

Risk of Hepatitis B among Healthcare Personnel

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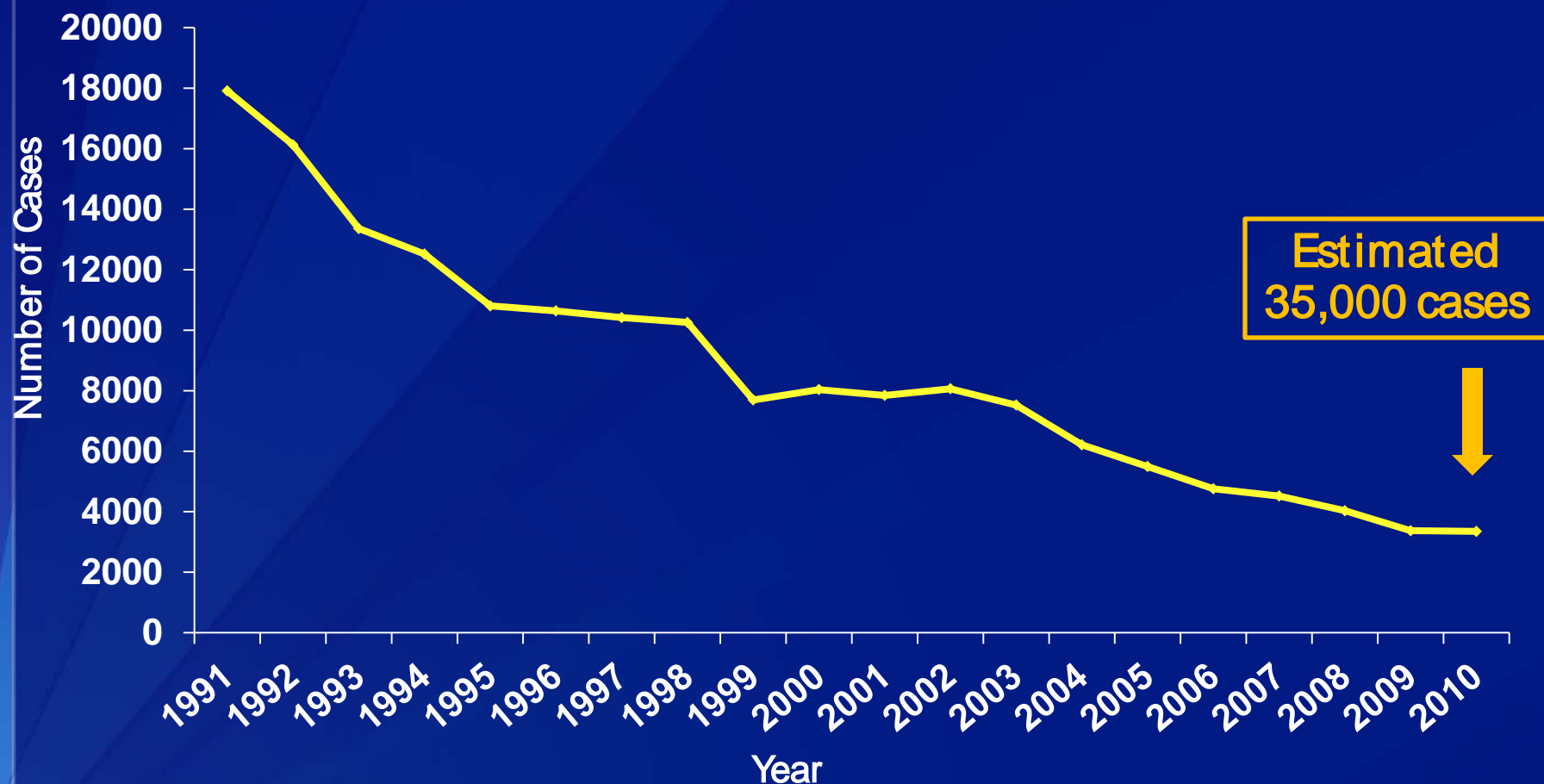
Division of Viral Hepatitis



