

Hepatitis B and Hepatitis B Vaccine

Revised August 2015

Hepatitis B

- ❑ Epidemic jaundice described by Hippocrates in 5th century BCE
- ❑ Jaundice reported among recipients of human serum and yellow fever vaccines in 1930s and 1940s
- ❑ Australia antigen described in 1965
- ❑ Serologic tests developed in 1970s

Hepatitis B Virus

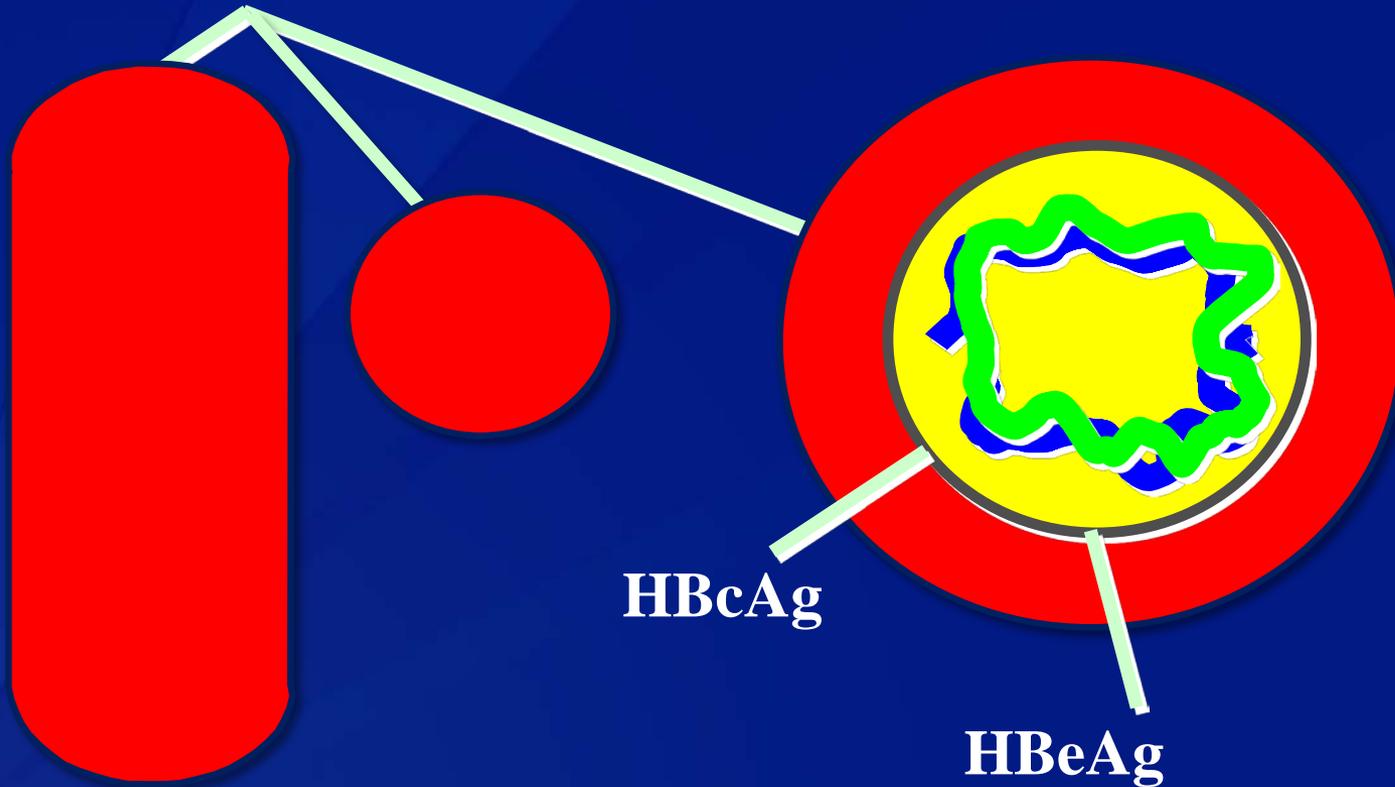
- ❑ Hepadnaviridae family (DNA)
- ❑ Numerous antigenic components
- ❑ Humans are only known host
- ❑ May retain infectivity for more than 7 days at room temperature

Hepatitis B Virus Infection

- ❑ 700,000 – 1.4 million chronic infections in US
- ❑ 240 million chronically infected worldwide
- ❑ Established cause of chronic hepatitis and cirrhosis
- ❑ Human carcinogen—cause of up to 50% of hepatocellular carcinomas
- ❑ Causes about 780,000 deaths worldwide
 - <http://www.cdc.gov/Features/worldhepatitisday/index.html>

Hepatitis B Virus

HBsAg (Australia antigen)



HBcAg

HBeAg

(presence indicates high infectivity)

Hepatitis B clinical Features

- ❑ Incubation period 45-160 days (average 120 days)
- ❑ Illness not specific for hepatitis B
- ❑ Nonspecific prodrome of malaise, fever, headache, myalgia
- ❑ At least 50% of infections asymptomatic

Hepatitis B Complications

- ❑ Fulminant hepatitis (1%-2%)
- ❑ Hospitalization
- ❑ Cirrhosis
- ❑ Hepatocellular carcinoma
- ❑ Death



Chronic Hepatitis B Virus Infection

- ❑ Responsible for most mortality
- ❑ 3,000–4,000 HBV cirrhosis deaths
- ❑ 1,000–1,500 HBV related liver cancer deaths
- ❑ Often asymptomatic

