

Hepatitis B Pre and Post Vaccination Testing and Non-Response to Vaccination

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Characteristics of Hepatitis B Vaccine

- **Highly immunogenic: > 95% response rate**
- **Excellent safety profile, few contraindications**
- **Can be administered to immune or HBV infected individuals w/o concern**
- **Reliable testing for infection and immunity available**

Serologic Tests for Hepatitis B

**Serologic
Test**

Interpretation

HBsAg + HBc-AB

**Infection: acute
or chronic**

HBc-AB + HBs-AB

Immunity: Natural

HBs-AB

Immunity: Vaccine

Pre-Vaccination Screening

- **Not Routinely Recommended**
- **Purpose: Identify infected and/or immune individuals**
- **Defer Immunization (infected and immune)**
- **Refer for counseling & treatment (infected)**

Pre-Vaccination Serologic Testing

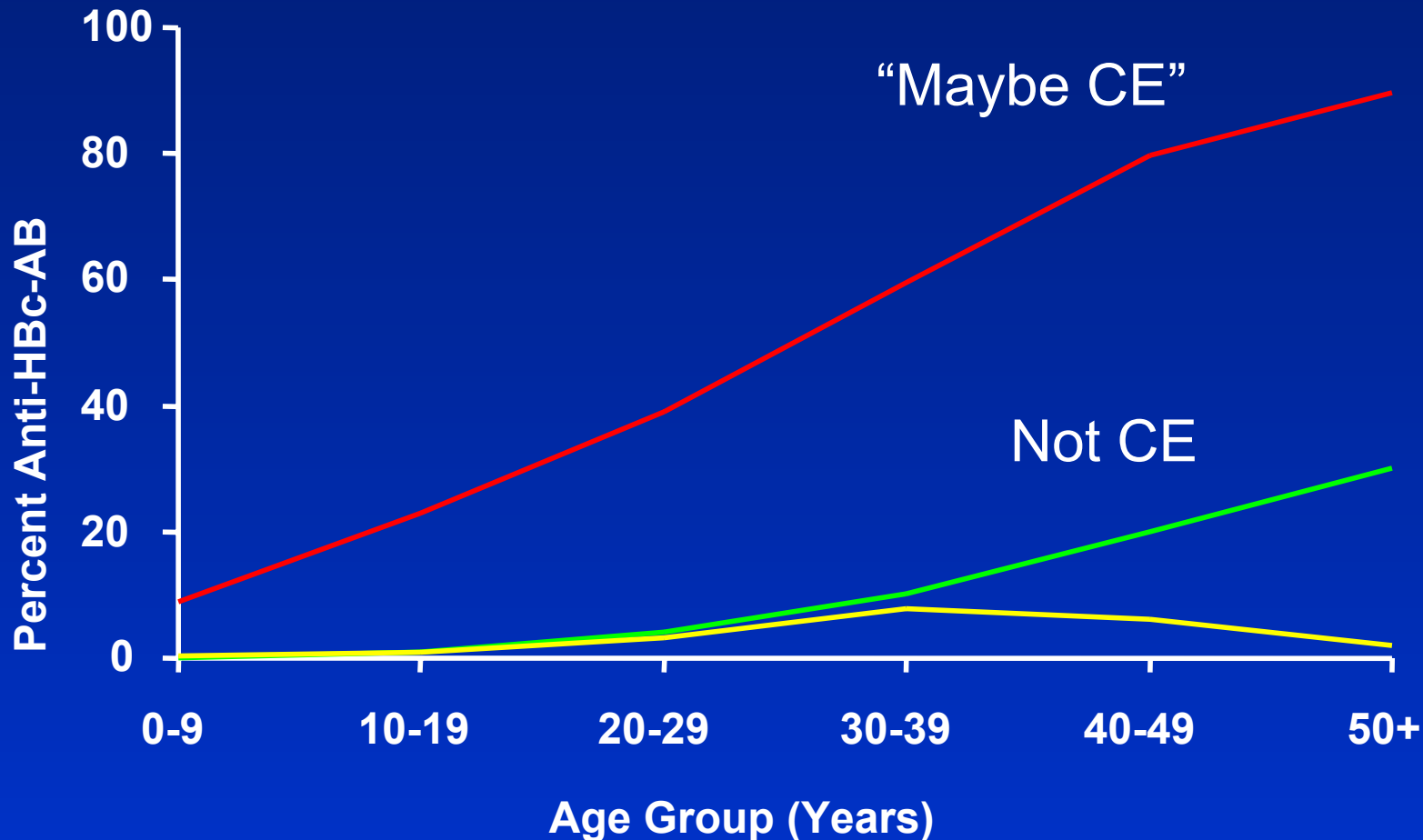
Not indicated for infant and children

- ***Maybe* considered for adult/high risk**

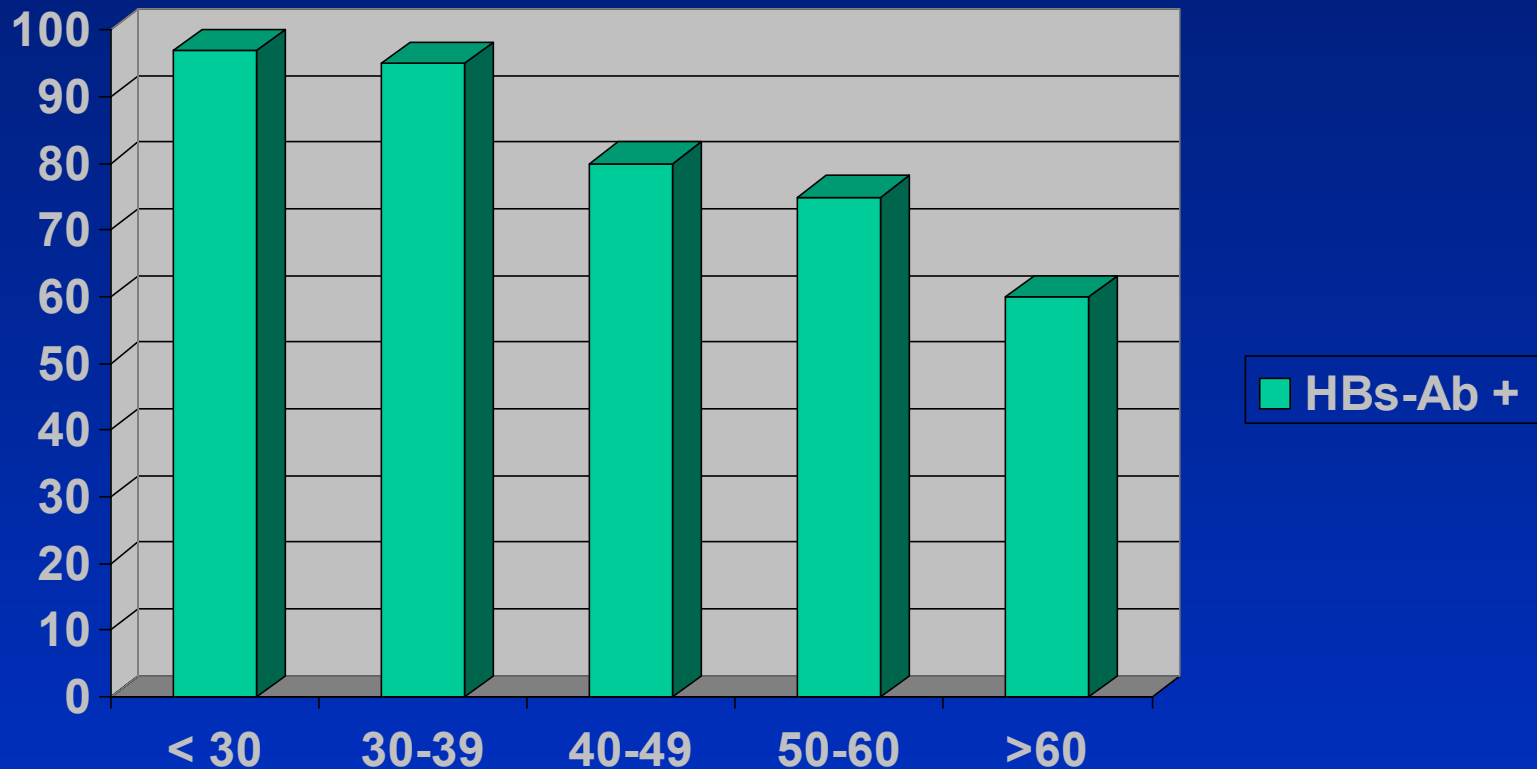
Cost effective for adult/high risk?

- **Cost of vaccine**
- **Cost of serologic testing**
- **Prevalence of infection (HBc-Ab) in population**
- **Compliance of individuals– *always administer first dose at time of testing!***

Prevalence of HBV Infection, by Age, and Cost Effectiveness of Pre-Vaccination Testing



Immunogenicity of hepatitis B vaccine by Age



95% of healthy young seroconvert with 3 doses!

Risk Factors for non-response to HB vaccine

- Older age
- Immunodeficiency
- Chronic Illness
- Smoking
- Obesity

Post-Vaccination Screening

- **> 95% seroconvert after 3 doses**
 - immune (HBs-Ab+)
- **Testing 1-2 months following 3rd dose**
 - False-negative test (Hbs-Ab neg) possible after 6 months
- **Quantitative HBs-Ab (best, if available)**
 - ≥ 10 mIU/ml HBs-Ab

Post-Vaccination Serologic Testing

- **Not Routinely Recommended**
- **May be considered:**
 - Infant of HBsAg+ mother (infected/immune)
 - High Risk for non-response and infection
 - HCWs

Post-Vaccination Screening

Management of Infants of HBsAg+ Mothers:

