

# Progress Towards Elimination of Perinatal and Childhood Hepatitis B Virus Infections

National Viral Hepatitis Prevention Conference  
December 7, 2005

The findings and conclusions in this presentation have not been formally disseminated by CDC and should not be construed to represent any agency determination or policy.



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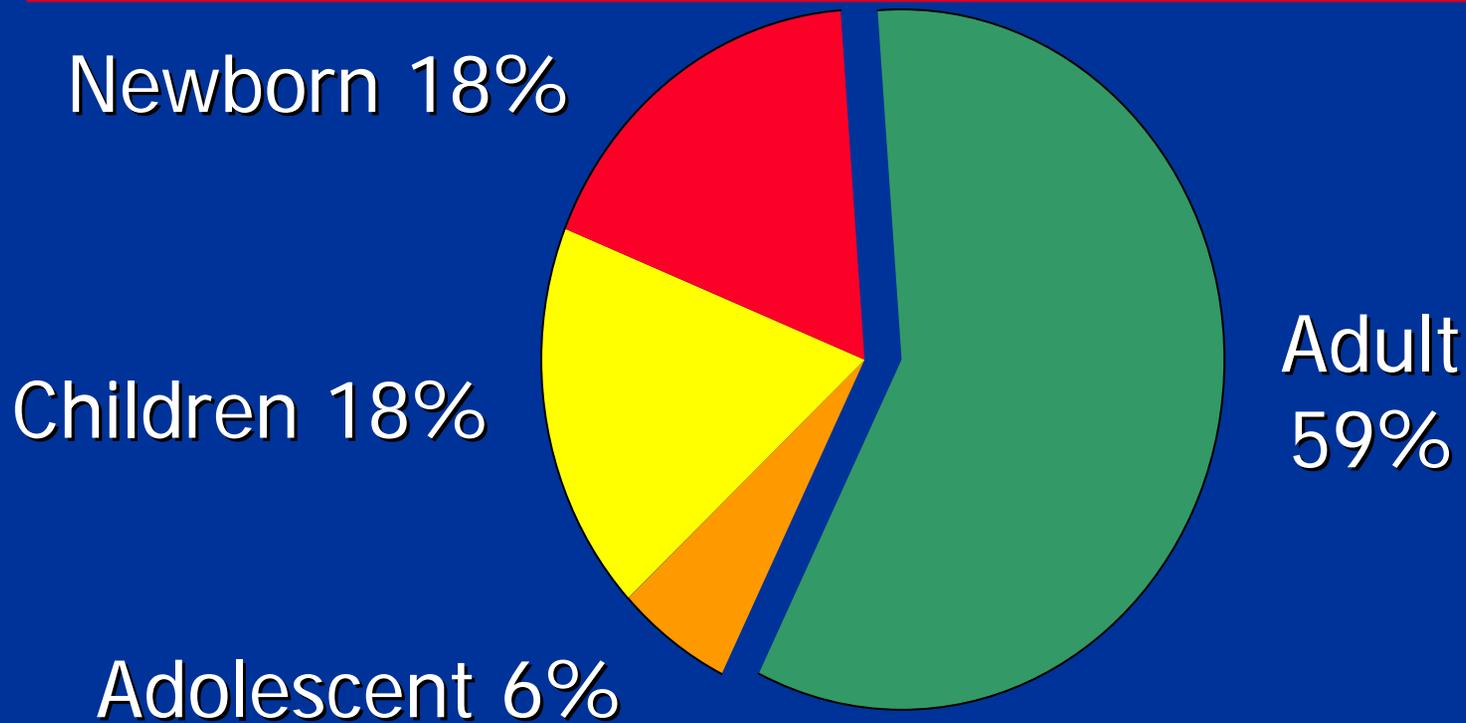
# Outline

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- Progress implementing strategy to eliminate HBV transmission in children
- New ACIP recommendations (Dec 2005):
  - Improve prevention of perinatal and early childhood HBV transmission
  - Improve hepatitis B vaccine coverage in children/adolescents not previously vaccinated
  - Provide counseling/referral to HBsAg-positive persons identified during delivery of immunization services

# Estimated Age at Infection of Persons With Chronic HBV Infection Before Childhood Vaccination, United States

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Sources: National Health and Nutrition Examination Survey III  
N Engl J Med 1989;321:1301-5  
Pediatrics 1992;89:269-73  
Pediatrics 1995;96:1113-6

## Strategy to Eliminate HBV Transmission

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- Prevent perinatal HBV transmission
- Universal infant vaccination
- Catch-up vaccination of all children and adolescents <19 years
- Vaccination of adults in high risk groups