Overview

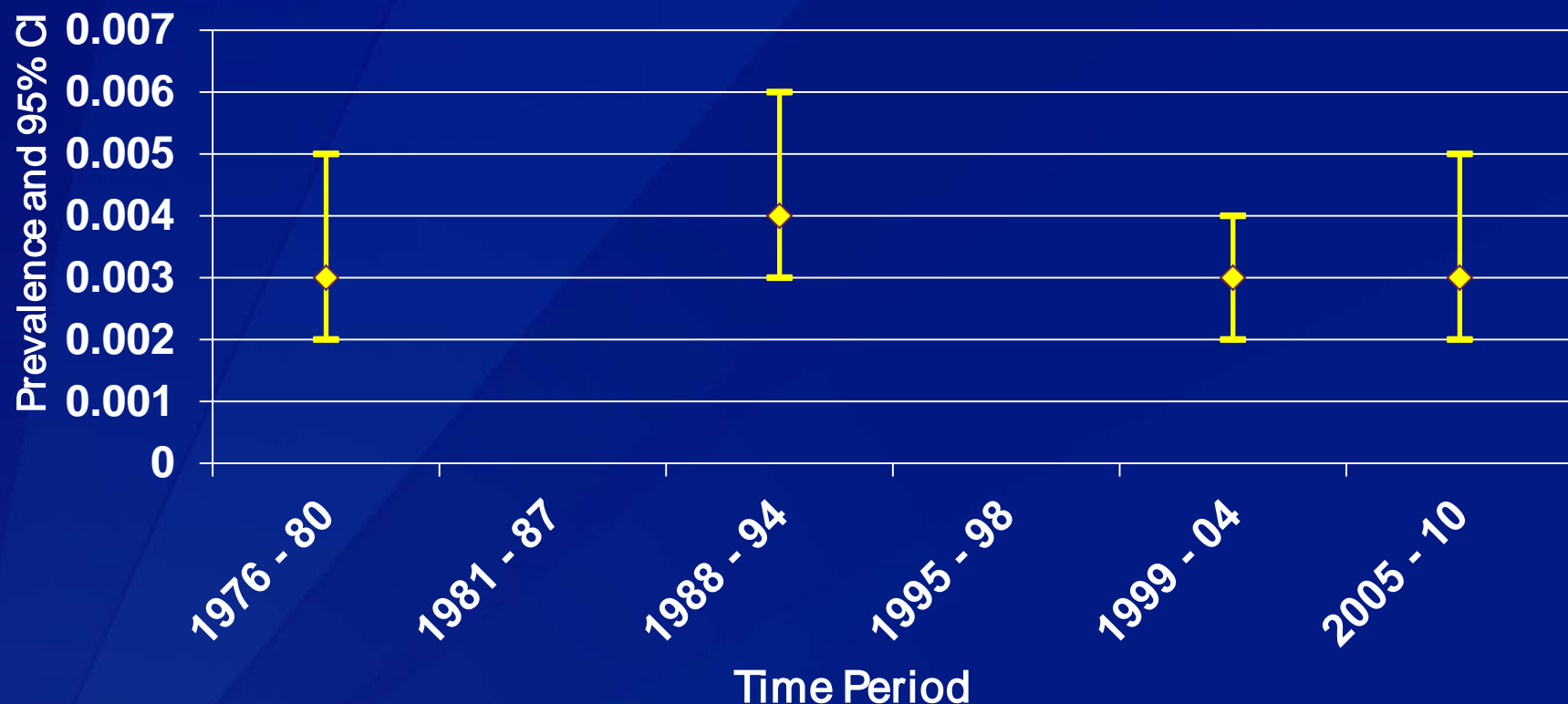
- ❑ Changing epidemiology of hepatitis B
- ❑ Hepatitis B (HepB) vaccine coverage among healthcare personnel (HCP)
- ❑ Risk and reporting of occupational blood and body fluid exposures
- ❑ Acute hepatitis B among HCP

Number of Reported Acute Hepatitis B Cases (U.S.) — NNDSS, 1991–2010



NNDSS=National Notifiable Diseases Surveillance System

Weighted Prevalence of Chronic Hepatitis B¹ (U.S.) — NHANES, 1976–2010



Estimated 800,000 to 1.4 million persons with chronic Hepatitis B in U.S.

