Perinatal Hepatitis B Prevention

November 2025 Lunch & Learn

Danni Pinnick, MPH - Immunization Surveillance Coordinator

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Be Legendary.

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Hepatitis

Inflammation of the liver
- Viral or bacterial infection
- Damage/trauma
- Tumor
- Toxic exposure (high amounts of alcohol or other chemicals, fungal toxins, etc.)
- Effects of another disease or condition

Liver function tests (LFTs)
- Enzymes: ALT, AST, ALP
- Waste product: Bilirubin
- Protein: Albumin
- Prothrombin Time (PT)

Signs and Symptoms
- Jaundice
- Itching
- Dark urine
- Light stool
- Fatigue
- Abdominal pain
- Nausea/vomiting

Viral hepatitis (A-E)
- Serology
  - Surface antigen: HbSAg(+)
  - Core antigen: HbC(+)
  - Surface antibody: anti-HBs(-)

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Viral Hepatitis

Type	Spread	Vaccine	Chronic or acute	Epidemiology	Treatment
A	Fecal/oral, foodborne, water, sexual	Yes	Acute	Sporadic in US, usually travel-associated. Sometimes caused by contaminated food	Supportive
B	Bloodborne, vertical (mother to child), sexual, IV drug use	Yes	Acute or Chronic	Increasingly less common in the U.S., still prevalent globally	GI treatment, antivirals
C	Bloodborne, IV drug use, sexual	No	Usually chronic unless cured	Common in the U.S.	Antivirals
D	Bloodborne	Yes*	Actue or Chronic	Uncommon in the U.S.	GI treatment, antivirals
E	Fecal/oral, foodborne	No	Acute	Uncommon in the U.S.	Supportive

*Individuals must be infected with Hepatitis B to become infected by Hepatitis D virus

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Hepatitis B

Mother-to-child transmission is the most common way to contract Hepatitis B

- A child born to a HBV+ mom has a 95% chance of contracting disease, UNLESS they are given HBV vaccine and/or HBIG
- If a child contracts HBV from their mother perinatally, or from another source while an infant, they have a 90% chance of developing chronic hepatitis B.
- Birth dose vaccination alone reduces this chance to under 10%
- Ig administration alone reduces this chance to under 30%
- Combined HBV vaccine and HBIG administration reduces this to almost zero

Only 13% of all people living with chronic hepatitis B infection know of their infection status. Only 3% of people living with HBV are receiving treatment.

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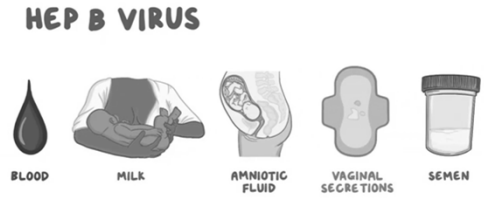
How is hepatitis B spread?



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No one without Hep B immunity is zero risk

Hepatitis B vaccination is low risk. Hepatitis B infection is high risk.

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Hepatitis B Adverse Events Summary - WHO

- Common events
  - Pain
  - Erythema
  - Swelling
  - Fever
  - Headache
- Very rare events
  - Anaphylaxis

Source: WHO, Global Manual on Surveillance of Adverse Events Following Immunization

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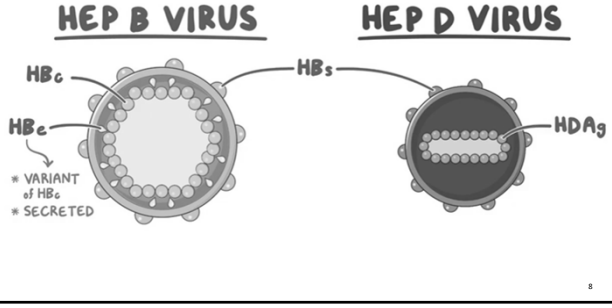

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Interpreting Hepatitis B Blood Test Results

