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Protect Your Patients. Protect Yourself.

Definition of Healthcare Worker

- “Defined as all paid and unpaid persons working in health-care setting who have the potential for exposure to patients and/or to infectious materials, including body substances, contaminated medical supplies and equipment, contaminated environmental surfaces, or contaminated air.”

Evidence of Immunity

- ACCEPTABLE
 - Immunization record containing at least three data elements
 - Date of vaccine administration
 - Vaccine administered
 - Signature or initial of person who administered vaccine
 - Laboratory evidence of immunity
 - Physician diagnosed (only in certain circumstances)
- NOT ACCEPTABLE
 - Verbal history
 - Date of birth – still widely used

Immunization Exemptions

- Immunization requirements are FACILITY-specific and not set forth by the state
 - Facilities can allow exemptions but are not required
 - HCP immunization requirements have been challenged nationally and found to be acceptable
 - Rationale is that employment is voluntary, whereas school is not

Recommended Immunizations

- Hepatitis B
- Measles, Mumps and Rubella
- Varicella
- Pertussis
- Influenza
- Hepatitis A
- Meningococcal
- Live vaccines

Resources

- MMWR: Immunization of Health-Care Personnel – November 25, 2011
 - <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6007a1.htm>
- NDDoH needle stick fact sheet for hepatitis and HIV exposure information
 - <http://www.ndhealth.gov/Disease/Documents/faqs/NeedleStick.pdf>

Hepatitis B

Hepatitis B

- Hepatitis B is an infection caused by the hepatitis B virus which is transmitted through percutaneous or mucosal exposure to infectious blood or body fluid
- Did you know that hepatitis B transmission can be 100 times more likely with exposure to hepatitis B-E Antigen than to HIV-positive blood?



Hepatitis B

- The risk for HBV is associated with degree of contact with blood in the work place and with the hepatitis B-E antigen status of the source.
- The virus is also environmentally stable, remaining infectious on environmental surfaces for at least 7 days.

Hepatitis B Vaccine

- First recommended for HCP in 1982
 - Prior to recommendation there were approximately 10,000 infections in HCP
 - In 2004 this was decreased to 304
- Immunization schedule: 0,1-2, and 6 months
- Adult dosage needed for those 20 years of age and older
- Adult formulation can be given as two pediatric doses if using Recombivax®
 - Not appropriate for Engerix®
 - Recommend keeping adult doses on hand to eliminate chance of mistakes

Hepatitis B Vaccine

- Series does not need to be restarted if the second or third dose is delayed
- For persons who do not have an adequate immune response following receipt of the primary series, administration of a second complete 3-dose series followed by anti-HBs testing 1-2 months after the third dose is recommended
 - This is usually more practical than conducting serologic testing after each additional dose of vaccine.

Interpreting Serology Results

HBsAg	Hepatitis B Surface Antigen	Positive Result 	HBV infection (IgM test needed to determine chronic or acute status)
Anti-HBs	Antibody to hepatitis B surface antigen	Positive Result 	Immunity to HBV (due to natural infection or HBV vaccination)

Immune Testing

- Among persons who do not respond to a primary 3-dose vaccine series
 - 25-50% respond to an additional vaccine dose
 - 44-100% respond to a 3-dose revaccination series using standard or high dosage vaccine
- People who have measurable but low (1-9 mIU/mL) levels of anti-HBs after the initial series have better response to revaccination than persons who have no anti-HBs
- ACIP does not recommend more than two vaccine series

To Test or Not to Test?

- To determine the need for revaccination and to guide postexposure prophylaxis, serologic testing should be performed for all HCP at **HIGH** risk for occupation exposures
 - Serologic testing should be completed 1-2 months after vaccination series
 - If person is found to be immune results should be documented and that person is now a known-responder to hepatitis B vaccine

To Test or Not to Test?

- Postvaccination testing for persons at **LOW** risk for occupational exposure is likely not cost effective
 - If persons do not undergo postvaccination testing should be counseled to seek immediate testing if exposed
 - These individuals still need documented vaccination with 3 doses of hepatitis B vaccine

What to do with a non-responder?

