sup>19-59yrs and 60+yrs for adults with diabetes

# Hepatitis B Vaccination Program Implementation in Settings in which a High Proportion of Adults have Hepatitis B-Related Risk Factors – United States 2012-2015

- To improve HepB vaccination of high risk adults, CDC funded fourteen local and state health departments (“awardees”: AL, Chicago, FL, KY, LA, MD, MI, NV, New York City, OR, San Antonio, TN, VA, WV) to implement hepatitis B vaccination programs
- Awardees provided CDC with standardized reports regarding vaccination activities, high risk settings partners, doses administered, 3-dose series completion, and program challenges and successes
- From September 2012 through September 2015, 161,171 HepB vaccine doses were distributed and 139,110 doses (86.3%) were administered at 459 settings, including correctional facilities
  - Challenges included incorporating vaccination services and tracking vaccine doses administered in settings without dedicated vaccination staff

# Hepatitis B Vaccination Dose-Series Completion Among Persons Who Received a 1<sup>st</sup> Dose and For Whom Patient-Level Vaccination Information Was Available, September 2012-2015\*

<b>Dose</b>	<b>Total Doses Given</b>	<b>Range of percent receiving HepB series among those received 1<sup>st</sup> dose</b>	<b>Average percent receiving HepB series among those received 1<sup>st</sup> dose</b>
<b>1st dose</b>	29,457	--	--
<b>2nd dose</b>	11,897	18.5% - 67.6%	40.4%
<b>3rd dose</b>	6,557	6.2% - 46.1%	22.3%

\*Six of the 14 awardees HepB pilot project awardees were able to track dose series (Chicago, Michigan, Maryland, New York City, Oregon, San Antonio). Data tracking issues (e.g., coding errors in distinguishing doses funded by the pilot and doses funded by other sources) resulted in some over counting and under counting of doses for some awardees.

If persons received hepatitis B vaccine outside of the pilot project, it was not tracked.



# Completion of HepB Vaccine Series among Vaccine Safety Datalink Adult Enrollees

Completed 3-dose series			Did not complete 3-dose series	
Completed 3-dose series within 1 year of 1st dose (n=88,711)	Completed 3-dose series 1-2 years after 1st dose	Completed 3-dose series >2 years after 1st dose	Received 1 dose	Received 2 doses
41.4-62.2%	2.8-4.9%	2.0-4.6%	15.1-25.7%	12.5-21.2%

# Cost-Effectiveness

		Patients with Diabetes	Healthcare Workers	Travelers
HEPLISAV-B (\$100/dose)	Discounted Cost	\$25,373,976	\$120,183,203	\$26,225,377
	Discounted QALY	1,442,023	2,799,372	2,799,206
Engerix-B (\$52.50/dose)	Discounted Cost	\$23,584,710	\$119,466,431	\$24,934,339
	Discounted QALY	1,441,881	2,799,307	2,798,974
	Incremental Cost	\$1,789,266	\$716,772	1,291,038
	Incremental QALY	142	65	232
	<b>ICER</b>	<b>\$12,613</b>	<b>\$11,062</b>	<b>\$5,564</b>

*Table was adapted from published article*

Kuan RK, Janssen R, Heyward W, Bennett S, Nordyke R. Cost-effectiveness of hepatitis B vaccination using HEPLISAV™ in selected adult populations compared to Engerix-B® vaccine. Vaccine. 2013 Aug 20;31(37):4024-32.

# Limitations of Existing Hepatitis B Vaccines

- Require 3 doses administered over 6 months\*
- Reduced seroprotection in some populations:
  - Diabetes ( $\geq 90\%$  for aged  $\leq 40$  yrs;  $< 40\%$  for aged  $\geq 70$  yrs)<sup>1</sup>
  - Renal disease (77% hemodialysis patients)<sup>2</sup>
  - Immunosuppressed
  - Obese
  - Elderly
  - Smokers

\*Minimum interval between dose 1 and 3 = 16 weeks

<sup>1</sup>Murphy TM, et al.; MMWR 2011 Dec 23;60(1709-1811)

<sup>2</sup>Cordova E, et al; Ann Ig 2017;29(27-37)

# Work Group Considerations

- **Compelling evidence of HEPLISAV-B immunogenicity**
- **Administration benefits (2-dose over 1 month)**
- **Favorable cost-effectiveness**
- **Need for post-marketing cardiovascular surveillance to address major adverse cardiac event findings**

# Work Group Considerations

## ■ Pros

- Increased immunogenicity, particularly in high-risk populations
- Administration:
  - 2-dose series over 1 month
- Coverage
  - Potential for increased series completion

## ■ Cons

- In one study, acute myocardial infarction was reported in a higher proportion of HEPLISAV-B than Engerix-B recipients

# Proposed Policy Option Language

- **HEPLISAV-B vaccine may be used for adults  $\geq 18$  years of age on a 2-dose schedule over 1 month**

# Work Group Summary

- **HEPLISAV-B results in high levels of seroprotection**
  - Including among populations with reduced immunogenicity to HepB vaccination
- **HEPLISAV-B vaccine series consisting of two-doses administered over 1-month will likely improve coverage for series completion**
- **Most safety outcomes balanced between HEPLISAV-B and comparator**
- **In the HBV-23 study, acute myocardial infarction was reported in a higher proportion of HEPLISAV-B than Engerix-B recipients**
  - Safety will be monitored in post-marketing studies

For more information, contact CDC  
1-800-CDC-INFO (232-4636)  
TTY: 1-888-232-6348 [www.cdc.gov](http://www.cdc.gov)

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

