Integrating Perinatal Hepatitis B Prevention Activities with Adult Viral Hepatitis Coordination

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Outline

- Prevention of Perinatal Hepatitis B
- Secondary Prevention Activities
- Recommendations for Perinatal Hepatitis Prevention
- NYCDOHMH Program Strategies
- NYCDOHMH Program Data
- Future Directions for Integration and Collaboration

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Prevention of
Perinatal Hepatitis B (PHB)

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Modes of Hepatitis B Virus Transmission

Hepatitis B is a DNA virus present in blood and body fluids and can be transmitted through exposure to infected blood/body fluids

- Mucosal
  - Perinatal - Infants born to hepatitis B positive mothers may become infected during the birthing process
  - Sexual transmission
  - Shared household objects (toothbrush, razor, etc.)
- Parenteral
  - IVD use
  - Needle sticks
  - Contamination of multi-dose vials

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Spectrum of HBV Disease

- Acute self-limited hepatitis (IgM anti-HBc)
- Chronic HBV infection (HBsAg+ > 6 months)
  - Markers of active disease
    - HBV DNA viral loads ($10^7 - 10^9$)
    - HBeAg positivity
    - Elevated liver enzyme levels (ALT and AST)
- 15%-25% of chronic cases have premature mortality from chronic liver disease
    - Cirrhosis
    - Hepatocellular carcinoma (HCC)

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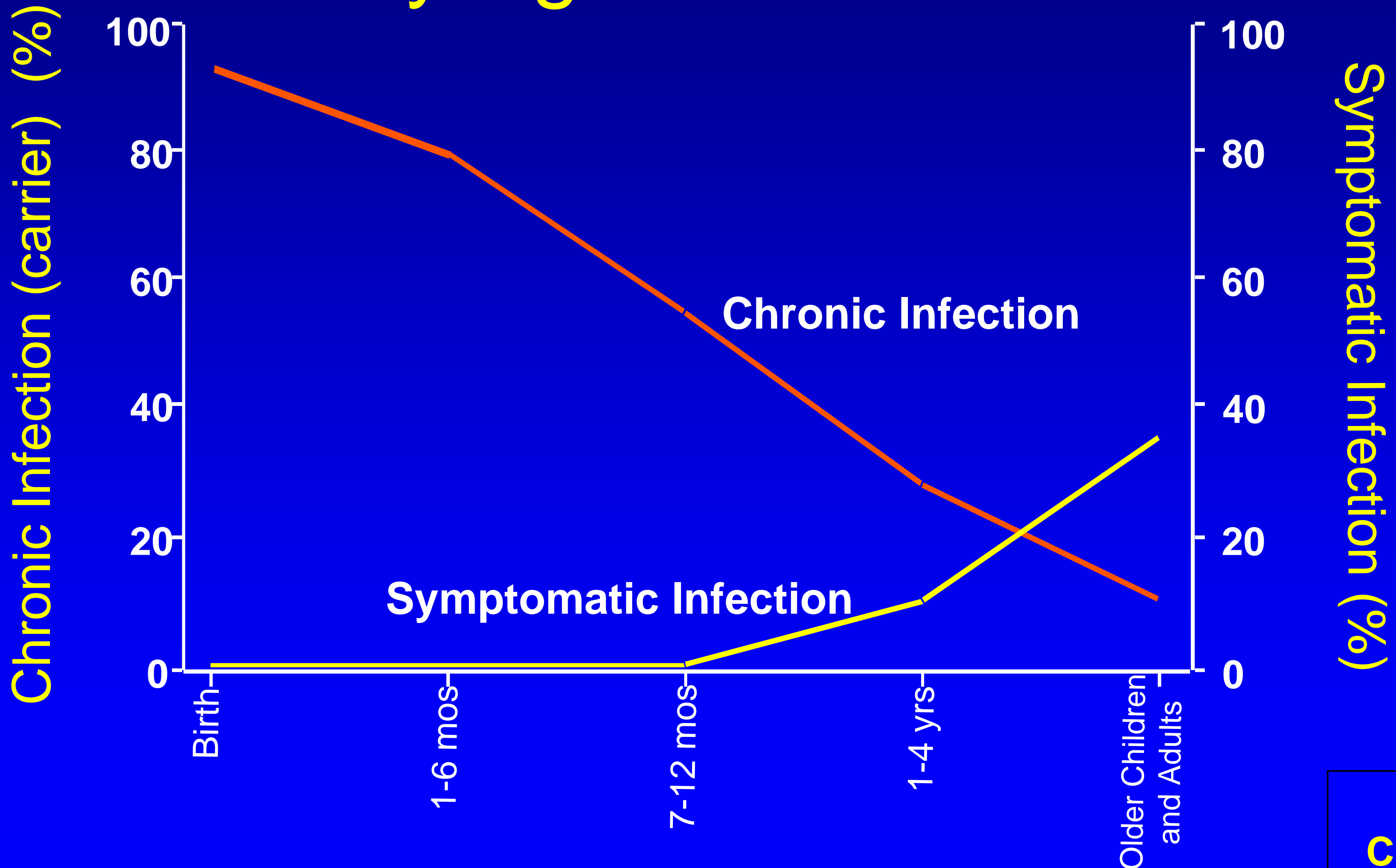
Clinical Presentation of Hepatitis B by Age at Infection