- Persons who are found to be non-immune after 6 doses (2 full series) should be considered susceptible to HBV infection and should be counseled about precautions to prevent HBV infection and the need to obtain hepatitis B immune globulin (HBIG) post-exposure prophylaxis for any known or likely exposure to HBsAg positive blood.

Occupational Exposure Table

Exposed Persons	Treatment when source is found to be:			
		HBsAg +	HBsAg-	Unknown or Not Tested
Unvaccinated		Administer one dose of HBIG and complete hepatitis B vaccine series	May initiate hepatitis B vaccine series	Initiate hepatitis B vaccine
Previously vaccinated	Known Responder (anti-HBs is adequate)	Test exposed person for anti-HBs 1. If adequate, no treatment. 2. If inadequate, administer a booster dose of hepatitis B vaccine.	No treatment	No treatment
	Known Non-Responder (anti-HBs inadequate)	Administer one dose of HBIG in addition to completing the hepatitis B vaccine series	No treatment	If known high-risk source, may treat as if source were HBsAg positive
	Response Unknown	Test exposed person for anti-HBs 1. If adequate, no treatment. 2. If inadequate, complete hepatitis B vaccine series.	No treatment	Test exposed person for anti-HBs 1. If adequate, no treatment. 2. If inadequate, hepatitis B vaccine booster dose

Anti-HBs: Hepatitis B Surface Antibody, adequate response is ≥ 10 milli-international units

Measles, Mumps and Rubella

Vaccination Schedule

- Two doses separated by at least 4 weeks
 - Usually given at 12-18 months and 4-6 years
- Required for entry into ND childcare, preschool, school and college
- MMR is a live vaccine
 - Discussion of live vaccines later in presentation

Acceptable Evidence of Immunity

- Written documentation of vaccination with 2 doses of measles or MMR vaccine administered at least 28 days apart
- Laboratory evidence of immunity
- Laboratory confirmation of disease
- Birth before 1957
 - Using DOB as evidence of immunity for measles is discussed further on next slide

DOB as evidence of immunity

- The majority of persons born before 1957 are likely to have been infected naturally and may be presumed immune. For unvaccinated personnel born before 1957 who lack laboratory evidence of measles immunity or history of disease, health-care facilities should consider vaccinating personnel with 2 doses of MMR vaccine at the appropriate interval.
 - Gold standard would be to have laboratory evidence or immunization history for all HCP regardless of DOB

Measles, mumps and rubella

- MMR protects against all 3 diseases
- Recommendations are the same for all 3
- The rest of the discussion will concentrate on measles protection
 - Very contagious
 - Almost all measles cases will be seen by a healthcare provider and many are hospitalized

Serological Testing

- Pre-vaccination antibody screening before MMR vaccination for an employee who does not have adequate presumptive evidence of immunity is not necessary
- For HCP who have 2 documented doses of MMR vaccine or other acceptable evidence of immunity to measles, serologic testing for immunity is not recommended

Serologic Testing, cont.

- In the event that a HCP who has 2 documented doses of MMR vaccine is tested serologically and determined to have negative or equivocal measles titer results, it is not recommended that the person receive an additional dose of MMR vaccine.
 - Such persons should be considered to have presumptive evidence of measles immunity.
 - Documented age-appropriate vaccination supersedes the results of subsequent serologic testing.

HCP exposure to measles

- In the event of an exposure to measles, HCP without evidence of immunity should be offered the first dose of MMR vaccine and excluded from work from day 5-21 following exposure.
 - This accounts for the incubation period of measles
- Available data suggest that live virus measles vaccine, if administered within 72 hours of exposure can prevent or modify disease.

Varicella

Varicella Evidence of Immunity

- ACCEPTABLE
 - Written documentation of vaccination with 2 doses of varicella vaccine
 - Laboratory evidence of immunity or laboratory confirmation of disease
 - Diagnosis or verification of a history of varicella disease by a HCP
 - Diagnosis or verification of a history of shingles by a health-care provider

Evidence of Immunity

- NOT ACCEPTABLE
 - Date of birth before 1980 (previously acceptable)
 - Gold standard is to not accept DOB, but could be phased in by your facility
 - Verbal history or parental report of history of disease
 - Acceptable for the general public, not for HCP

Chickenpox vs. Shingles

- Chickenpox and shingles result from the same virus but you must have chickenpox first
- Chickenpox is highly contagious, however shingles is much less contagious
- Someone with shingles cannot give someone else shingles
 - Only risk for infection would be if someone who was susceptible to chickenpox had direct skin-to-skin contact with someone's shingles rash.