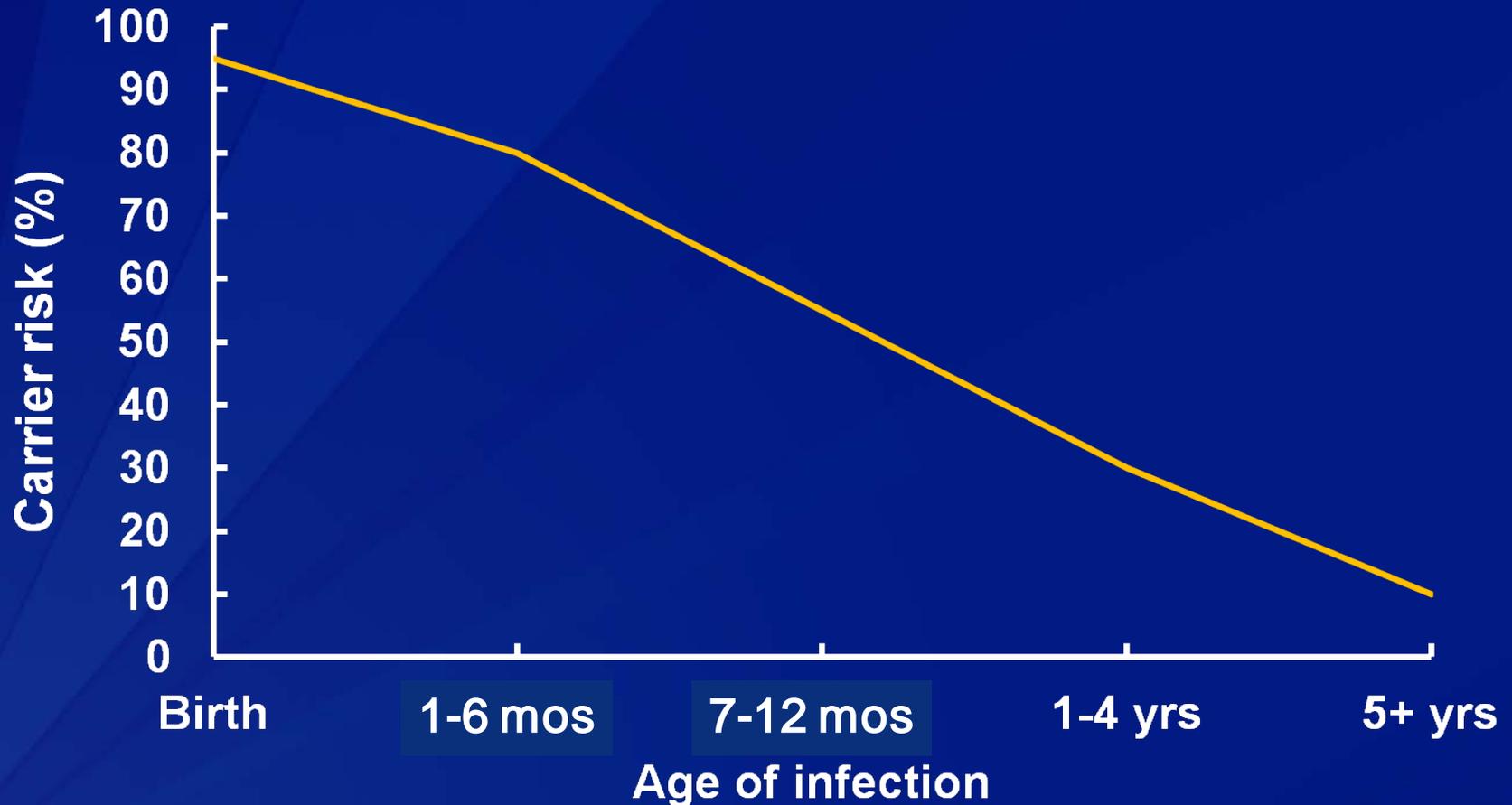
Hepatitis B Perinatal Transmission*

- ❑ If mother positive for HBsAg and HBeAg
 - 70%-90% of infants infected
 - 90% of infected infants become chronically infected

- ❑ If positive for HBsAg
 - only 10% of infants infected
 - 90% of infected infants become chronically infected