# HBsAg Screening of Pregnant Women

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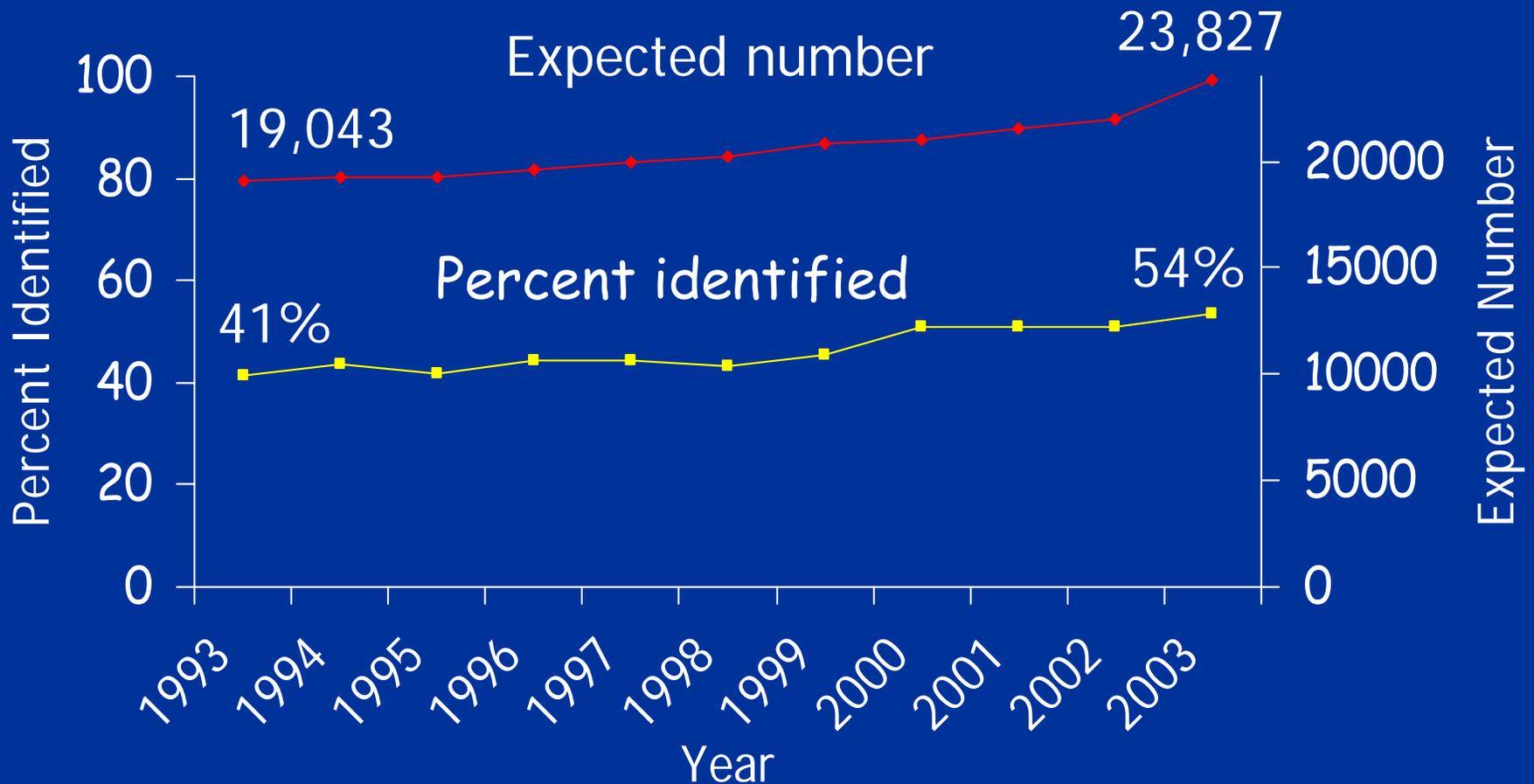
- 96.5% screened in hospital-based assessment conducted in 8 Emerging Infectious Disease sites – 2001
- Hospital-based screening assessments reported by states in 2003
  - $\geq 95\%$ : 25 states
  - 90-94%: 8 states
  - 85-89%: 3 states
  - 80-84%: 1 state
  - Unknown: 13 states

# Postexposure Immunoprophylaxis Among Identified Infants Born to HBsAg-Positive Mothers, 2003

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Identified Infants	HBIG and HepB at birth No. (%)	Complete series by 8 mo No. (%)	Complete series by 12 mo No. (%)
11,550	11,006 (95)	8300 (72)	9057 (78)

# Identified and Expected Births to HBsAg-Positive Mothers, United States, 1993-2003



Source: National Immunization Program, CDC

# Post-Exposure Immunization by Receipt of Case Management

State (yrs)	Case management	No.(%)	HBIG and HepB at birth No. (%)	Complete series by 8 mo No. (%)
Alabama (1990-2002)	Yes	982 (78)	905 (92)	828 (90)
	No	318 (22)	212 (67)	189 (59)
Connecticut (1994-1995)	Yes	64 (52)	64 (100)	52 (90)
	No	58 (48)	52 (90)	189 (48)

Sources: Brian Wheeler, Alabama Department of Public Health, 2004  
MMWR 1996;45:584-7

# HepB Birth Dose Coverage among Infants Born to Women with Unknown HBsAg Status

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Study	Year	No. of infants identified	Vaccinated at birth, (%)
National	1993	640	(22)
Washington	1994	125	(53)
California	1995	200	(20)
Florida	1995	38	(29)
Ohio	1995	35	(66)
Oregon	2000	43	(19)
Michigan	2000	57	(14)

## HBsAg Prevalence among Pregnant Women by Prenatal Screening Status, Philadelphia, 1991

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Prenatal Screening	No. of Women Tested	HBsAg-positive No. (%)
Yes	1555	12 (0.8)
No	208	14 (6.7)

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Source: JAMA 1991;266:2852-5

# Estimated HBsAg Positive Pregnant Women Among Women Not Tested Prenatally, 2003

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HBsAg prevalence in women not tested prenatally	Estimated HBsAg Prevalence, %	Estimated HBsAg positive No. (%)
Same as pregnant women tested prenatally	0.6%	1,191 (5)
8X higher than pregnant women tested prenatally*	3.6%	7,244 (30)
Total		23,827