Interpretation & Action Needed	HBsAg Hepatitis B Surface Antigen	HBsAb (anti-HBs) Hepatitis B Surface Antibody	HBcAb (anti-HBc) Hepatitis B Core Antibody
Not Immune - Not Protected Has not been infected, but still at risk for possible hep B infection. Vaccine is needed.	−	−	−
***Immune Controlled - Protected** Surface antibodies present due to natural infection. Has recovered from a prior hep B infection. Cannot infect others. No vaccine is needed.	−	+	+
Immune - Protected Has been vaccinated. Does not have the virus and has never been infected. No vaccine is needed.	−	+	−
Infected Positive HBsAg indicates hep B virus is present. Virus can spread to others. Find a doctor who is knowledgeable about hep B for further evaluation. More Testing Needed.	+	−	+
***Could be Infected** Result unclear - possible past or current hep B infection. Find a doctor who is knowledgeable about hep B for further evaluation. More Testing Needed.	−	−	+

*Inform all doctors about a prior or current hepatitis B infection and include this information as part of your health history. Talk to doctors before taking immune system suppressing medications to understand the risk for possible hep B reactivation.

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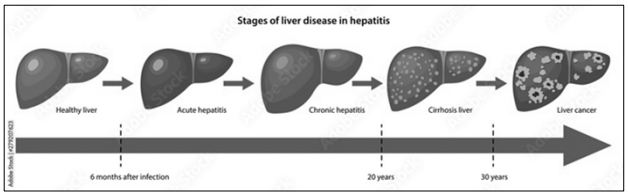
Chronic Liver Disease Progression



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Infant Hepatitis B Vaccination

U.S. Infant Hepatitis B Vaccine Schedules
For infants < 1 year of age

Vaccine	Dose 1 "Birth Dose"	Dose 2	Dose 3	Dose 4
3-dose vaccine series Brand names: Engerix-B, Recombivax HB	Within 24 hours of birth ✓	1 month after dose 1 ✓	6 months after dose 1 ✓	
4-dose combination vaccine series (pentavalent or hexavalent) Brand names: Vaxelis, Pediarix	Within 24 hours of birth (Hepatitis B vaccine) ✓	6 weeks of age (Combination vaccine) ✓	14 weeks of age (Combination vaccine) ✓	6 months of age (Combination vaccine) ✓

Key: ✓ = Monovalent hepatitis B vaccine (protection against hepatitis B only); ✓ = Combination vaccine (protection against hepatitis B + other diseases)

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Hepatitis B vaccination in children and adults

U.S. Children and Adult Hepatitis B Vaccine Schedules
For children ≥ 1 and adults
Note: the first dose should be given as soon as possible. Additional doses require minimum time intervals required between doses in order for the vaccine to be effective.

Vaccine	Dose 1	Dose 2	Dose 3
3 dose vaccine series Brand names: Engerix-B, Recombivax HB, Twinrix (hepatitis A and B - Adults ≥ 18 Years)	Now ✓	1 month after dose 1 ✓	6 months after dose 1 ✓
2 dose vaccine series Adults ≥ 18 Years Brand name: Heplisav-B	Now ✓	1 month after dose 1 ✓	

Key: ✓ = Monovalent hepatitis B vaccine (protection against hepatitis B only); = Approved for adults; = Approved for children

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What is the birth dose recommendation?

All infants are recommended to receive Hepatitis B vaccine within 24 hours of birth

Children born to HBV+ moms are also recommended to receive HBIG

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Why vaccinate at birth?

- Having a universal birth dose recommendation catches children who may otherwise be missed.
- Risk-based recommendations are confusing and difficult to implement.
- Due to the disease's long incubation period, Hepatitis B vaccine is useful as post-exposure prophylaxis.
- If there is vertical exposure during birth, the infant may avoid infection.
- When birth dose vaccination programs are suspended, even briefly, there is a notable increase in perinatal infection.

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Why can't we just test mom?