*in the absence of postexposure prophylaxis

Risk of Chronic HBV Carriage

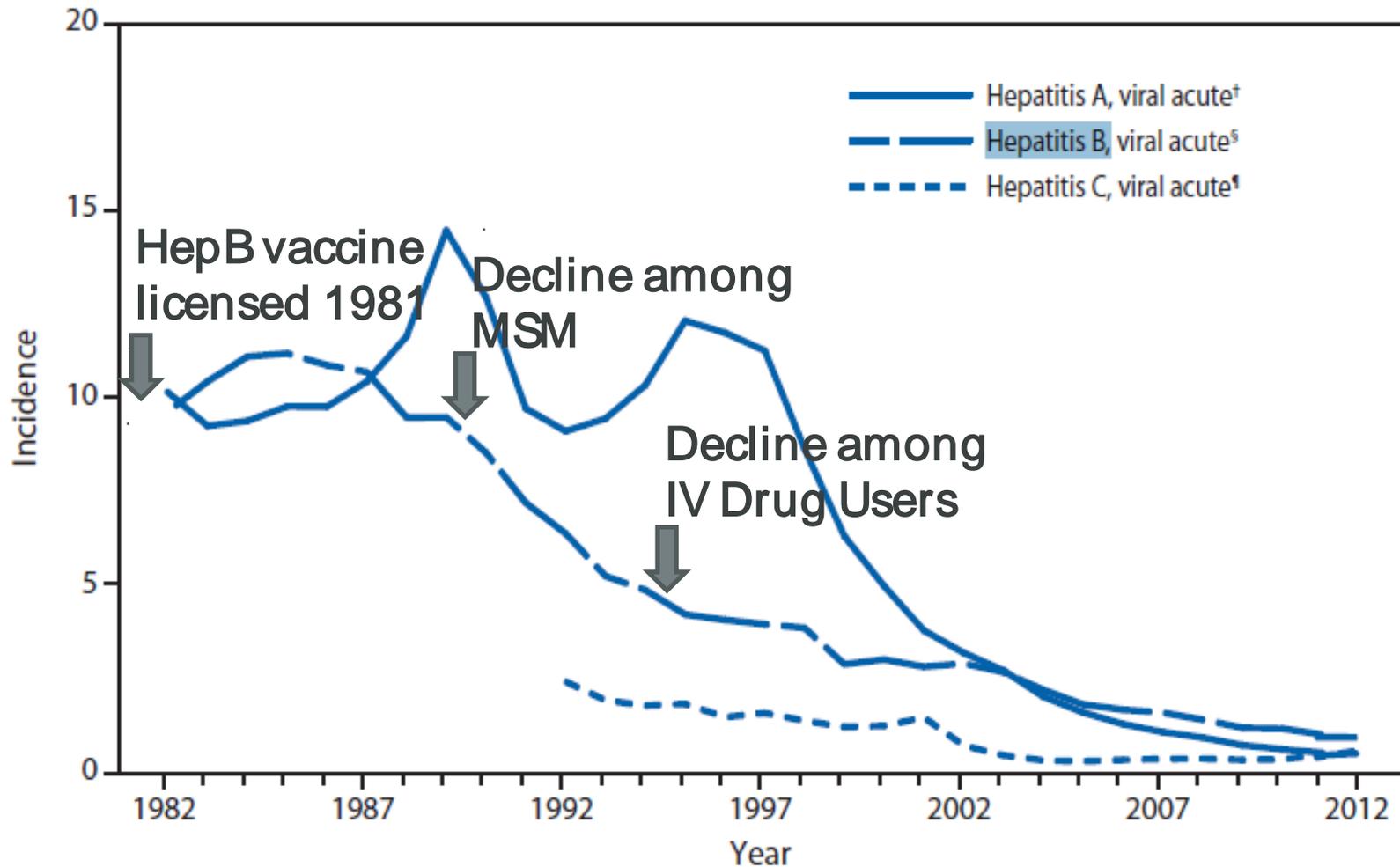


Hepatitis B Epidemiology

- Reservoir Human
- Transmission Bloodborne
Subclinical cases transmit

1-2 months before and
after onset of symptoms
- Communicability Persons with either acute
or chronic HBV infection
with HBsAg present in
blood

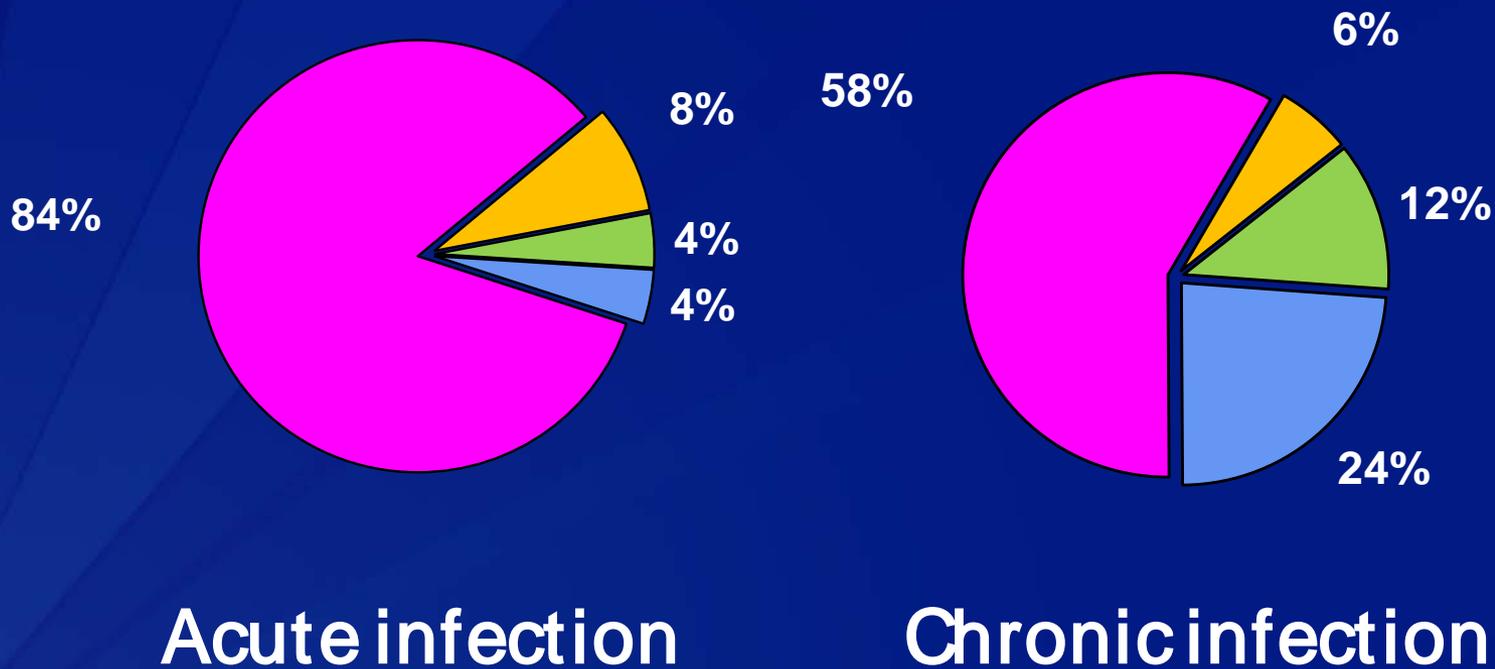
HEPATITIS, VIRAL. Incidence,* by year — United States, 1982–2012



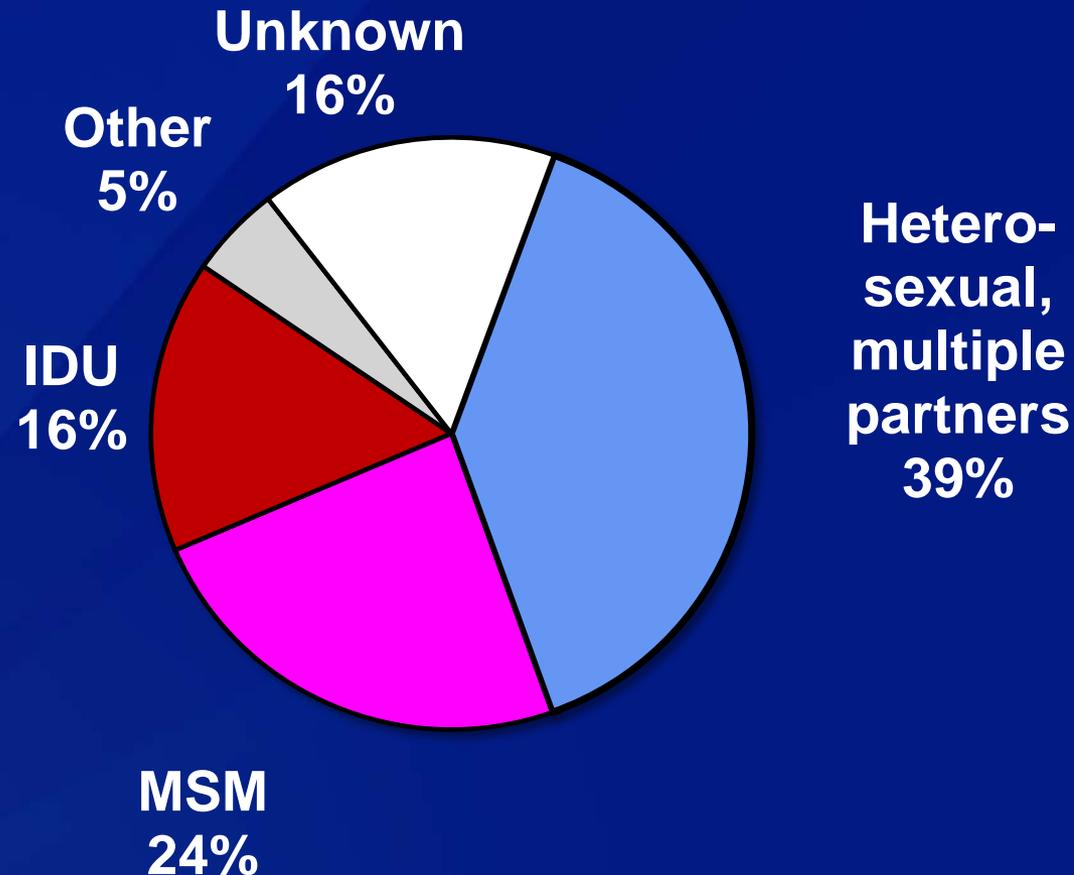
* Per 100,000 population.