CDC

Risks to the Newborn

- Up to 90% of infants born to HBsAg (+) mothers will become infected with HBV without intervention
  - 5-20% of infants born to HBsAg (+)/HBeAg (-) mothers
  - 70-90% of infants born to HBsAg (+)/HBeAg (+) mothers
  - High maternal viral load may be associated with increased risk
- Up to 90% of HBV infected infants will develop chronic HBV infection
- Risk continues to the uninfected
  - Horizontal transmission from infected household contacts
  - Risk is increased in high methamphetamine use areas due to higher hepatitis B prevalence

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Post-exposure Prophylaxis (PEP) at Birth to Prevent PHB

- 1981: first Hepatitis B vaccine (plasma derived) approved for use
- 1986: first recombinant Hepatitis B vaccine licensed
- Infants born to HBsAg (+) mothers should receive:
  - HBIG and 1st dose hepatitis B vaccine (single antigen, .5 mL, IM) within 12 hrs of birth
  - Infants < 2kg should receive 1st dose and HBIG within 12hrs, but 3 additional doses are still needed [(1-2, 4, 6) or (1-2, 4, 12-15)]
  - HBIG must be given within 7 days of birth in order to be an effective PEP

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Follow up Care of Infants born to HBsAg (+) Mothers

- Single antigen must be used at birth, but combination vaccines can be used > 6 wks old
  - 2nd dose hepatitis B vaccine at 1 month
  - 3rd dose hepatitis B vaccine at 4-6 months
  - If 3rd dose given < 6 months of age than give an additional dose at ≥ 6 months for lifetime immunity
- Post Vaccination Serology (PVS) Testing: at 9 months of age, test for <u>both</u> HBsAg and anti-HBs (antibody to HBsAg)
  - If susceptible, administer a 2nd three dose series and follow up testing one month after the last dose

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Impact of PEP on Newborns

- The recommended PEP for infants born to HBsAg (+) mothers is estimated to be 90-95% effective at preventing perinatal transmission of HBV
- Administering the 3-dose schedule **without** HBIG is still estimated to be 70-95% effective in preventing perinatal transmission

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Universal Hepatitis B Birth Dose

- All infants, without regard for the mother's HBsAg status should receive the first dose of hepatitis B vaccine at birth*
  - "Safety net" for infants whose mother's HBsAg+ status was unknown or incorrect at time of birth
  - Minimizes risk of horizontal transmission after birth
  - Adopted as the standard of care by New York State
- Infants who weigh < 2kg may receive 1st dose at 1-2 months
  - If birth dose is withheld, a copy of the negative maternal HBsAg test result and a written doctor's order should be included in the newborn's chart.