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\*JAMA 1991;266:2852-5

# Perinatal Hepatitis B Death - Michigan

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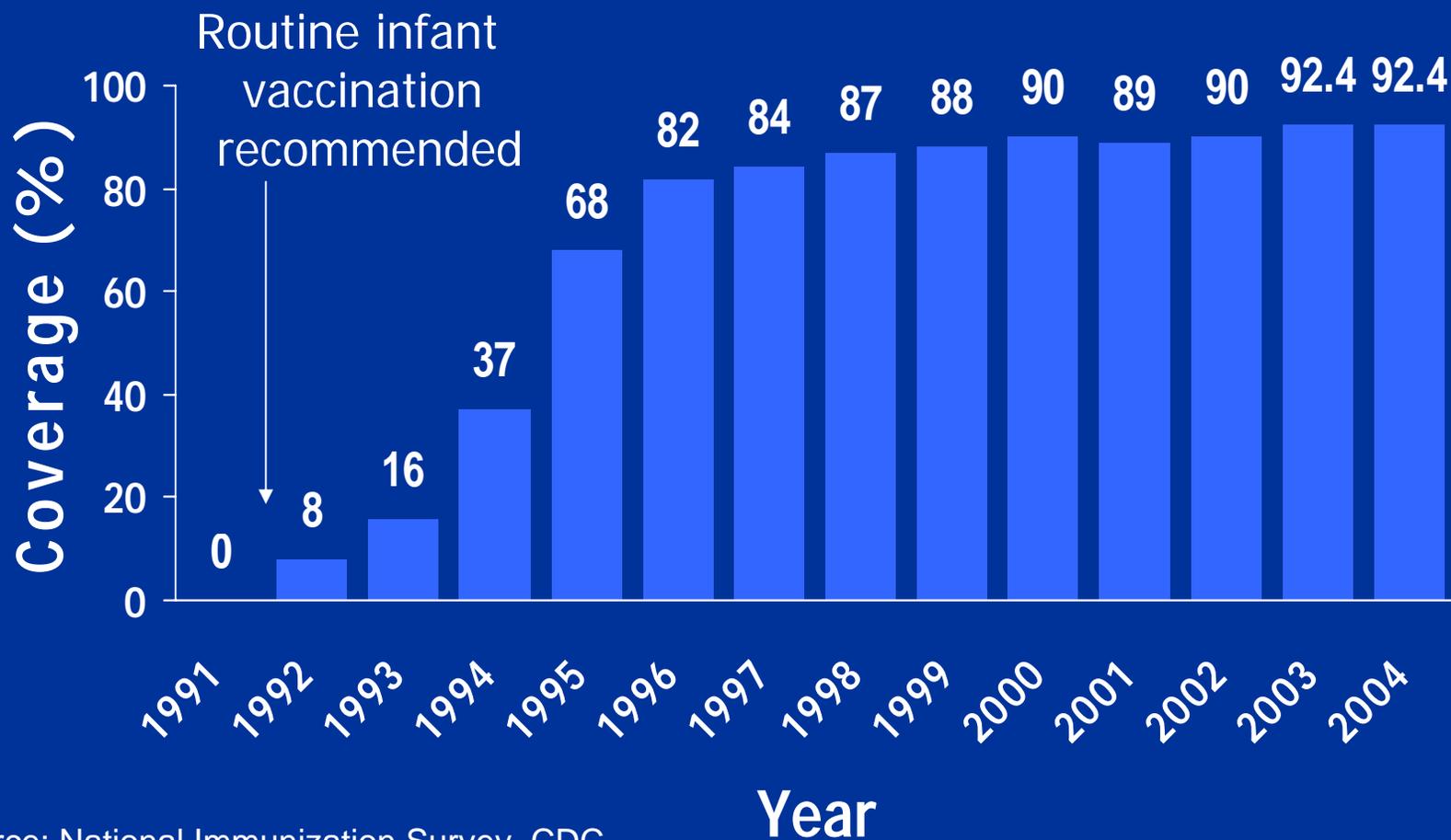
- Baby girl; DOB: 9/99
- Died: 12/99; Cause - fulminant hepatitis B
- Mother tested HBsAg-positive during pregnancy
- Prenatal care provider
  - Made a transcription error and reported mother as “hepatitis negative” to the hospital
  - Used prenatal record form from 1966
  - Did not report HBsAg-positive test (Michigan law)
- Hospital staff
  - Relied on written record from prenatal provider
  - Did not have a copy of mother’s laboratory result
  - Had suspended administration of HepB birth dose for all newborns because of thimerosal concern

# Strategy to Eliminate HBV Transmission

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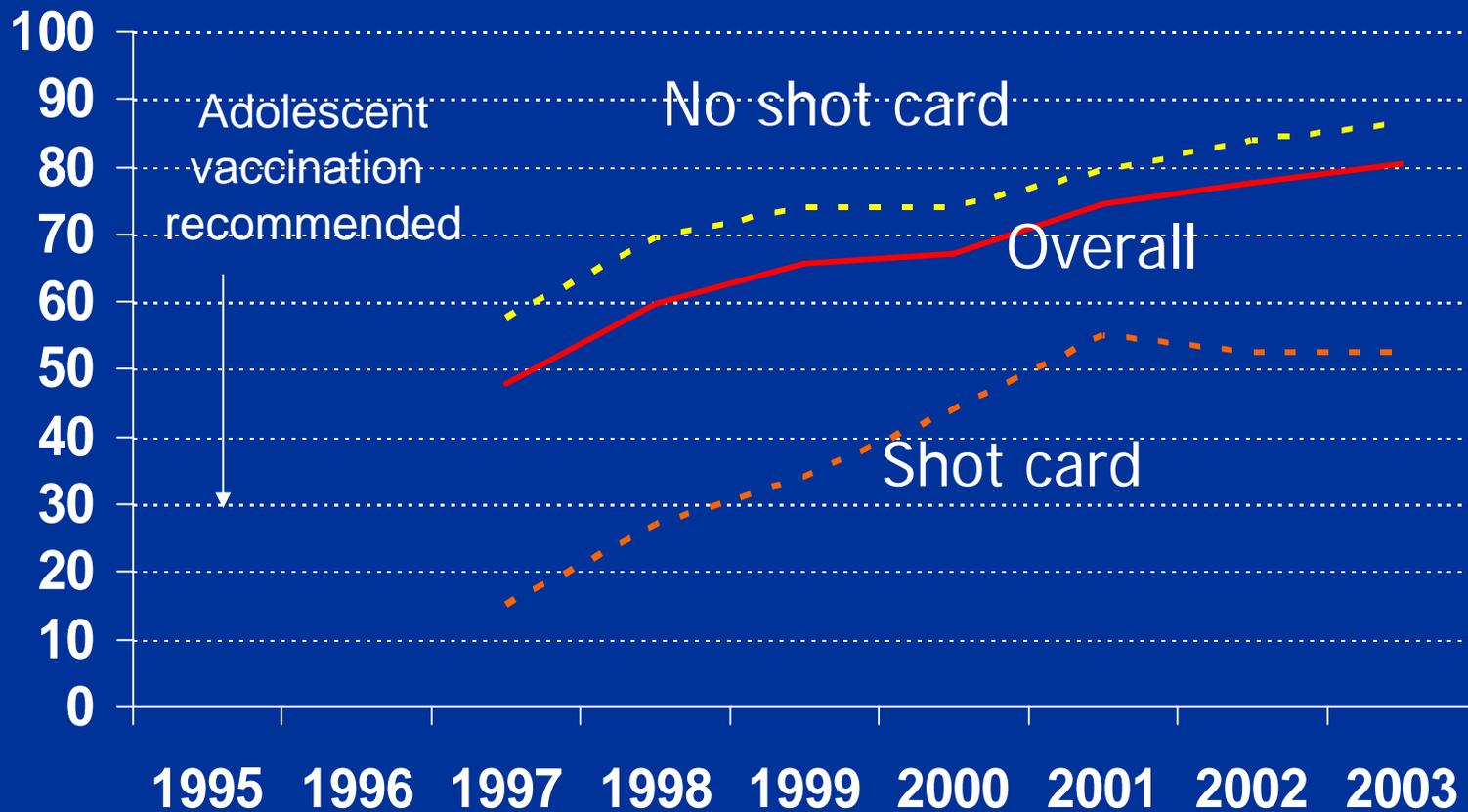
- Prevent perinatal HBV transmission
- Universal infant vaccination
- Catch-up vaccination of all children and adolescents <19 years
- Vaccination of adults in high risk groups