NHANES=National Health and Nutrition Examination Survey

¹Chronic Hepatitis B defined as the presence of both hepatitis B surface antigen (HBsAg) and antibody to hepatitis B core antigen (anti-HBc), prepared by H. Roberts

Prevalence of Chronic Hepatitis B among Selected Populations

Population	Prevalence	Source
US population (overall)	0.3%	Wasley 2010
Alaska Natives	1% - 2%	Personal communication ¹
Inmates	1% - 4%	MMWR 2003/52 (RR01)
Injection drug users	3%	MMWR 2006/55 (RR16)
US immigrants	4% - 11%	Mitchell 2011
HIV-positive persons	6% - 14%	MMWR 2006/55 (RR16)
API in NYC	12% - 24%	Wang 2011

❑ 0.9%² of source patients HBsAg-positive

API=Asian Pacific Islanders

¹Brian McMahon and Brenna Simons, Alaska Native Tribal Health Consortium

²Representing 7,170 exposures from three healthcare institutions

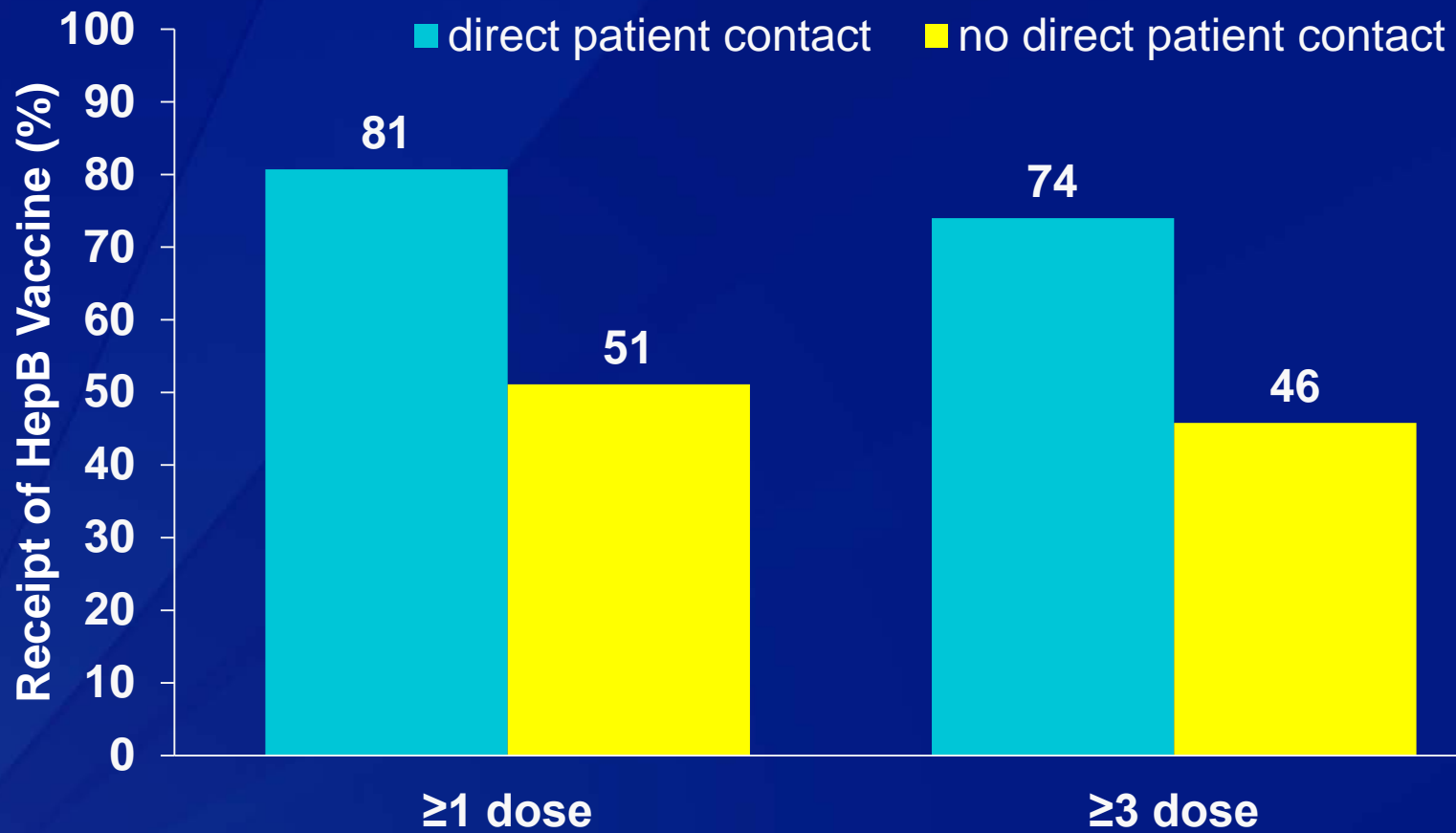
Decline in Hepatitis B Infections among HCP