Secondary Prevention Activities

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Preventing Horizontal Transmission

- Educate mothers regarding behaviors that reduce the risk of transmission to household, sex, and needle sharing contacts (using condoms, not sharing injection equipment and other household objects that could be contaminated with blood)
- Refer mother's contacts to be tested for HBsAg, Anti-HBs and/or Anti-HBc. (First dose of hepatitis B vaccine should be adminstered at time of testing.)
- Refer susceptible persons for completion of the 3-dose series

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Medical Management of Persons with Chronic Hepatitis B

- Educate and refer all HBsAg (+) mothers and their infected contacts to be screened for liver disease according to current medical recommendations to help to detect onset and progression of HBV-related liver disease.
- Educate regarding healthy lifestyle behaviors such as avoiding excessive alcohol use.
- Recommend hepatitis A vaccine if susceptible.
- Refer infected persons to a support group to assist in the emotional aspects of coping with the disease

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Recommendations for Perinatal Hepatitis B Prevention

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Identification of HBsAg (+) Cases

- Mandatory screening of all pregnant women
- Mandatory reporting of HBsAg (+) pregnant women
- Encourage or mandate laboratories to require providers to indicate pregnancy status on laboratory requisitions for HBsAg and to report pregnancy status with all positive HBsAg results
- Ensure delivery hospitals to test for HBsAg at time of admission for women who:
  - Do not have a documented HBsAg result
  - Were at risk for HBV infection during pregnancy
  - Had clinical hepatitis since previous testing

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Documentation and Reporting of Maternal HBsAg Status

- Ensure that prenatal care providers and delivery facilities review and include copies of the maternal HBsAg test result in both the maternal and newborn charts
- Establish a Universal Reporting Mechanism
  - Report maternal HBsAg status for all births through one or more of the following methods:
    - Newborn Screening Blood Collection Form (NSBCF)
    - Birth Certificate
    - Immunization Information System

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Pending HBsAg Test Results and Post-exposure Prophylaxis

- Mandate HBsAg testing for the Labor and Delivery Unit be turned around within 48 hrs
- Recommend best practices for communication regarding test results between the lab, L & D and the Newborn Nursery
- Mandate that newborns born to unknown or high risk status mothers receive the first dose of Hep B within 12 hours
- Recommend that HBIG is administered as soon as initially positive report is received or before discharge if still unknown

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Documentation and Reporting of Hep B Doses and PVS Results

- Ensure that Newborn Nurseries and Pediatricians properly administer and document administration of vaccinations in case of adverse reactions and for reporting purposes.
  - Infant medical record
  - Infant vaccination card
  - Immunization Information Systems
  - Reporting to PHBP programs
- Ensure that pediatricians conduct PVS testing properly and report PVS results of infants born to HBsAg (+) mothers to the health department in the jurisdiction where the mother resides.

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New York City Department
of Health and Mental Hygiene

Perinatal Hepatitis B Prevention Program Overview

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Overview

- Bureau of Immunization: located in downtown Manhattan
- Unit staff: 3 field Offices – Brooklyn, Queens, Manhattan
  - Unit Chief, 1-2 Epidemiologists, 18 Public Health Advisors (PHAs), 1 Data Entry Clerk
    - Bilingual capacity in Mandarin, French/Creole and Spanish
- Program operating since 1987, funded by CDC since 1990, awarded Enhanced Surveillance Grant in 2007
- All data has been stored electronically since the inception, currently in an MS Access database

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Case Identification – PHBP Unit

- 1990: New York State Public Health Law mandates prenatal testing and reporting positives to NYCDOHMH
- Source of Reports
  - Prenatal care providers (66%)
  - Newborn nurseries (17%)
  - Laboratories (12%)
  - Other jurisdictions (<1%)
  - Newborn screening cards (5%) – NYS State Law
- Electronic Laboratory Reporting – June 2006 - field for pregnancy status
  - Changes to health code for minimum data set on laboratory reports
  - Laboratory audit in collaboration with IT and Communicable Disease
- Hospital policy survey and medical record reviews

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Case Management of Infants – PHBP Unit

- PHAs collect demographic, risk factor and medical information from mother and providers
- PHAs provide education to mothers about prevention and follow up reminders for vaccinations and testing
  - Conduct follow up of infants who move to China by staying in touch with mother
- PHAs obtain documentation of vaccinations directly from providers (by fax or chart review) and from the Citywide Immunization Registry (CIR)
  - Currently use paper forms for PHB reports, electronic systems are being developed at the Dept level
- Conduct individual provider education regarding vaccination schedule, PVS testing recommendations
- Mailing on universal birth dose sent in 2007