# Estimated Hepatitis B Vaccination Coverage 19-35 Months of Age United States, 1992-2004



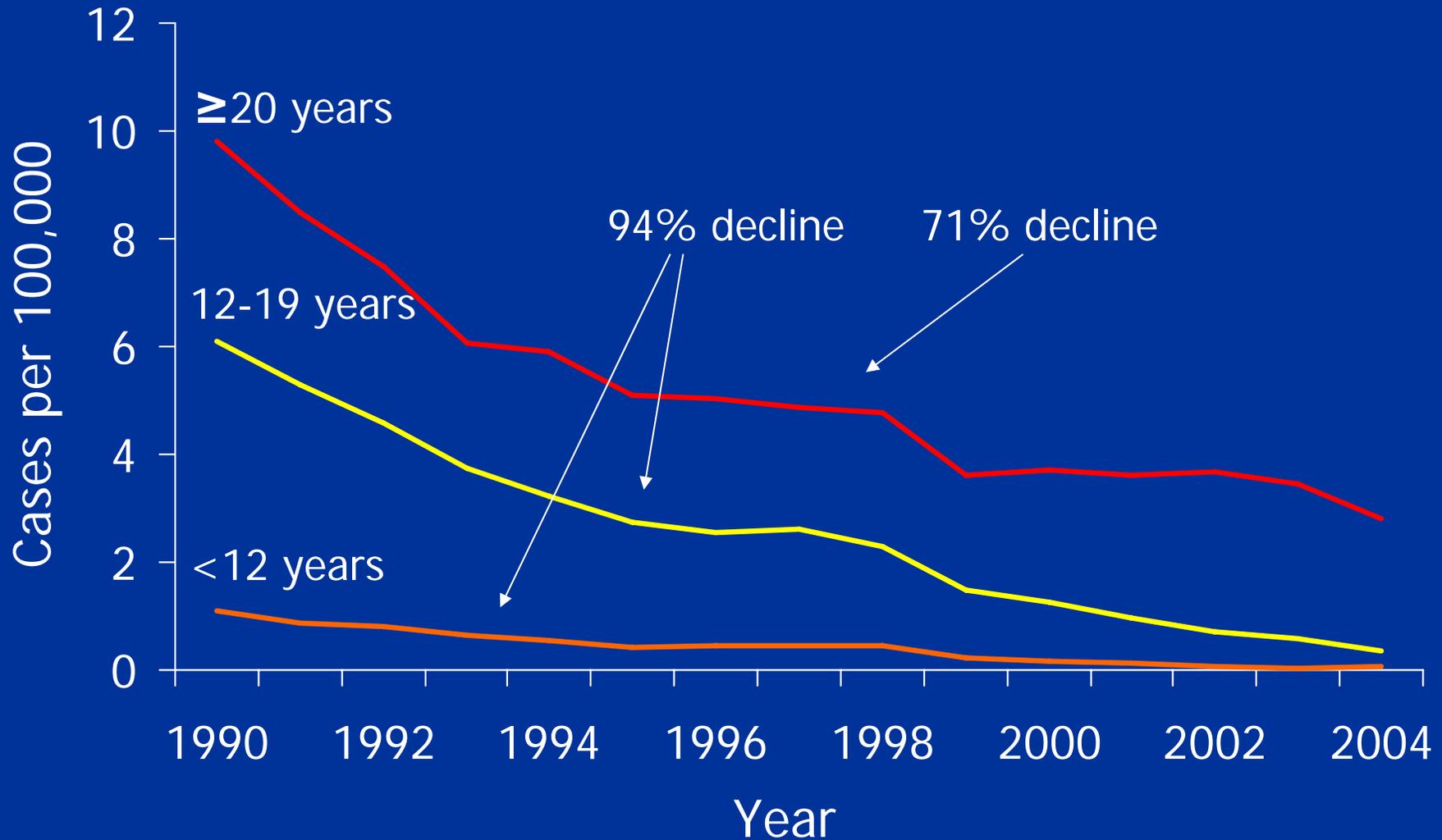
Source: National Immunization Survey, CDC