Age of Infection of Acute and Chronic Hepatitis B Virus Infection

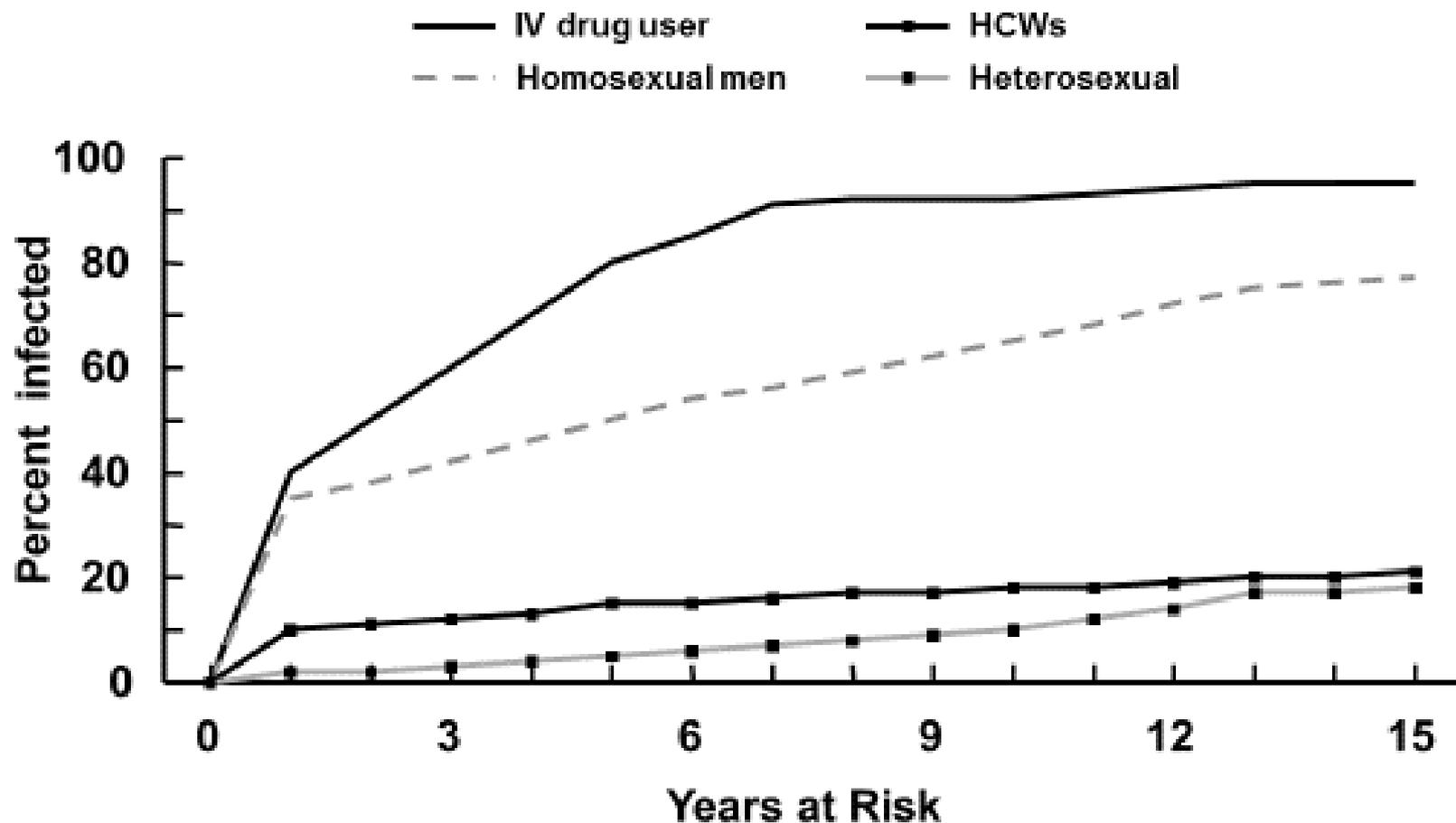
■ Adolescent ■ Children ■ Perinatal ■ Adult



Risk Factors for Hepatitis B



Hepatitis B Virus Infection by Duration of High-Risk Behavior



Strategy to Eliminate Hepatitis B Virus Transmission—United States

- ❑ Prevent perinatal HBV transmission
- ❑ Routine vaccination of all infants
- ❑ Vaccination of children in high-risk groups
- ❑ Vaccination of adolescents
- ❑ Vaccination of adults in high-risk groups

Hepatitis B (HepB) Vaccine

- ❑ **Composition** Recombinant HBsAg
- ❑ **Efficacy** 95% (Range, 80%-100%)
- ❑ **Duration of Immunity** 20 years or more
- ❑ **Schedule** 3 Doses
- ❑ **Booster doses not routinely recommended**

HepB Vaccine Indications

- ❑ All children through 18 years of age beginning at birth
- ❑ Persons 19 years and older at increased risk of exposure because of behavior (multiple sexual partners, injection drug use) or occupation (exposure to blood or sharps injury)

HepB Vaccine Formulations

□ Recombivax HB (Merck)

- 5 mcg/0.5 ml (pediatric)
- 10 mcg/1 ml (adult)
- 40 mcg/1 ml (dialysis)

□ Engerix-B (GSK)

- 10 mcg/0.5 ml (pediatric)
- 20 mcg/1 ml (adult)

Recommended Dosage of Hep B Vaccine

	Recombivax HB Dose (mcg)	Enerix-B Dose (mcg)
Infants and children younger than 11 years of age	0.5 mL (5)	0.5 mL (10)
Adolescents 11-19 years	0.5 mL (5)	0.5 mL (10)
Adults 20 years of age and older	1.0 mL (10)	1.0 mL (20)

Figure 1. Recommended Immunization schedule for persons aged 0 through 18 years – United States, 2015.