- False negatives are possible for any test.
- Testing occurs early in pregnancy and is often not repeated.
- Continued exposure to Hep B virus is likely.
- Universal vaccination helps babies who would otherwise get missed.
- Birth mothers are the largest, but not the only, risk for exposure to infants.

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Goal is fully vaccinated by six months old.

Why?...

- Maternal antibodies passed to baby are expected to have worn off by the time the infant reaches 6 months of age.
- The cell mediated response will not be properly developed until 12 months , leaving children especially vulnerable in months 6-11 if they do not have their own humoral immunity (circulating antibodies).
  - This is also why, if they are infected in infancy (under 12 months), the infection is 90% likely to become chronic.

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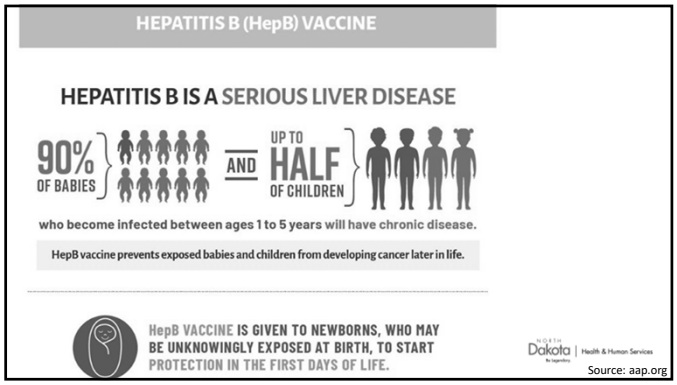

Source: aap.org

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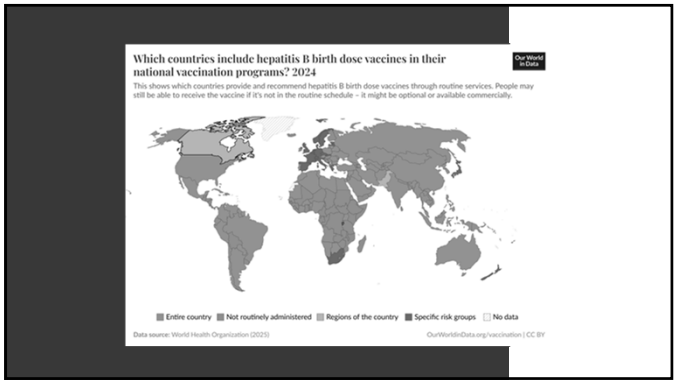

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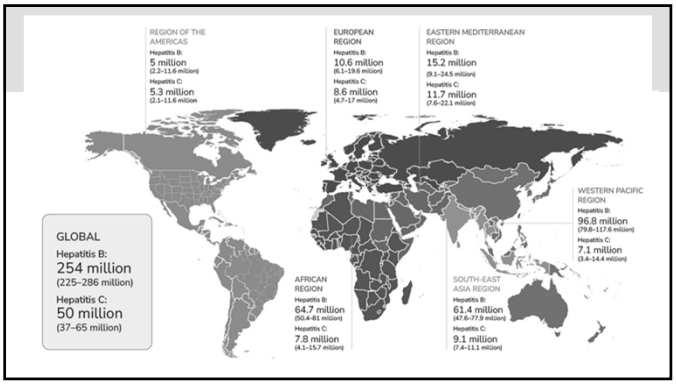

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No proven benefit in delaying vaccination

- Vaccines are given at stages in life when a human is most likely to contract and/or have serious consequences from a disease.
- Alternative vaccine spacing is impractical and time-consuming – both for parents and the medical professional who is vaccinating them.
- Extra trips to the doctor and more "pokes" can be more emotionally stressful to children.
- Vaccine schedules are based on an incredible amount of data and expertise. Delaying vaccines only lengthens the amount of time a child is vulnerable to potential disease.