# Estimated Hepatitis B Vaccine Coverage 13-15 Year Olds, 1997-2003

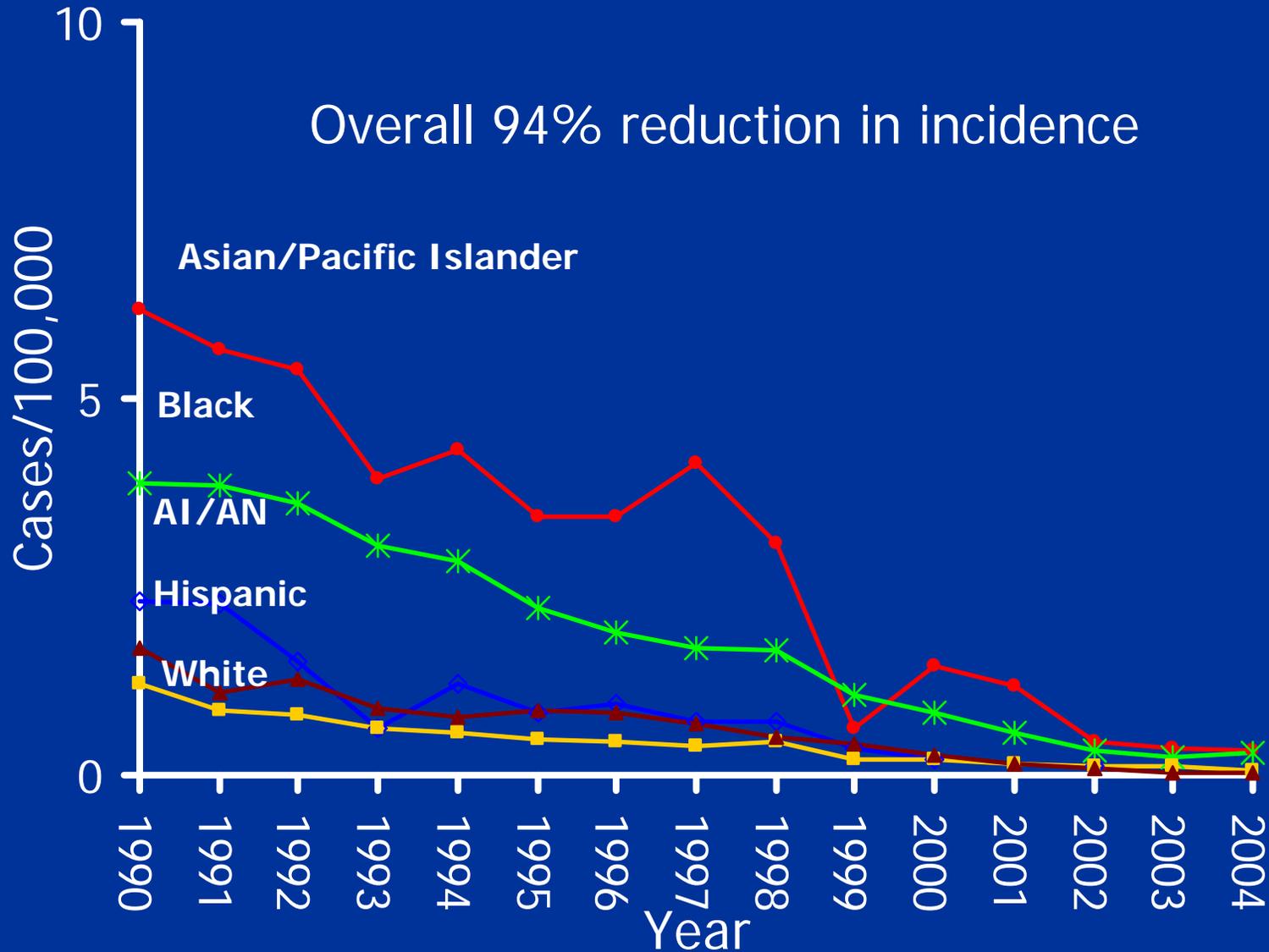


Source: National Health Interview Survey

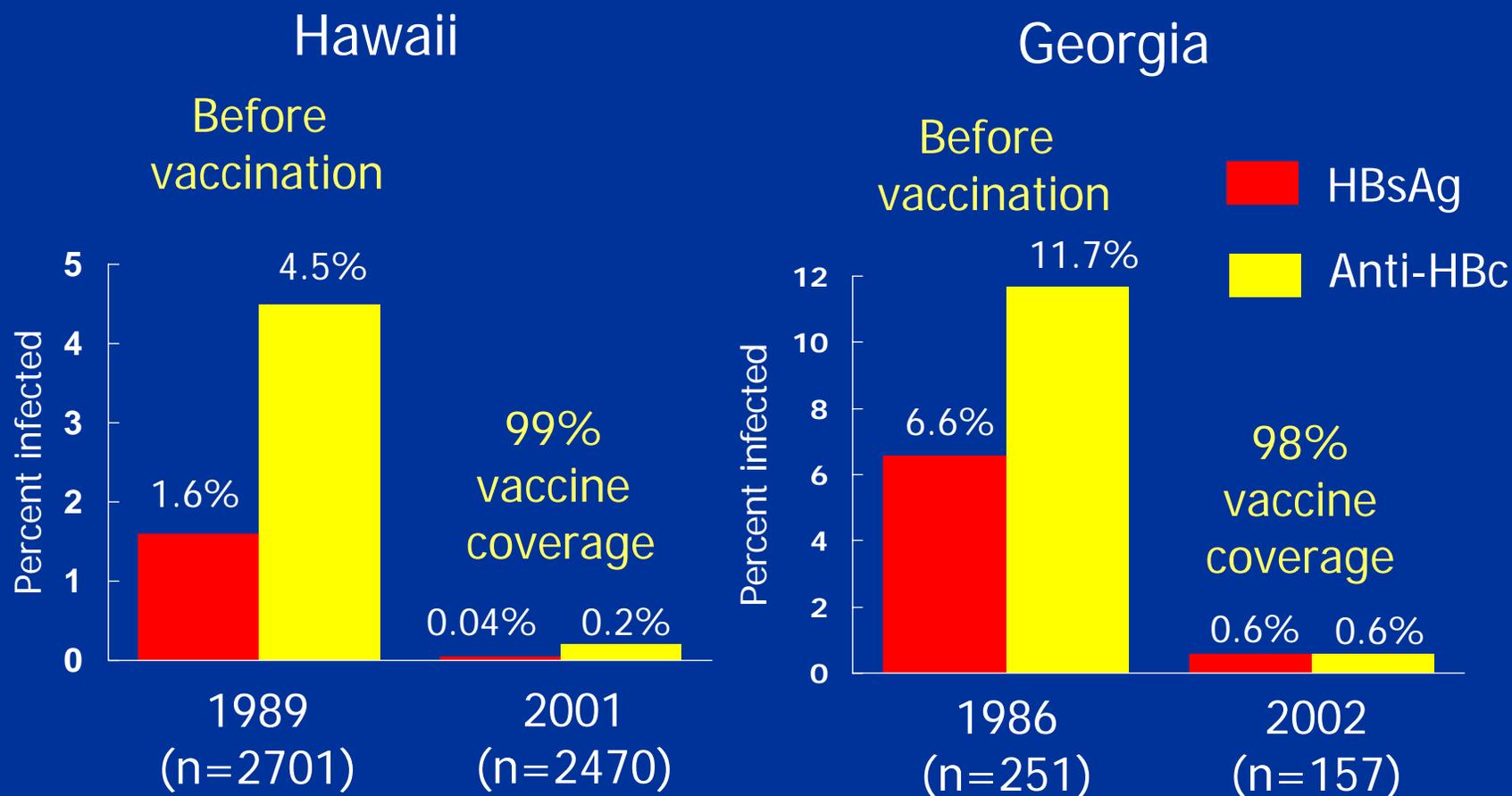
# Reported Acute Hepatitis B Incidence By Age Group: United States, 1990-2004