- ❑ Hepatitis B infections among HCP:
 - 1983: 17,000 cases estimated¹
 - 2010: 10 cases reported, 263² cases estimated
- ❑ Decline attributed to:
 - HepB vaccination
 - Improvements in infection control

¹Beltrami 2000

²Surveillance data, considering that occupational history was assessed for 43.6% of cases and using a correction factor of 10.5 to account for underreporting and asymptomatic infection

Proportion of HCP who Received HepB Vaccine by Patient Contact Status—NHIS, 2010



NHIS=National Health Interview Survey, provided by K. Byrd

Risk and Reporting of Occupational Blood and Body Fluid Exposures

	Trainee	Non-Trainee
Risk (annual)		
Percutaneous injury ¹	18%	10%
Mucosal exposure ²	22%	13%
Proportion of exposures reported to occupational health		
Percutaneous injury ¹	54%	54%
Mucosal exposure ²	17%	17%

¹Needlesticks, cuts, or bites

²Blood or body fluid contact with mucus membranes or non-intact skin

OSHA Bloodborne Pathogens Standard

- ❑ States what employers must do to protect workers who are occupationally exposed to blood or other potentially infectious materials
 - Includes offering HepB vaccine at no-cost to worker
- ❑ Unpaid trainees and volunteers not covered
- ❑ Effective since 1992

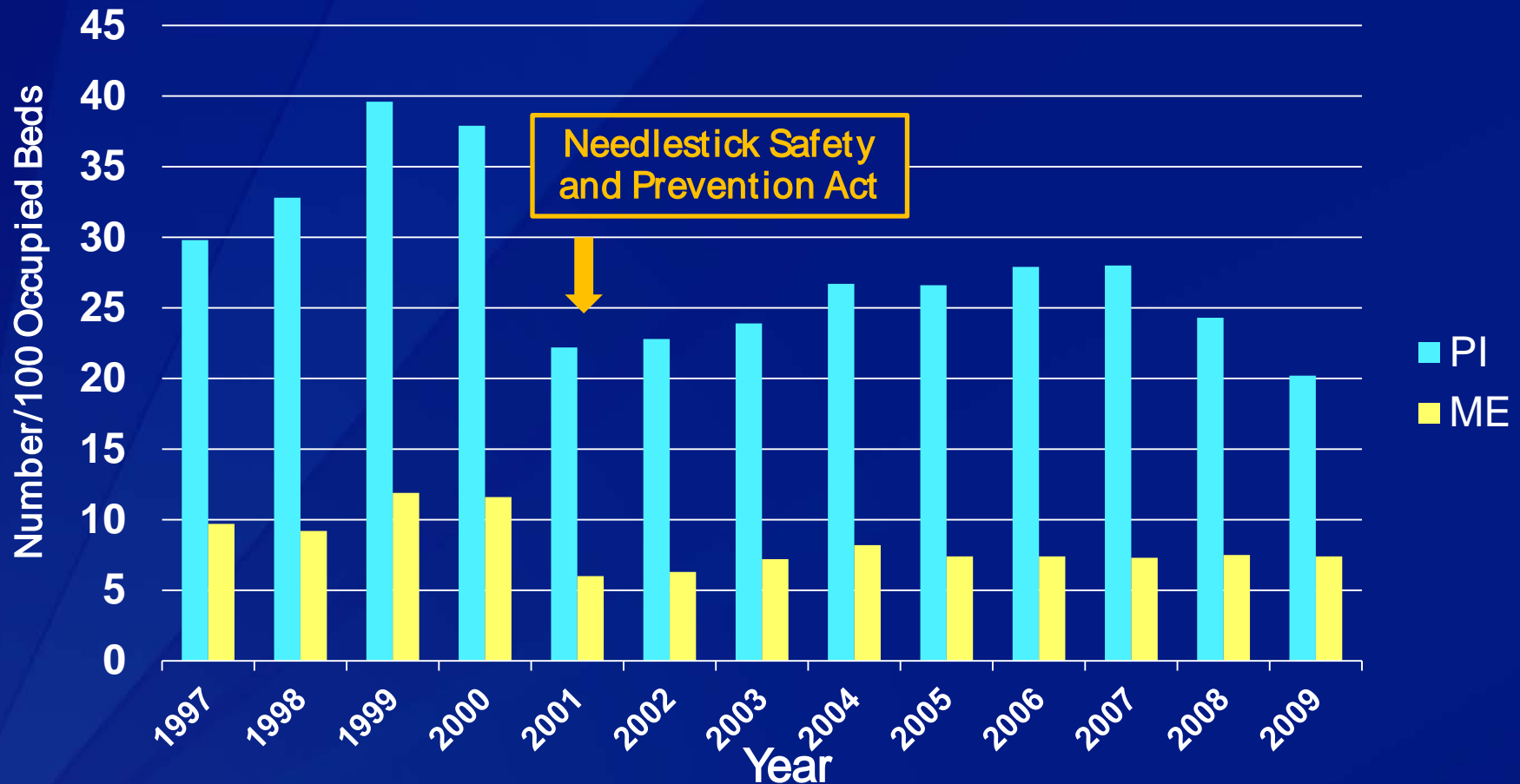
¹http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=21010