(FOR THOSE WHO FALL BEHIND OR START LATE, SEE THE CATCH-UP SCHEDULE [FIGURE 2]).

These recommendations must be read with the footnotes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars in Figure 1. To determine minimum intervals between doses, see the catch-up schedule (Figure 2). School entry and adolescent vaccine age groups are shaded.

Vaccine	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19–23 mos	2–3 yrs	4–6 yrs	7–10 yrs	11–12 yrs	13–15 yrs	16–18 yrs
Hepatitis B ¹ (HepB)	1 st dose	← 2 nd dose →		← 3 rd dose →												
Rotavirus ² (RV) RV1 (2-dose series); RV5 (3-dose series)			1 st dose	2 nd dose	See footnote 2											
Diphtheria, tetanus, & acellular pertussis ³ (DTaP; <7 yrs)			1 st dose	2 nd dose	3 rd dose			← 4 th dose →				5 th dose				
Tetanus, diphtheria, & acellular pertussis ⁴ (Tdap; ≥7 yrs)														(Tdap)		
Haemophilus influenzae type b ⁵ (Hib)			1 st dose	2 nd dose	See footnote 5		← 3 rd or 4 th dose → See footnote 5									
Pneumococcal conjugate ⁶ (PCV13)			1 st dose	2 nd dose	3 rd dose			← 4 th dose →								
Pneumococcal polysaccharide ⁶ (PPSV23)																
Inactivated poliovirus ⁷ (IPV; <18 yrs)			1 st dose	2 nd dose	← 3 rd dose →						4 th dose					
Influenza ⁸ (IN; LAV) 2 doses for some: See footnote 8					Annual vaccination (IV only) 1 or 2 doses					Annual vaccination (LAV or IV) 1 or 2 doses		Annual vaccination (LAV or IV) 1 dose only				
Measles, mumps, rubella ⁹ (MMR)					See footnote 9		← 1 st dose →					2 nd dose				
Varicella ¹⁰ (VAR)							← 1 st dose →					2 nd dose				
Hepatitis A ¹¹ (HepA)							← 2-dose series, See footnote 11 →									
Human papillomavirus ¹² (HPV2: females only; HPV4: males and females)														(3-dose series)		
Meningococcal ¹³ (Hib-MenCY ≥ 6 weeks; MenACWY-D ≥ 9 mos; MenACWY-CRM ≥ 2 mos)			See footnote 13										1 st dose			Booster

Range of recommended ages for all children
 Range of recommended ages for catch-up immunization
 Range of recommended ages for certain high-risk groups
 Range of recommended ages during which catch-up is encouraged and for certain high-risk groups
 Not routinely recommended

This schedule includes recommendations in effect as of January 1, 2015. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. The use of a combination vaccine generally is preferred over separate injections of its equivalent component vaccines. Vaccination providers should consult the relevant Advisory Committee on Immunization Practices (ACIP) statement for detailed recommendations, available online at <http://www.cdc.gov/vaccines/hcp/acip-recs/index.html>. Clinically significant adverse events that follow vaccination should be reported to the Vaccine Adverse Event Reporting System (VAERS) online (<http://www.vaers.hhs.gov>) or by telephone (800-822-7967). Suspected cases of vaccine-preventable diseases should be reported to the state or local health department. Additional information, including precautions and contraindications for vaccination, is available from CDC online (<http://www.cdc.gov/vaccines/recs/vac-admin/contraindications.htm>) or by telephone (800-CDC-INFO [800-232-4636]).

This schedule is approved by the Advisory Committee on Immunization Practices (<http://www.cdc.gov/vaccines/acip/>), the American Academy of Pediatrics (<http://www.aap.org>), the American Academy of Family Physicians (<http://www.aafp.org>), and the American College of Obstetricians and Gynecologists (<http://www.acog.org>).

NOTE: The above recommendations must be read along with the footnotes of this schedule.

Prevention of Perinatal Hepatitis B Virus Infection

- ❑ Begin treatment within 12 hours of birth
- ❑ HepB vaccine (first dose) and HBIG at different sites
- ❑ Complete vaccination series at 6 months of age
- ❑ Test for response after completion of at least 3 doses of the HepB series at 9 through 18 months of age (generally at the next well-child visit)

Preterm Infants

- ❑ Birth dose and HBIG if mother HBsAg positive (within 12 hours of birth)
- ❑ Preterm infants who weigh less than 2,000 grams have a decreased response to vaccine administered before 1 month of age
- ❑ Delay first dose until chronologic age 1 month if mother **documented** to be HBsAg negative **at the time of birth**

Hep B Vaccine

Routine Infant Schedule

Dose+	Usual Age	Minimum Interval
Primary 1	Birth	--
Primary 2	1- 2 months	4 weeks
Primary 3+	6-18 months*	8 weeks**

* Infants whose mothers are HBsAg+ or whose HBsAg status is unknown should receive the third dose at 6 months of age

** At least 16 weeks after the first dose

+ An additional dose at 4 months is acceptable if the clinician prefers to use a combination vaccine that contains hepatitis B vaccine

Third Dose of Hep B Vaccine

- ❑ Minimum of 8 weeks after second dose,
and
- ❑ At least 16 weeks after first dose,
and
- ❑ For infants, at least 24 weeks of age

Pediarix

- ❑ DTaP – Hep B – IPV combination
- ❑ Approved for 3 doses at 2, 4, and 6 months
- ❑ Not approved for booster doses
- ❑ Approved for children 6 weeks to 7 years of age