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Follow up of Contacts

- PHAs educate mothers by phone regarding behaviors that reduce the risk of transmission to contacts
- PHAs Identify Contacts
  - Enter contact information and link to cases in electronic database
  - Refer for testing and vaccination at a FQHC in Chinatown and Flushing-Queens
    - Vaccine is provided by the NYCDOHMH.
    - Testing is performed at the NYCDOHMH Public Health Lab
    - Contacts with incomplete case management are closed with a disposition to describe why contact did not get tested or vaccinated
    - Plans to conduct a survey to identify barriers to testing, etc.

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Medical Management of Mothers and Contacts

- PHAs provide referrals over the phone
- PHAs collect data on whether or not mothers and contacts have been screened for their liver disease and/or treated during pregnancy
- Data on HBV DNA and HBeAg results is retrieved from the Electronic Laboratory Reporting System for cases if available
- Referrals to Support Groups
  - Information about a new support group held in English and Mandarin/Cantonese is being sent to all cases.

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Perinatal Hepatitis B Prevention (PHBP) Program Data

New York City Department of Health and Mental Hygiene (NYCDOHMH)

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HBsAg-Positive Pregnancies

- Due to large immigrant population in NYC, the program has the 2nd highest caseload in the US
  - ~1.4% of births in NYC are to HBsAg (+) women
- The majority of HBsAg (+) pregnant women are immigrants
    - 82% of cases are foreign born
    - 60% were born in China
- Other risk factors are rare among cases
- Steady increase in the number of cases for the past 12 years
  - Cases identified increased from 1457 in 1995 to 2100 in 2007