- Test at 9 months of age-
 - R/O possible late infection or
 - R/O passive immunity, if administer HBIG

Post-Vaccination Screening

Management of Non-Responders:

- Test 1-2 months after 3rd dose
- May administer repeat 3 dose series –0,1,6 months
- Retest after completing repeat series

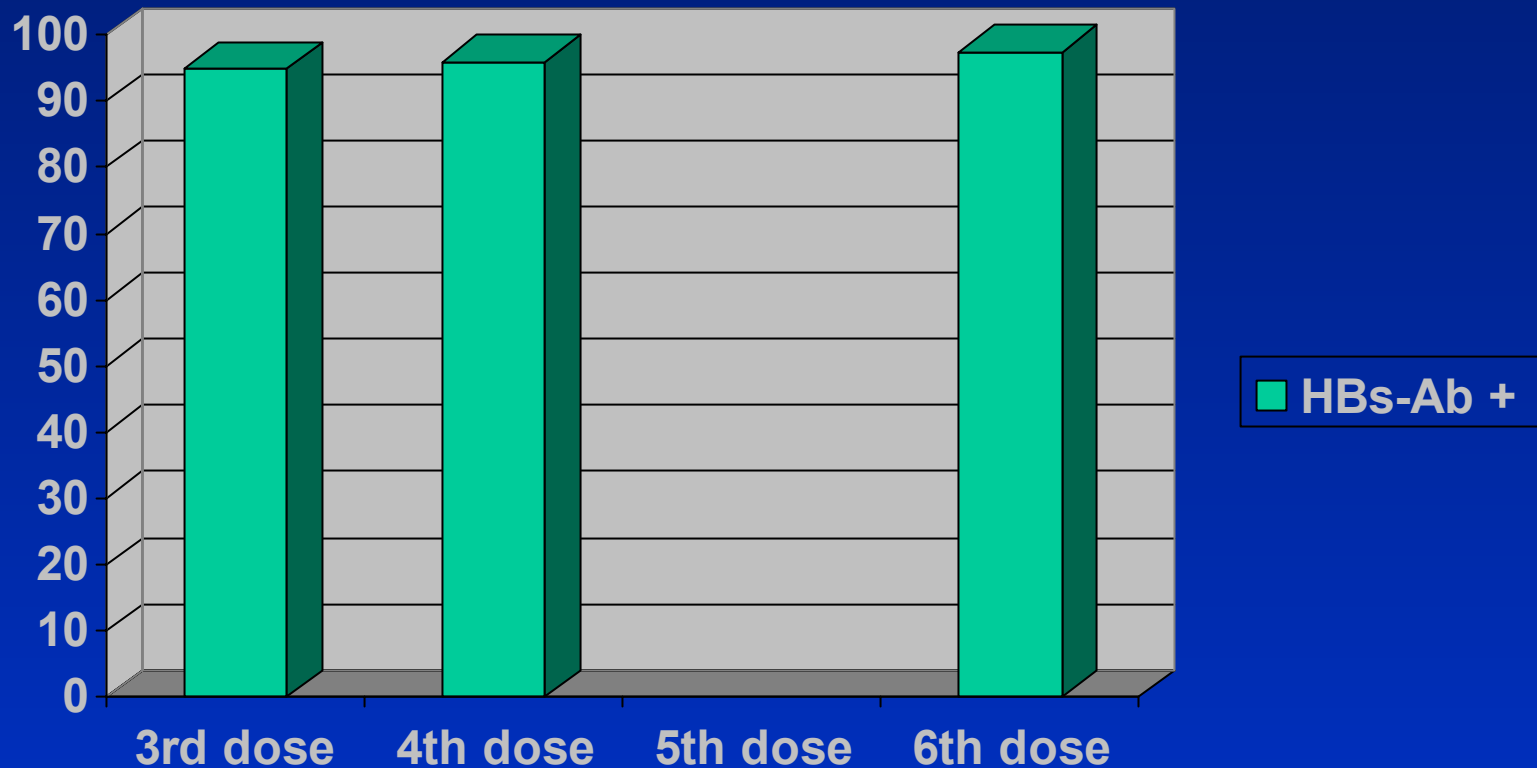
Management of Non-responders

- **May administer an additional 3 doses on same schedule (0,1,6 months)**
- **30% respond after 1 additional dose**
- **50% respond after 3 additional doses**

Persistent non-Responders

- **< 5% do not develop antibody**
- **May be non-responder or hyporesponder”**
- **“May be Chronic HBV (HBsAg+); will not respond to vaccine**
- **If exposed, should administer HBIG (if available)**

Expected Results of Post-vaccination testing



95% of healthy young seroconvert with 3 doses!

Management of Non-responders: Program Considerations

- 95% of healthy adults immune after 3 doses
- Need to test 100% to identify 5% of non-responders
- 50% of non-responders seroconvert (2.5% of total population) with 3 additional doses
- *Little Potential Benefit:*
 $95\% + 2.5\% = 97.5\%!$

END