Pediarix

- ❑ Minimum age 6 weeks
 - Cannot be used for HepB birth dose
- ❑ Can be given at 2, 4, and 6 months in infants who received a birth dose of HepB vaccine (total of 4 doses)
- ❑ May be used in infants whose mothers are HBsAg positive or status unknown*

*ACIP off-label recommendation

Comvax

- ❑ Hepatitis B-Hib (PRP-OMP) combination
- ❑ Removed from existing contracts and pricing programs
- ❑ Listed as “Discontinued” on FDA website
- ❑ Unexpired vaccine can be administered

Combination Vaccine Rule

- ❑ The minimum intervals between doses of a combination vaccine are dictated by the single antigen with the longest minimum intervals
- ❑ For Pediarix, the minimum intervals are determined by the hepatitis B component

Hep B Vaccine

Adolescent Vaccination

- ❑ Routine vaccination recommended through age 18 years
- ❑ Integrate into routine adolescent immunization visit
- ❑ Flexible schedules

Hep B Vaccine

Adolescent and Adult Schedule

Dose	Usual Interval	Minimum Interval
Primary 1	---	---
Primary 2	1 month	4 weeks
Primary 3	5 months	8 weeks*

* Third dose must be separated from first dose by at least 16 weeks

Alternative Adolescent Vaccination Schedule

- ❑ Two 1.0 mL (10 mcg) doses of Recombivax HB separated by 4 to 6 months
- ❑ Approved only for adolescents through 15 years of age 11
- ❑ Only applies to Merck HepB vaccine

Figure 2. Vaccines that might be indicated for adults based on medical and other indications¹

VACCINE ▼	INDICATION ►	Pregnancy	Immuno-compromising conditions (excluding human immunodeficiency virus [HIV]) ^{4,6,7,8,13}	HIV infection CD4+ T lymphocyte count ^{4,6,7,8,13}		Men who have sex with men (MSM)	Kidney failure, end-stage renal disease, receipt of hemodialysis	Heart disease, chronic lung disease, chronic alcoholism	Asplenia (including elective splenectomy and persistent complement component deficiencies) ^{8,12}	Chronic liver disease	Diabetes	Healthcare personnel
				< 200 cells/μL	≥ 200 cells/μL							
Influenza ^{2,3}			1 dose IIV annually				1 dose IIV or LAIV annually	1 dose IIV annually				1 dose IIV or LAIV annually
Tetanus, diphtheria, pertussis (Td/Tdap) ^{2,3}		1 dose Tdap each pregnancy	Substitute 1-time dose of Tdap for Td booster; then boost with Td every 10 yrs									
Varicella ⁴		Contraindicated				2 doses						
Human papillomavirus (HPV) Female ^{4,5}		3 doses through age 26 yrs				3 doses through age 26 yrs						
Human papillomavirus (HPV) Male ^{4,5}		3 doses through age 26 yrs				3 doses through age 21 yrs						
Zoster ⁶		Contraindicated				1 dose						
Measles, mumps, rubella (MMR) ⁷		Contraindicated				1 or 2 doses						
Pneumococcal 13-valent conjugate (PCV13) ⁸						1 dose						
Pneumococcal polysaccharide (PPSV23) ⁸						1 or 2 doses						
Meningococcal ⁹						1 or more doses						
Hepatitis A ¹⁰						2 doses						
Hepatitis B ¹¹						3 doses						
Haemophilus influenzae type b (Hib) ¹²		post-HSCT recipients only				1 or 3 doses						

¹Covered by the Vaccine Injury Compensation Program



For all persons in this category who meet the age requirements and who lack documentation of vaccination or have no evidence of previous infection; zoster vaccine recommended regardless of prior episode of zoster



Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indications)



No recommendation

VACCINE ▼	INDICATION ►	Pregnancy	Immuno-compromising conditions (excluding human immunodeficiency virus [HIV]) ^{4,6,7,8,15}	HIV infection CD4+ T lymphocyte count ^{4,6,7,8,15}		Men who have sex with men (MSM)	Kidney failure, end-stage renal disease, receipt of hemodialysis	Heart disease, chronic lung disease, chronic alcoholism	Asplenia (including elective splenectomy and persistent complement component deficiencies) ^{8,14}	Chronic liver disease	Diabetes	Healthcare personnel
				< 200 cells/μL	≥ 200 cells/μL							
Hepatitis B ^{13,4}			3 doses									

Adults at Risk for HBV Infection

□ Sexual exposure

- Sex partners of HBsAg-positive persons
- Sexually active persons not in a long-term, mutually monogamous relationship*
- Persons seeking evaluation or treatment for a sexually transmitted disease
- Men who have sex with men

* Persons with more than one sex partner during the previous 6 months

Adults at Risk for HBV Infection

- ❑ Percutaneous or mucosal exposure to blood
 - Current or recent IDU
 - Household contacts of HBsAg-positive persons
 - Residents and staff of facilities for developmentally disabled persons
 - Healthcare and public safety workers with risk for exposure to blood or blood-contaminated body fluids
 - Persons with end-stage renal disease
 - Persons with diabetes mellitus

❑ CDC has become increasingly concerned about risks for transmitting HBV during assisted blood glucose monitoring and insulin administration

❑ In the last 10 years, at least 15 outbreaks of HBV have been associated with providers failing to follow basic principles of infection control when assisting with blood glucose monitoring, particularly in long-term care settings (e.g. nursing homes and assisted living facilities)

The screenshot shows the CDC website interface. At the top, it says 'CDC Home' and 'Centers for Disease Control and Prevention' with the tagline 'CDC 24/7: Saving Lives. Protecting People. Saving Money through Prevention.' Below this is an 'A-Z Index' navigation bar. The main content area is titled 'Injection Safety' and features a sidebar with a menu. The selected menu item is 'Infection Prevention during Blood Glucose Monitoring and Insulin Administration'. The main content area has a sub-header for the same topic and a 'Summary' section. The summary states that CDC is increasingly concerned about the risks of transmitting hepatitis B virus (HBV) and other infectious diseases during assisted blood glucose monitoring and insulin administration. It lists infection control requirements: 1) Fingerstick devices should never be used for more than one person. 2) Whenever possible, blood glucose meters should not be shared; if they must be shared, they should be cleaned and disinfected after every use. 3) Insulin pens and other medication cartridges and syringes are for single-patient-use only and should never be used for more than one person. There is also a 'Related Links' section with links to 'One & Only Campaign', 'HICPAC', '2007 Guideline for Isolation Precautions', and 'HHS Action Plan to Prevent HAIs'. A 'Top of page' link is visible at the bottom right of the summary section.