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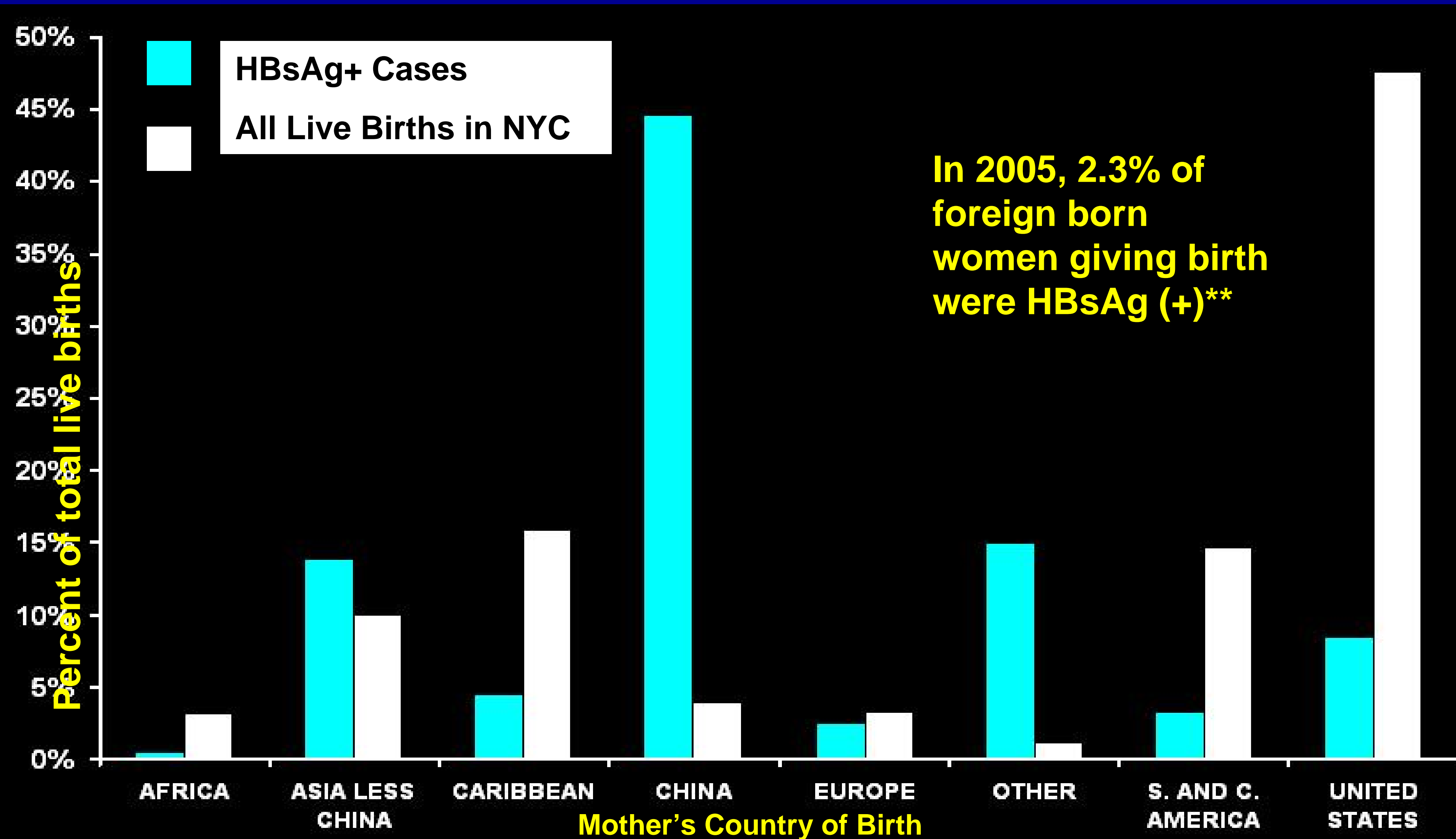
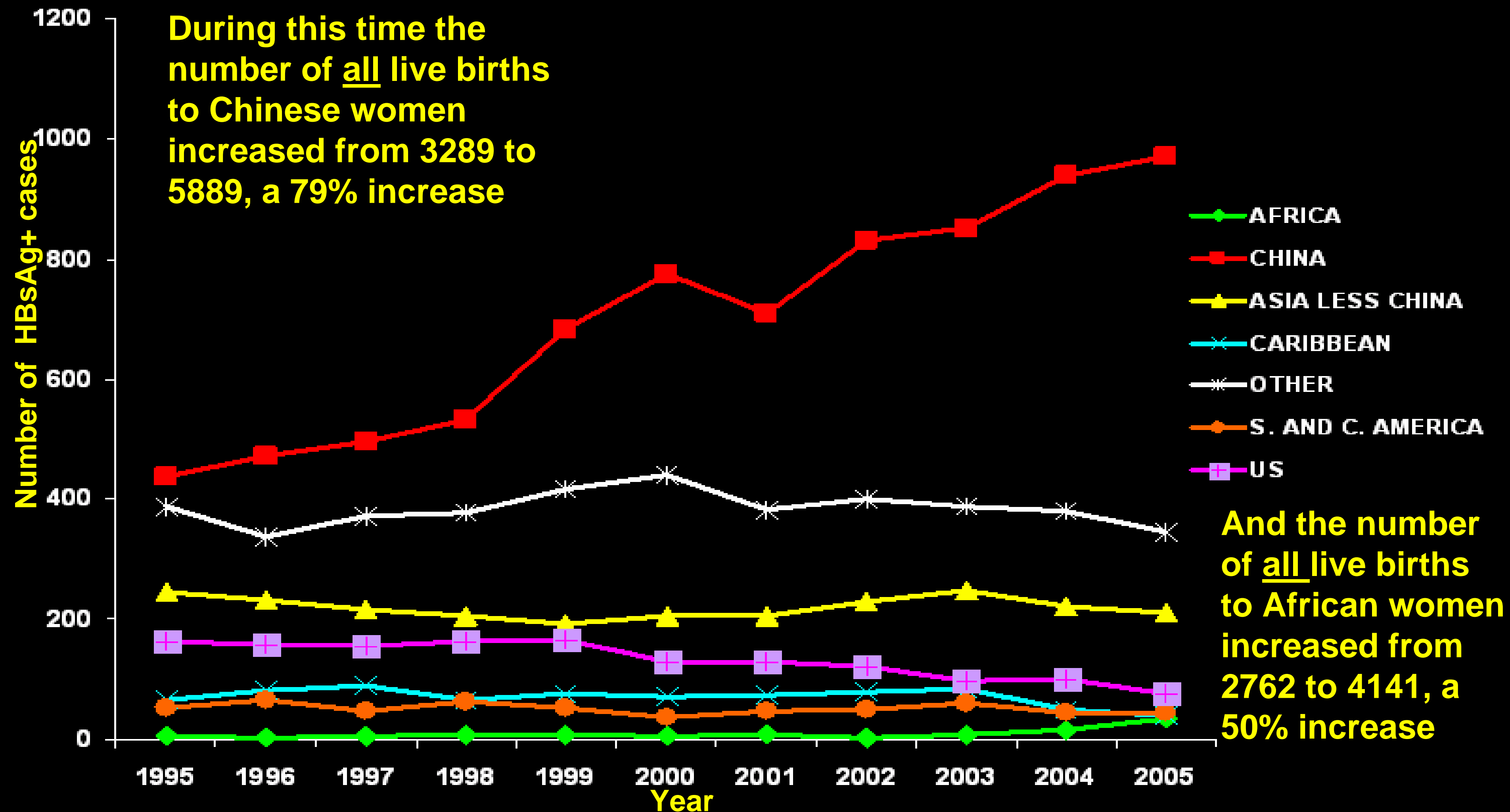
HBsAg+ Cases vs. All Live Births
By Mother's Region of Birth
NYC, 1995-2005