Needlestick Safety and Prevention Act

- ❑ Directed OSHA to revise Occupational Exposure to Bloodborne Pathogens Standard
- ❑ Established in greater detail requirements that employers identify and use effective and safer medical devices¹
 - Effective since 2001

¹<http://www.osha.gov/SLTC/bloodbornepathogens/standards.html>

Rates of Percutaneous Injuries (PI)¹ and Mucosal Exposures (ME)² — EPINet, 1997-2009³



EPINet=Exposure Prevention Information Network

¹PI=Needlestick, cut, or bite

²ME (termed "blood and body fluid exposures" by EPINet)=Contact with mucous membranes or non-intact skin

³<http://www.healthsystem.virginia.edu/pub/epinet/rates.html>

Acute Hepatitis B Surveillance — NNDSS, 2005-2010

- ❑ 203 cases among HCP¹ reported to CDC
- ❑ HepB vaccination determined through routine surveillance question: “Has this patient ever received the three dose series of Hepatitis B vaccine?”

- Yes: 39 (19.2%)
- Unknown: 49 (24.1%)
- No: 115 (56.7%)

Additional
information
67/88 (76%)

NNDSS=National Notifiable Diseases Surveillance System

¹Occupational history assessed for a subset of cases (e.g., 46.0% and 43.6% of cases for 2009 and 2010, respectively).

203 Cases of Acute Hepatitis B among HCP Reported to CDC

- ❑ Mean age: 41.7 years, range: 18-69 years (n=203)
- ❑ Male: 40.4% (82/203)
- ❑ Accidental stick with needle/sharp object: 16.7% (28/168)¹
- ❑ Other hepatitis B risk factor: 59.6% (121/203)²

¹During 6 weeks – 6 months prior to illness; information on post-exposure prophylaxis not available

²Other risk factors consist of: contact with hepatitis case, receipt of dialysis, blood transfusion, men who have sex with men, injection drug use, multiple sexual partners, surgery, acupuncture, or tattoo