CDC Home
Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People. Saving Money through Prevention.

A-Z Index A B C D E F G H I J K L M N O P Q R S T U V W X Y Z #

Injection Safety

Infection Safety

- CDC's Role
- Information for Providers
- Information for Patients
- Preventing Unsafe Injection Practices
- Infection Prevention during Blood Glucose Monitoring and Insulin Administration**
- FAQs regarding Assisted Blood Glucose Monitoring and Insulin Administration
- Recent Publications
- Recent Meetings
- The One & Only Campaign

[Infection Safety](#)

Infection Prevention during Blood Glucose Monitoring and Insulin Administration

Summary

The Centers for Disease Control and Prevention (CDC) has become increasingly concerned about the risks for transmitting hepatitis B virus (HBV) and other infectious diseases during assisted blood glucose (blood sugar) monitoring and insulin administration.

CDC is alerting all persons who assist others with blood glucose monitoring and/or insulin administration of the following infection control requirements:

- Fingerstick devices should **never** be used for more than one person
- Whenever possible, blood glucose meters should **not** be shared. If they must be shared, the device should be cleaned and disinfected after every use, per manufacturer's instructions. If the manufacturer does not specify how the device should be cleaned and disinfected then it should not be shared.
- Insulin pens and other medication cartridges and syringes are for single-patient-use only and should **never** be used for more than one person

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Blood Glucose Monitoring and Insulin Administration

Monitoring of blood glucose levels is frequently performed to guide therapy for persons with diabetes. Blood glucose monitoring and insulin administration can be accomplished in two ways: self-monitoring of blood glucose and insulin administration, where the individual performs all steps of the testing and insulin administration themselves, and assisted monitoring of blood glucose and insulin administration, where another person assists with or performs testing and insulin administration for an individual.

ACIP Recommendation for Diabetics

- ❑ HepB vaccine (3-dose series) **should** be administered to unvaccinated adults (19 through 59 years of age) with diabetes (insulin and non-insulin dependent)
- ❑ HepB vaccine (3-dose series) **may** be administered to unvaccinated adults (60 years of age and older) with diabetes (insulin and non-insulin dependent)

Adults at Risk for HBV Infection

□ Other groups

- International travelers to regions with high or intermediate levels (HBsAg prevalence of 2% or higher) of endemic HBV infection
- Persons with HIV infection

Twinrix

- ❑ Combination HepA vaccine (pediatric dose) and HepB (adult dose)

- ❑ Schedules
 - 0, 1, 6 months, or
 - 0, 7, 21- 30 days and a booster dose at 12 months

- ❑ Approved for persons 18 years of age and older

Prevaccination Serologic Testing

- ❑ Not indicated before routine vaccination of infants or children
- ❑ Recommended for:
 - All persons born in Africa, Asia, the Pacific Islands, and other regions with HBsAg prevalence of 2% or higher
 - Household, sex, and needle-sharing contacts of HBsAg-positive persons
 - Men who have sex with men
 - Injection drug users
 - Certain persons receiving cytotoxic or immunosuppressive therapy

Postvaccination Serologic Testing

- ❑ Not routinely recommended following vaccination of infants, children, adolescents, or most adults

- ❑ Recommended for:
 - Chronic hemodialysis patients
 - Other immunocompromised persons
 - Persons with HIV infection
 - Sex partners of HBsAg+ persons
 - Infants born to HBsAg+ women
 - Certain healthcare personnel

Postvaccination Serologic Testing

- ❑ Healthcare personnel who have contact with patients or blood should be tested for anti-HBs (antibody to hepatitis B surface antigen) 1 to 2 months after completion of the 3-dose series

Management of Nonresponse to HepB Vaccine

- ❑ Complete a second series of 3 doses
- ❑ Should be given on the usual schedule of 0, 1, and 6 months
 - May be given on a 0,1, and 4 month or 0,2 and 4 month schedule
- ❑ Retest 1-2 months after completing the second series

Persistent Nonresponse to Hep B Vaccine

- ❑ Less than 5% of vaccinees do not develop anti-HBs after 6 valid doses
- ❑ May be nonresponder or “hyporesponder”
- ❑ Check HBsAg status
- ❑ If exposed, treat as nonresponder with postexposure prophylaxis

HepB Vaccine and HCP New Recommendations

- Management of HCP who have written documentation of a complete series of HepB vaccine doses in the past who were not tested for antibody response following the vaccination series and who now test negative for anti-HBs
 - Administer 1 dose of HepB vaccine, then test for anti-HBs 1 to 2 months later
 - If positive, stop (the person is immune)
 - If negative, complete second series

Hep B Vaccine

- ❑ Once a person has tested positive for anti-HBs, no additional testing or “booster” doses are recommended
- ❑ Provide the person with a copy of the laboratory result and advise that it be kept forever

Centers for Disease Control and Prevention

MMWR

Recommendations and Reports / Vol. 62 / No. 10

Morbidity and Mortality Weekly Report

December 20, 2013

**CDC Guidance for Evaluating Health-Care Personnel
for Hepatitis B Virus Protection and for
Administering Postexposure Management**

www.cdc.gov/mmwr/pdf/rr/rr6210.pdf

TABLE 2. Postexposure management of health-care personnel after occupational percutaneous and mucosal exposure to blood and body fluids, by health-care personnel HepB vaccination and response status

Health-care personnel status	Postexposure testing		Postexposure prophylaxis		Postvaccination serologic testing [†]
	Source patient (HBsAg)	HCP testing (anti-HBs)	HBIG*	Vaccination	
Documented responder [§] after complete series (≥3 doses)	No action needed				
Documented nonresponder [¶] after 6 doses	Positive/unknown	—**	HBIG x2 separated by 1 month	—	No
	Negative	No action needed			
Response unknown after 3 doses	Positive/unknown	<10mIU/mL**	HBIG x1	Initiate revaccination	Yes
	Negative	<10mIU/mL	None		
	Any result	≥10mIU/mL	No action needed		
Unvaccinated/incompletely vaccinated or vaccine refusers	Positive/unknown	—**	HBIG x1	Complete vaccination	Yes
	Negative	—	None	Complete vaccination	Yes

Abbreviations: HCP = health-care personnel; HBsAg = hepatitis B surface antigen; anti-HBs = antibody to hepatitis B surface antigen; HBIG = hepatitis B immune globulin.

