Vaccine Preventable Diseases and Pregnancy: Protecting Women & Infants

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VACCINE PREVENTABLE DISEASE PROGRAM

Screening recommended: Preconception

- Per CDC:
  - All women of reproductive age should have their immunization status for tetanus-diphtheria toxoid/diphtheria-tetanus-pertussis; measles, mumps, and rubella; and varicella reviewed annually and updated as indicated. All women should be assessed annually for health, lifestyle, and occupational risks for other infections and be offered indicated immunizations.

- Specific screening for:
  - Hepatitis B
  - Human Papillomavirus
  - Influenza
  - Measles, Mumps and Rubella*
  - Tetanus, Diphtheria, Pertussis
  - Varicella*

*Specific antigen containing vaccines NOT recommended during pregnancy
Testing recommended: Prenatal

- Complete blood count (CBC)
- Blood type
- Urinalysis
- Urine culture
- **Rubella** (immunity tests only)
- **Hepatitis B** and hepatitis C
- Sexually transmitted infections (STIs)
- Human immunodeficiency virus (HIV)
- Tuberculosis (TB)

*vaccine preventable diseases

http://www.acog.org/Patients/FAQs/Routine-Tests-During-Pregnancy#

Vaccination recommended during pregnancy: Influenza (inactivated)

- Pregnant and postpartum women are at higher risk for severe illness and complications from influenza than women who are not pregnant
  - Due to changes in the immune system, heart, and lungs during pregnancy
- Influenza vaccination can be administered at any time during pregnancy, before and during the influenza season
- Studies have shown that vaccinating a pregnant woman also can protect a baby after birth from flu
  - Mom passes antibodies on to her developing baby that will protect against flu for the first several months after birth

Vaccination recommended during pregnancy: Tdap (Tetanus, Diphtheria and Pertussis)

- Healthcare provider (HCP) should administer a dose of Tdap during each pregnancy irrespective of the patient’s prior history of receiving Tdap
- To maximize the maternal antibody response and passive antibody transfer to the infant
  - Optimal timing for Tdap administration is between 27 and 36 weeks of gestation although Tdap may be given at any time during pregnancy
  - Mom will pass antibodies to baby before birth, these antibodies help protect the baby in the first few months of life
- Women not previously vaccinated and not vaccinated during pregnancy with Tdap
  - Tdap should be administered immediately postpartum

Rubella

- Pregnant women should NOT be vaccinated during pregnancy with rubella containing vaccine
  - Vaccine contains live virus
  - Pregnancy testing is not routinely recommended prior to vaccination
    - Inadvertent vaccination of women who are pregnant is not a reason for termination but women should be counseled about theoretical risk
- In order to check immunity, the IgG **ONLY** should be ordered
  - A positive IgG would indicate immunity
  - A negative IgG would indicate susceptibility
  - An individual with an “equivocal” test result should be considered susceptible unless they have other evidence of immunity
  - An IgM should **ONLY** be ordered if a HCP is suspecting illness

http://www.cdc.gov/vaccines/pregnancy/hcp/guidelines.html
https://www.cdc.gov/features/tdap-in-pregnancy/
http://www.cdc.gov/vaccines/pregnancy/hcp/guidelines.html
Follow up: Rubella immunity testing - IgG

- If IgG is positive, no further action is required and individual is considered immune
- If IgG is negative individual is considered susceptible
  - HCP should counsel pregnant women regarding precautions to avoid exposure
    - Ensure household contacts are immune to rubella
    - Isolate pregnant women from settings where rubella has been identified
    - Assure no travel to rubella endemic regions
  - After giving birth, should receive rubella containing vaccine prior to hospital discharge
- Women of childbearing age who do not respond to MMR after 2 doses
  - Administer 1 additional dose of vaccine, maximum of 3 doses recommended
  - Retesting serology is not recommended

Public health follow up: Rubella immunity testing - IgM

- If an IgM is ordered by the HCP in error
  - Positive IgM requires immediate public health investigation
  - Call HCP to inquire about
    - Symptoms
    - Why test was ordered
    - Exposure/travel
    - Immune status: vaccine history or positive IgG
  - If no symptoms, exposure or travel risk exists and test was ordered for immunity check: no public health action is required
Varicella