# Hepatitis B Incidence Among Persons Aged <20 Yrs By Race/Ethnicity, 1990-2004



# Effectiveness of Hepatitis B Immunization Among API Children, Hawaii and Georgia



Sources: Pediatrics 1993, N Engl J Med 1989, CDC, GA Health Dept, HI Health Dept.

# New Recommendations

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- Improve prevention of perinatal and early childhood HBV transmission
- Improve hepatitis B vaccine coverage in children/adolescents not previously vaccinated
- Provide counseling/referral to HBsAg-positive persons identified during delivery of immunization services

# New Birth Dose Recommendation I

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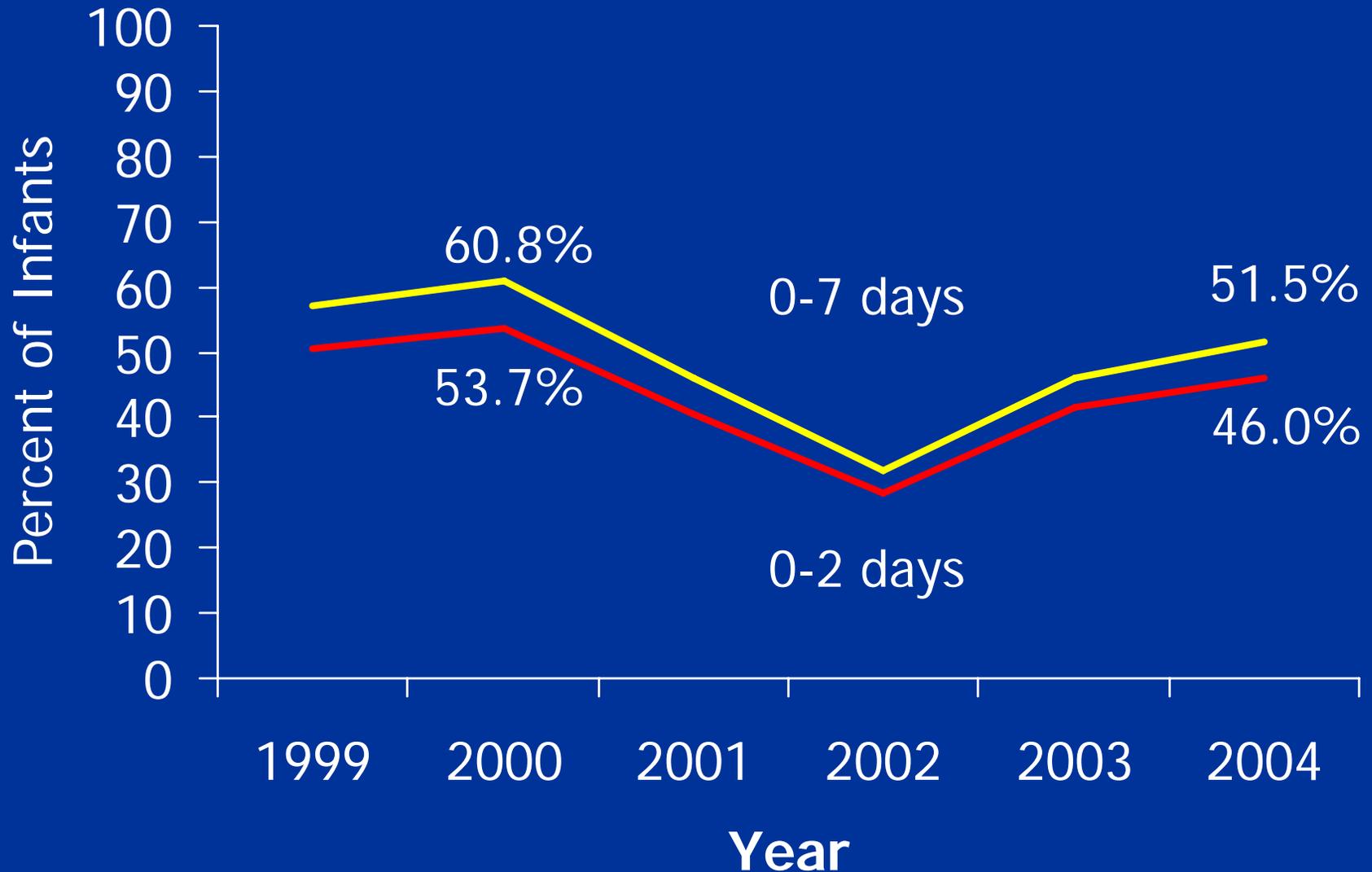
“For all medically stable infants weighing  $\geq 2,000$  grams at birth and born to HBsAg negative mothers, the first dose of vaccine should be administered before hospital discharge.”