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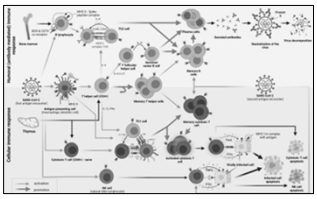
An infant's immune system is uniquely vulnerable

- Many vaccines are designed to build immunity in ways that immunity from disease can not.
- These tools are necessary for infants because they lack immune defenses that older children and adults may have.



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Perinatal Hepatitis B Prevention Program

When maternal hep B status is known to be positive:
HBV vaccine + HBIG at birth
Immunizations are given on schedule and finished by 6 months
Babies are tested for infection and antibodies at 9-12 months

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Hepatitis B Disease Reporting & Surveillance

- Hepatitis B is a mandatory reportable condition in North Dakota.
  - All HbSAg+ should be reported to Disease Control
    - Follow up tests and infectious disease consultation can determine additional
  - All HbSAg+ diagnosed during pregnancy should be reported along with the pregnancy status, estimated due date, and should be clearly noted on the mother and baby's charts
- All reported Hepatitis B cases are investigated by NDHHS.
- For female cases between 14 and 50 years of age, pregnancy status must be obtained for every Hepatitis B lab results reported.
  - Additional monitoring and follow-up is required for pregnant cases.
  - Pregnant cases are monitored throughout the duration of the pregnancy and post-delivery.
- **Birthing hospitals MUST notify us at Disease Control & Forensic Pathology when a pregnant woman is positive for Hep B and when she delivers**
- **HBIG and HBV must be entered into NDIIS**

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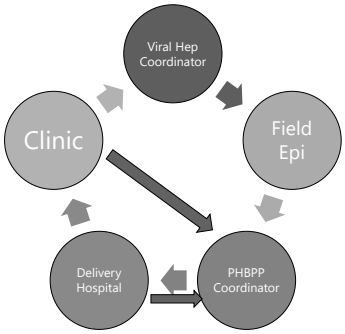

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Additional resources

- CIDRAP Vaccine Integrity Project
- CHOP Children's Hospital of Philadelphia
- Hepatitis B Foundation
- AAP American Academy of Pediatrics
  - Red Book Section(s) on Hepatitis B: vaccination and perinatal prevention

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Post-Test

- Successfully complete the five-question post-test to receive your certificate for nursing credit using the link below: https://ndhealth.co1.qualtrics.com/jfe/form/SV_eLEAtVXhm8aqZsa
- Credit for this session will be available until December 9, 2025.
- This presentation will be posted to our website at: www.hhs.nd.gov/immunizations

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Immunization Unit Staff Members

For general immunization questions: vaccine@nd.gov

For NDIIS-specific questions: NDIIS@nd.gov

Immunization Unit

Mary Woinarowicz, MA Director	Phone: 701-328-2404 Email: mary.woinarowicz@nd.gov	NDIIS Manager	Phone: Email:
Abbi Berg, MPH VFC/Quality Improvement Manager	Phone: 701-328-3324 Email: alberg@nd.gov	Allison Dykstra, MS NDIIS Coordinator	Phone: 701-328-2420 Email: ardykstra@nd.gov
Miranda Baumgartner VFC/QI Coordinator (West)	Phone: 701-328-2035 Email: mlbaumgartner@nd.gov	Ronda Kercher NDIIS Data Admin	Phone: 701-226-1379 Email: rkercher@nd.gov
Rachel Flores VFC/QI Coordinator (East)	Phone: 701-328-9016 Email: rflores@nd.gov	Melissa Marto NDIIS Data Quality Coordinator	Phone: 701-328-4169 Email: mmarto@nd.gov
Jenny Galbraith Adult Immunization Manager	Phone: 701-328-2335 Email: jgalbraith@nd.gov	Lynde Monson CDC Public Health Advisor	Phone: Email: lyndemonson@nd.gov
Danni Pinnick, MPH Immunization Surveillance Coordinator	Phone: 701-239-7169 Email: dpinnick@nd.gov		

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