* HBIG should be administered intramuscularly as soon as possible after exposure when indicated. The effectiveness of HBIG when administered >7 days after percutaneous, mucosal, or nonintact skin exposures is unknown. HBIG dosage is 0.06 mL/kg.

† Should be performed 1–2 months after the last dose of the HepB vaccine series (and 4–6 months after administration of HBIG to avoid detection of passively administered anti-HBs) using a quantitative method that allows detection of the protective concentration of anti-HBs (≥10 mIU/mL).

§ A responder is defined as a person with anti-HBs ≥ 10 mIU/mL after ≥3 doses of HepB vaccine.

¶ A nonresponder is defined as a person with anti-HBs <10 mIU/mL after ≥6 doses of HepB vaccine.

** HCP who have anti-HBs <10mIU/mL, or who are unvaccinated or incompletely vaccinated, and sustain an exposure to a source patient who is HBsAg-positive or has unknown HBsAg status, should undergo baseline testing for HBV infection as soon as possible after exposure, and follow-up testing approximately 6 months later. Initial baseline tests consist of total anti-HBc; testing at approximately 6 months consists of HBsAg and total anti-HBc.

Hep B Vaccine

Contraindications and Precautions

- ❑ Severe allergic reaction to a vaccine component or following a prior dose
- ❑ Moderate or severe acute illness

Hep B Vaccine Adverse Reactions

	Adults	Infants and Children
Pain at injection site	13%-29%	3%-9%
Mild systemic complaints (fatigue, headache)	11%-17%	0%-20%
Temperature greater 37.7 C	1%	0.4%-6%
Severe systemic reactions	rare	rare

Please note: An erratum has been published for this issue. To view the erratum, please click here and here.



MMWR

Morbidity and Mortality Weekly Report

Recommendations and Reports December 23, 2005 / Vol. 54 / No. RR-16

A Comprehensive Initiative to Eliminate Transmission of Hepatitis B Virus in the United States

Recommendations of the Advisory Committee on Immunization Practices
Part 1: Immunization of Infants



INSIDE: Continuing Efforts

DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION



MMWR

Morbidity and Mortality Weekly Report

Recommendations and Reports December 8, 2006 / Vol. 55 / No. RR-16

A Comprehensive Initiative to Eliminate Transmission of Hepatitis B Virus in the United States

Recommendations of the Advisory Committee on Immunization Practices
Part 2

INSIDE: Continuing Efforts

DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION

Morbidity and Mortality Weekly Report

Use of Hepatitis B Vaccination for Adults with Diabetes Mellitus: Recommendations of the Advisory Committee on Immunization Practices (ACIP)

Hepatitis B virus (HBV) causes acute and chronic infection of the liver leading to substantial morbidity and mortality. In the United States, since 1996, a total of 29 outbreaks of HBV infection in one or multiple long-term-care (LTC) facilities, including nursing homes and assisted-living facilities, were reported to CDC; of these, 25 involved adults with diabetes receiving assisted blood glucose monitoring (1; CDC, unpublished data, 2011). These outbreaks prompted the Hepatitis Vaccines Work Group of the Advisory Committee on Immunization Practices (ACIP) to evaluate the risk for HBV infection among all adults with diagnosed diabetes. The Work Group reviewed HBV infection-related morbidity and mortality and the effectiveness of implementing infection prevention and control measures. The strength of scientific evidence regarding protection was evaluated using the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) methodology,* and safety values, and cost-effectiveness were incorporated into a recommendation using the GRADE system. Based on the Work Group findings, on October 25, 2011, ACIP recommended that all previously unvaccinated adults aged 19 through 59 years with diabetes mellitus (type 1 and type 2) be vaccinated against hepatitis B as soon as possible after a diagnosis of diabetes is made (recommendation category A). Data on the risk for hepatitis B among adults aged ≥ 60 years are less robust. Therefore,

risk for HBV infection among adults with diabetes was estimated from 865 confirmed infections reported during 2009–2010 in the National Hepatitis Infections Program (NHIP) sites constituting 17% of the U.S. population. The analysis included persons aged ≥ 23 years because of high rates among younger persons. In multivariate analyses, persons without hepatitis B–related injection-drug use, male sex with a male sex partner, persons aged 23 through 59 years, and persons aged 23 through 59 years were associated with 2.1 (95% confidence interval [CI] = 1.6–2.7) times higher risk of developing acute hepatitis B as compared with persons aged ≥ 60 years. The annual incidence of acute HBV infection among adults with diabetes was 1.5 (CI = 0.9–2.5) times higher than among persons aged ≥ 60 years. The annual incidence of acute HBV infection among adults with diabetes was 1.5 (CI = 1.5–2.2) times higher than among persons aged ≥ 60 years. Acute HBV infection is underestimated; an additional 10.5% of persons likely occurred for each reported, confirmed case.

Data for the period 1999–2010 from the National Health and Nutrition Examination Survey (NHANES) representative sample of the noninstitutionalized U.S. population indicated a 60% ($p < 0.001$) higher seroprevalence of hepatitis B core antigen (indicative of

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CDC Guidance for Evaluating Health-Care Personnel for Hepatitis B Virus Protection and for Administering Postexposure Management

Continuing Education Contribution available at <http://www.cdc.gov/mmwr/ce/continuing.html>



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/hepb.html

www.cdc.gov/mmwr/pdf/rr/rr6210.pdf



Hepatitis B Resources

- ❑ ACIP's Hepatitis B Recommendations web page
www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/hepb.html
- ❑ CDC's Hepatitis B Infection web page
www.cdc.gov/hepatitis/HBV/index.htm
- ❑ CDC's Hepatitis B Vaccination web page
www.cdc.gov/vaccines/vpd-vac/hepb/default.htm
- ❑ Immunization Action Coalition Hepatitis B web page
www.immunize.org/hepatitis-b/
- ❑ Children's Hospital of Philadelphia Vaccine Education Center Hepatitis B web page
www.chop.edu/service/vaccine-education-center/a-look-at-each-vaccine/hepatitis-b-vaccine.html