# New Birth Dose Recommendation II

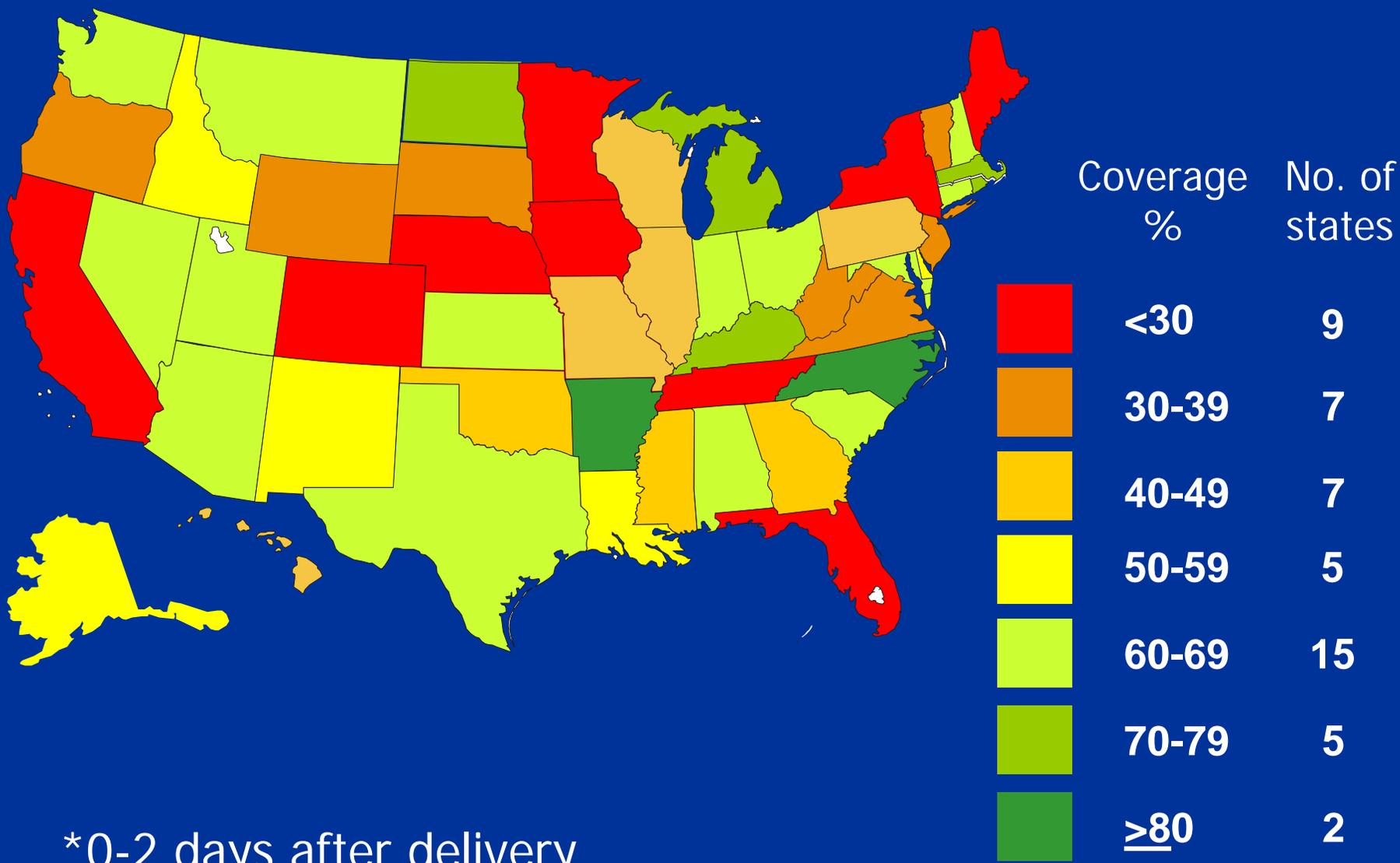
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- Exceptions on a case-by case basis and rare.
- If birth dose delayed, medical record should document:
  - physician's order not to administer birth dose
  - copy of original laboratory report indicating mother was HBsAg-negative during this pregnancy
- Situations when birth dose should not be delayed:
  - high risk sexual or drug using activity
  - expected poor compliance with follow-up to initiate the hepatitis B vaccination series

# Proportion of Infants Receiving HepB Birth Dose, 1999-2004



# HepB Birth Dose Coverage\*, 2003



\*0-2 days after delivery

# HepB Birth Dose Coverage by State Birth Dose Policy, 2003

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Universal Birth Dose Policy	No. of States*	Birth Dose Coverage Median (range)
Yes	28	64% (23% - 83%)
No	20	38% (5% - 69%)

\*Unknown for 2 states

# Delivery Hospital Policies & Procedures I

## Ensure identification & immunoprophylaxis

- Review HBsAg test results for all pregnant women at the time of admission for delivery
- Test women for HBsAg:
  - if prenatal test result is not documented
  - if at risk of HBV infection during pregnancy

## Delivery Hospital Policies & Procedures II

### Ensure identification & immunoprophylaxis

- Identify and administer immunoprophylaxis to:
  - all infants born to HBsAg-positive mothers
  - all infants born to mothers w/unknown HBsAg status
- Document maternal HBsAg test results and infant HepB vaccination status on infant's medical record

# Case Management Programs

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### Ensure:

- HBsAg testing of all pregnant women
- Reporting and tracking of HBsAg-positive women
- Appropriate case management for infants born to:
  - HBsAg-positive mothers
  - mothers with unknown HBsAg status
- Completion of post vaccination testing
- Program monitoring and evaluation

# New Recommendations

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- Improve prevention of perinatal and early childhood HBV transmission
- Improve hepatitis B vaccine coverage in children/adolescents not previously vaccinated
- Provide counseling/referral to HBsAg-positive persons identified during delivery of immunization services