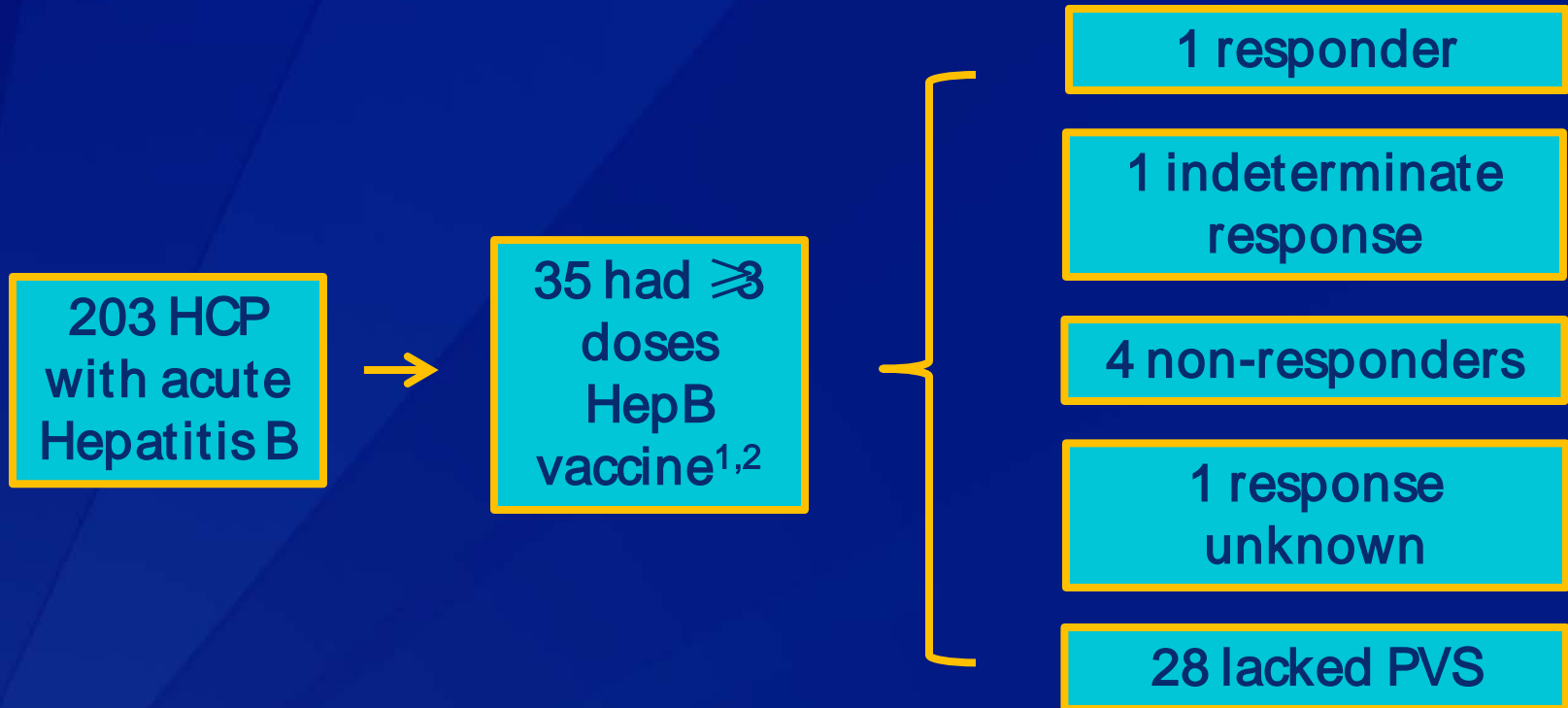
203 Cases of Acute Hepatitis B among HCP Reported to CDC, cont.

- ❑ Hospitalized: 40.8% (75/184)
- ❑ Developed chronic infection: 37.5% (6/16)
- ❑ Died: 0% (0/151)

- ❑ Vaccinated: 19.2% (35/182)¹

¹Follow-up not attempted for 115 cases initially reported to have not received HepB vaccination series

Vaccination and Post-Vaccination Serologic (PVS) Testing Status among HCP with Acute Hepatitis B



¹7 with complete documentation (month, date, and year) of vaccination; minimum dosing intervals heeded for 7 with complete documentation

²4 of 8 with information developed chronic infection

Summary

- ❑ Acute hepatitis B occurs among HCP who are:
 - Unvaccinated
 - Vaccine non-responders
- ❑ Chronic hepatitis B occurs in some HCP
- ❑ Hepatitis B vaccine coverage among HCP not optimal
 - Efforts needed to improve coverage

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ACIP Hepatitis Work Group

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