Exclusion Criteria

- Individuals with chickenpox should be excluded until all blisters have crusted over and no new lesions have resulted in over 24 hours
- Individuals with shingles DO NOT need to be excluded unless the rash cannot be covered (i.e., on the face or systemic)

Rationale for Immunization

- Varicella infection becomes far more severe the older the patient is at the time of infection
 - Especially in pregnant women
- Many patients are susceptible to chickenpox

Serological Testing

- Serological screening before vaccination of personnel without evidence of immunity is likely to be cost effective
 - This is because so many HCP will be immune due to history of disease
 - In younger employees this may not be the case

Pertussis

Pertussis

- Pertussis is a highly contagious bacterial infection that ND still sees every year
- Most dangerous in young infants or those with high risk conditions
- Cases are on the rise again in other states
 - Washington, Oregon and Vermont have announced large increases in cases in 2012
 - WA has as many as 6x the number of cases they had last year at this point

ND Pertussis Data



Pertussis State Data - 2012		
Total Cases	30	Age Information
Confirmed	14	
Epi-Linked	14	Under 1
Probable	2	1 to 4
		5 to 9
		10 to 17
Gender		
Female	21	18 to 24
Male	9	25 to 39
		40 to 59
Hospitalized	2	60 and Over
Last Updated	4/5/2012	

Pertussis Data

- At this time last year only had 20 cases reported
- Most notable increase:
 - Morton County
 - All of 2011: 2 cases
 - As of April 5, 2012: 11 cases
- Pertussis is highly underreported
 - Usually diagnosed in infants and linked to other sibling, parent or childcare provider

Vaccination Recommendations

- Regardless of age, HCP should receive a single dose of Tdap as soon as feasible if they have not previously received Tdap and regardless of the time since their most recent Td vaccination.
- Tdap is licensed for a one-time only dose
 - Tdap can be administered to anyone over the age of 7 years old
 - Includes pregnant HCP and those over 65 years of age
- If history of Tdap is unknown administer Tdap

Cocooning Strategies

- Vaccinate HCP who work with infants
- Vaccinate family members who will have significant contact with infants
- Ensure older siblings are vaccinated
- Keep infants away from people with coughs if feasible

Influenza

Influenza Vaccine

- Recommended to ALL HCP regardless of the level of patient interaction
- Many health care centers are moving towards mandating influenza vaccine for ALL employees to protect other employees as well as patients

LAIV and HCP

- TIV (flu shot) is recommended to be used for vaccinating household members, HCP, and others who have close contact with severely immunosuppressed person during those periods in which the immunosuppressed person requires care in a protective environment
 - Specialized patient-care area with a positive airflow relative to the corridor, high-efficiency particulate air filtration and frequent air changes

Contact Restrictions

- HCP who receive LAIV should avoid providing care for severely immunosuppressed patients requiring a **protected environment** for 7 days after vaccination
- HCP who have contact with lesser degrees of immunosuppression (e.g., persons with HIV, chemotherapeutic medication use, or who are cared for in other areas such as the NICU) can receive TIV or LAIV

High Risk Groups

Meningococcal Vaccine

- Not routinely recommended for HCP
- Vaccination should be considered for:
 - Certain high risk conditions
 - Travel to areas with epidemic meningitis
 - Work with the bacteria in a laboratory setting

Hepatitis A

- HCP have not been demonstrated to be at an increased risk due to occupational exposures
- Vaccination should be considered for:
 - Certain high risk conditions
 - International travel

Live Vaccines

HCP and live vaccines

- HCP can receive, administer and handle live vaccines
- HCP who are pregnant or otherwise contraindicated should not receive live vaccines but may still administer them to others

Questions

Type your question into either of the chat windows at your right.

After the presentation, questions may be sent to:

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This presentation will be posted to our website:

www.ndhealth.gov/immunize

Evaluation and Post-test

- Evaluation
 - Following today's presentation, please complete the brief survey
 - We use your feedback to improve future Lunch & Learn sessions!