- Pregnant women should NOT be vaccinated during pregnancy with varicella containing vaccine
  - Vaccine contains live virus
  - Pregnancy testing is not routinely recommended prior to vaccination
    - Inadvertent vaccination of women who are pregnant is not a reason for termination but women should be counseled about theoretical risk
- Assess immune status
  - Documented history of illness indicates immunity, no serology is needed
  - Documented history of appropriate vaccination indicates immunity, no serology needed

http://www.cdc.gov/vaccines/pregnancy/hcp/guidelines.html

Varicella

- If immunity status is not documented - need to check immunity titers
  - IgG ONLY should be ordered
    - A positive IgG would indicate immunity
    - A negative IgG would indicate susceptibility
    - An individual with an “equivocal” test result should be considered susceptible unless they have other evidence of immunity

http://www.cdc.gov/vaccines/pregnancy/hcp/guidelines.html
Follow up: Varicella immunity testing - IgG

- If IgG is positive, no further action is required and individual is considered immune
- If IgG is negative individual is considered susceptible
  - HCP should counsel pregnant women regarding precautions to avoid exposure
  - After giving birth, should receive varicella containing vaccine prior to hospital discharge

Hepatitis B

- Hepatitis B surface antigen (HBsAg):
  - A protein on the surface of hepatitis B virus
  - Can be detected in high levels in serum during acute or chronic hepatitis B virus infection
  - The presence of HBsAg indicates that the person is infectious
  - The body normally produces antibodies to HBsAg as part of the normal immune response to infection
- If negative no other tests are recommended
  - Unless mother is in high risk category
- If positive further tests may be indicated
Hepatitis B Screening of Pregnant Women

Public health follow up: Hepatitis B

- Should be referred to a specialist
  - High viral load, >20,000 IU/mL
  - Elevated liver enzymes, ALT >19 IU/mL
  - Hepatitis B e antigen positive (HBeAg)

- Local health department (LHD) will follow babies born to HBsAg positive mothers
  - Babies born to HBsAg positive women are followed by the NJ Perinatal Hepatitis B Prevention Program (PHBPP)
Perinatal Hepatitis B Prevention Program (PHBPP): Prenatal

- Women should be identified during pregnancy
  - All women with positive HBsAg of child bearing age should have current pregnancy status
- LHD should provide the following
  - Education
  - Discuss sexual/household contacts
    - Provide information where contacts can be assessed for disease and immunity status
  - Information regarding follow up of child once born

Perinatal Hepatitis B Prevention Program (PHBPP): Infant vaccination

- Newborn should receive within 12 hours of birth
  - Hepatitis B immune globulin (HBIG)
  - Single antigen hepatitis B vaccine
- Child will be followed through completion of hepatitis B vaccination series
  - 1st dose: at birth
  - 2nd dose: at 1-2 months of age
  - 3rd dose: at 6 months of age
  - If indicated through use of combination vaccine or if child is <2000g at birth: 4th dose may be administered
Perinatal Hepatitis B Prevention Program (PHBPP): Post vaccine serology testing

- When child has completed the vaccine post vaccine serology testing (PVST) should be done
- PVST should be completed 1-2 months after the final dose of vaccine in the series but not before 9 months of age
  - Should be completed between 9 and 12 months of age*
    - Recently CDC recommended the shortening of the interval for PVST
- PVST includes
  - Hepatitis B surface antigen (HBsAg) **qualitative** test
  - Hepatitis B surface antibody (HBsAb/anti-HBs) **quantitative** test

*MMWR October 9, 2015;64(39):1118-20) [https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6439a6.htm](https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6439a6.htm)

Post vaccine serology testing - interpretation

- Immune with no further follow up needed
  - HBsAg – negative
  - HBsAb – ≥10mIU/mL
- Not immune, requires revaccination
  - HBsAg – negative
  - HBsAb – <10mIU/mL
- Infected, should be referred to specialist
  - HBsAg – positive
  - HBsAb – <10mIU/mL
Resources

- Centers of Disease Control and Prevention: CDC.gov
- Immunization Action Coalition: Immunize.org
- The American Congress of Obstetricians and Gynecologists: ACOG.org
- NJDOH: NJ.gov/health

Questions
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