Number of HBsAg+ Cases by Mother's Region of Birth

NYC, 1995-2005



PEP to Infants

- Overall, highly successful in assuring infants born to HBsAg (+) mothers receive PEP
  - ~ 99% of infants born receive HBIG
  - ~ 99% receive first dose of hepB
  - ~ 97% receive 2nd dose of hepV
- Universal Birth Dose in NYC - percent of birth cohort who received a birth dose increased from 42% in January 2006 to 59% in June 2008
- Challenge is in 3rd dose administration and PVS testing
  - ~70-80% finish 3rd dose
  - ~ 50-60% finish PVS

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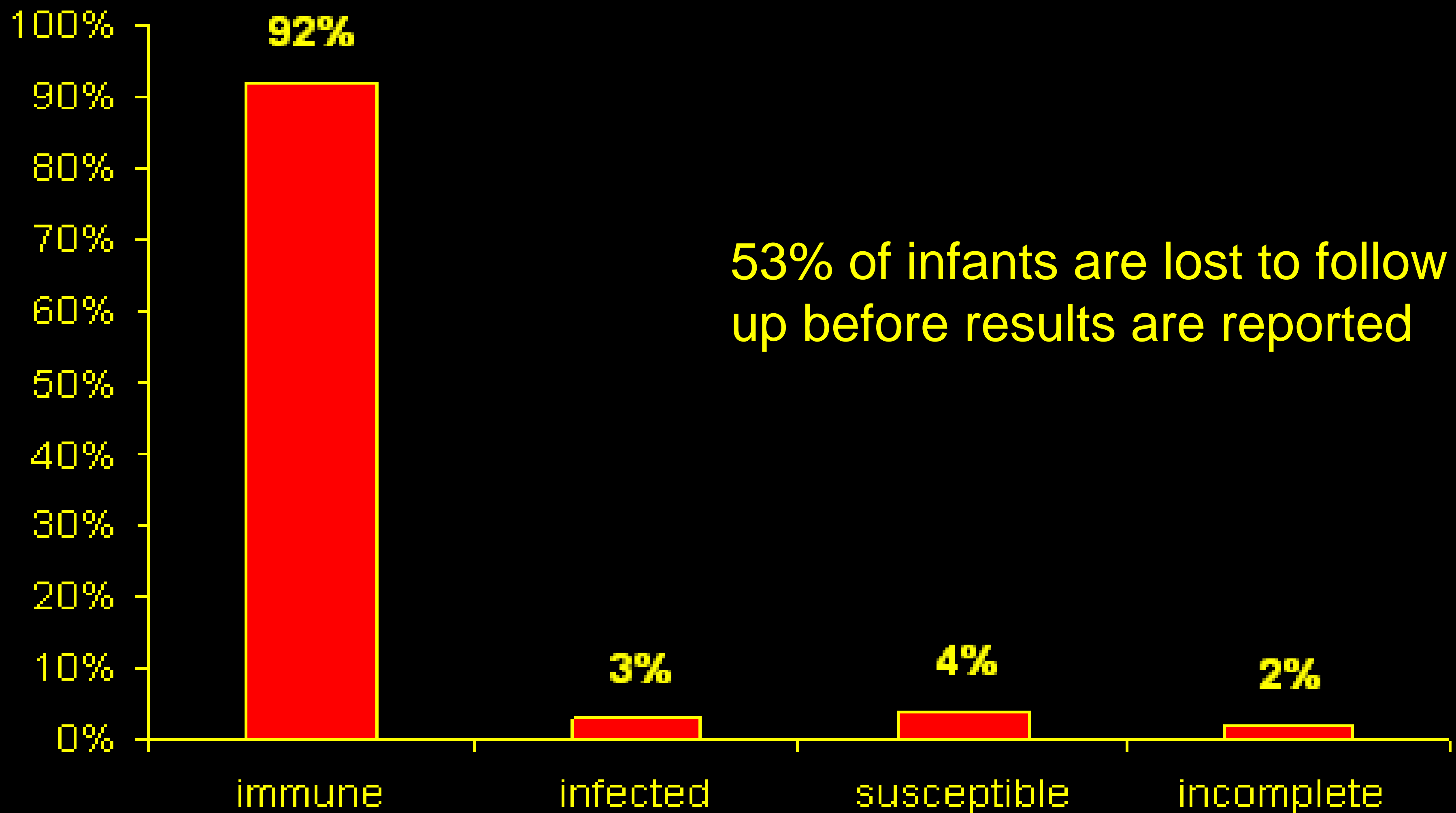
PVS Testing Results
Infants Tested 1995-2005
n = 8057 (47%)