# Vaccination of Children and Adolescents Who Were Not Previously Vaccinated

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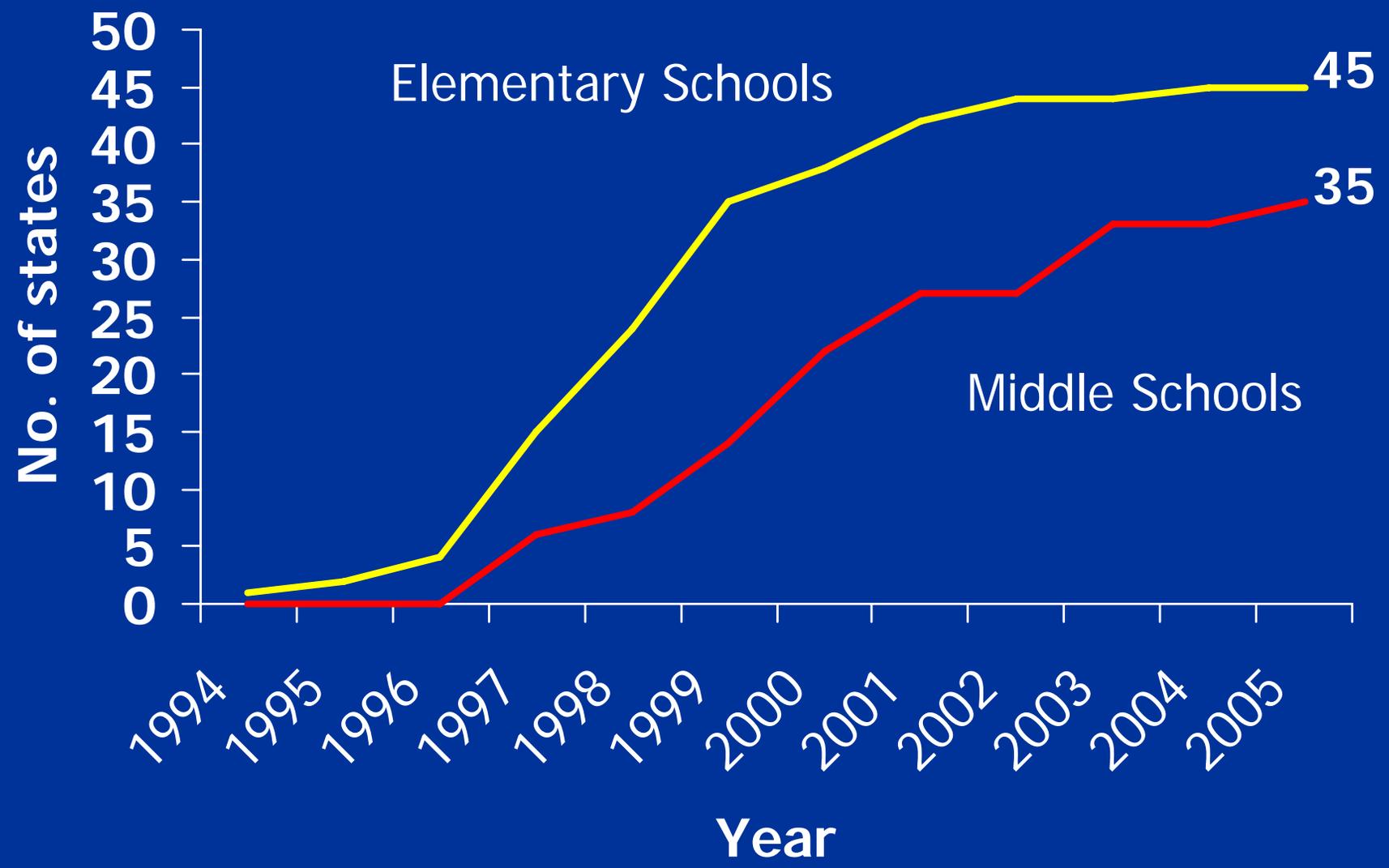
- Immunization record reviews should be conducted for:
  - all children aged 11-12 years
  - all children and adolescents <19 years:
    - born in Asia, the Pacific Islands, Africa, or other countries w/ HBsAg prevalence >2%
    - who have at least one parent who was born in these countries
- Children not previously vaccinated or incompletely vaccinated should complete the vaccine series

# Vaccination of Children and Adolescents Who Were Not Previously Vaccinated

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- States are encouraged to adopt regulations/laws requiring hepatitis B vaccination before middle school entry
- When feasible, vaccination requirements should be considered for:
  - older high school students
  - students before college entry

# States With Elementary or Middle School HepB Requirements, 1994-2005



# Vaccination of Children and Adolescents Who Were Not Previously Vaccinated

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- Hepatitis B vaccine should be offered to all unvaccinated adolescents in all settings that provide healthcare services to this age group
- States are encouraged to implement immunization registries for adolescents.

# New Recommendations

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- Improve prevention of perinatal and early childhood HBV transmission
- Improve hepatitis B vaccine coverage in children/adolescents not previously vaccinated
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# Rationale for HBsAg Screening As A Component of Immunization Services

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- Identification of HBsAg positive persons provides opportunity to:
  - Prevent transmission to others by vaccinating at risk contacts
  - Reduce risks for chronic liver disease in infected person by providing medical management and antiviral therapy

# HBsAg Testing for Chronic Infection

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- All persons born in Asia, Pacific Islands, Africa and other countries w/ HBsAg prevalence  $\geq 8\%$  should be tested for HBsAg
- Other persons who should be tested for HBsAg in the context of immunization services:
  - Pregnant women
  - Persons who test positive for anti-HBc (prevaccination)
  - Hemodialysis patients
  - Non-responders to vaccination

# Summary

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- Substantial progress has been made in reducing perinatal and childhood HBV infections
- New ACIP recommendations provide blueprint for next steps towards elimination of HBV transmission
- Focus on:
  - Administering birth dose to all infants  $\geq 2000\text{g}$
  - Implementing delivery hospital policies/procedures and case management programs for infants born to:
    - HBsAg-positive mothers
    - mothers w/unkown HBsAg status
  - Increasing vaccine coverage among unvaccinated children and adolescents
- New emphasis on identifying/managing HBsAg-positive persons during delivery of immunization services

# Related Workshops

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- Addressing the Challenges to Ensuring a Birth Dose of Hepatitis B Vaccine
  - 10:30 AM – 12:00 PM – Columbia C
- Immunization Registries: Use for Tracking Adolescent and Adult Immunizations
  - 2:00 PM – 3:00 PM – Yorktown
- Evaluation of Perinatal HBsAg Identification Based on Universal Reporting Mechanisms
  - 3:30 PM – 5:00 PM – Columbia C

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