PEP of Infected Infants
1995-2005, n=240

- HBIG/HBV rates among infected infants (pooled 1995-2005 data)
  - 99% received HBIG (237/240)
  - 100% received a birth dose < 72 hrs
  - 16 did not receive 3 doses (224/240)*

* Vaccination records may not be fully updated

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Household Contact Data - 2005

Contacts Identified	1956	
All Contact Tested	758	39%
Contact Tested before Pregnancy	265	14%
Contact Tested during or after Pregnancy	493	25%
Immune	462	61%
Susceptible	136	18%
Infected	160	21%
Number of Susceptible Received 3rd Dose	63	46%

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Future Directions for Integration and Collaboration

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Current and Future Collaboration within the NYCDOHMH

- Viral Hepatitis Coordination Office
  - Coordinates with community based programs
  - Assists in grant writing to secure funding
  - Coordinates partners within the NYCDOHMH
- Bureau of Communicable Disease - Hep B Registry
  - Surveillance – forwards paper reports
  - Retrospective identification of infected infants
  - Develops and sends out educational materials for chronically infected persons

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Current and Future Collaboration within the NYCDOHMH (cont.)

- Bureau of STD
  - Has knowledge regarding contact notification procedures and best practices
  - Disease Intervention Specialists (DIS) have experience in reaching cases that are lost to follow up
  - STD Clinics may administer hepatitis B vaccination
- Bureau of Public Health Laboratories
  - May perform testing for other recommended populations
- Bureau of HIV/AIDs
  - May work toward hepatitis B testing for HIV/AIDs patients
  - Need to coordinate perinatal hepatitis B and perinatal HIV prevention efforts

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Future Directions in Working with External Partners

- Department of Corrections
  - Hepatitis B and C testing; Hep A and B vaccination
- Provider Education - OB/GYN physicians
  - Educate to refer HBsAg (+) mothers for screening and to identify contacts and refer to testing, etc
  - Coordinate with other programs (i.e., HIV, STD, Hepatitis, etc., prior to conducting provider education, quality assurance activities and hospital surveys
- Expand direct services for testing and evaluation of liver disease in coordination
  - Identify clinics to refer uninsured or underinsured
    - FQHC and Immigrant Health Centers
    - Primary care physicians can do preliminary screening
  - Seek out grant opportunities

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Contact Information

NYC Department of Health and Mental Hygiene
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References

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