SUBJECT: Infection Control Management of Exposures to Non-Bloodborne Pathogens in Children's National Employees Procedure

PROCEDURE: CHPC:I:10P

DATE EFFECTIVE: 01/2009

Infectious Diseases Included: Hepatitis A Virus, Meningococcal Disease, Pertussis, Rabies, Scabies and/or Pediculosis (Lice), Tuberculosis (TB), Varicella/Zoster virus, Parvovirus B-19 and Measles.

Management of exposures to bloodborne pathogens (such as HIV/AIDS, Hepatitis B Virus and Hepatitis C Virus) is addressed in CHPC:I:04 & CHPC:I:04P.

I. PROCEDURE

A. Roles/Responsibilities

All CNHS Staff	• Must comply with this policy and procedure
Infection Control/ Hospital Epidemiology	• Shall provide investigation and confirmation of infectious disease exposures • Shall determine measures necessary to contain and control confirmed and potential infectious disease exposures • Shall assist in the direction of exposed staff to appropriate evaluation and treatment
Infectious Disease Attending On-Service	• Shall fulfill the role of Infection Control (IC) during hours when the IC office is closed
Occupational Health (OH)	• Shall provide evaluation and treatment, as appropriate, to all susceptible personnel exposed to infectious diseases in the workplace • Shall assist in the coordination of chemical prophylaxis as appropriate • Shall maintain documents of the exposure and treatment for all affected personnel
Pharmacy	• Shall provide medications to prevent and/or treat infectious diseases in staff exposed in the workplace
Supervisors/Managers of All Departments	• Will assist in the control of all infectious disease exposures as outlined below

B. Process for Exposure Notification

i. The first person to observe a potential exposure shall immediately notify Infection Control (IC). During off hours, report any exposures to the on-call Infectious Disease (ID) attending.

ii. IC/ID will investigate the report to assess whether an exposure has occurred:
   a. If no exposure has occurred, IC/ID will notify the reporting department/unit/personnel.
   b. If the exposure is confirmed, IC will:
      1. Define criteria for exposure(s) in personnel;
      2. Identify whether urgent or emergent management is necessary;
      3. Initiate the communication pathway outlined in Appendix I; and

4. Identify any IC measures necessary to control the spread of disease including (but not limited to) isolation precautions for contagious patients, prophylaxis in exposed patients, cohorting of patients and/or environmental cleaning.

iii. In the event of confirmed exposure(s), and following notification by IC, the Nurse Manager and Medical Unit Director of the unit in which the exposure(s) occurred shall:
   a. Generate a list of all clinical personnel who meet the exposure definition (Appendix III);
   b. Submit the list to IC and Occupational Health (OH);
   c. Notify all affected personnel to report to OH for exposure management; and
   d. Ensure all required IC measures for disease containment are initiated and maintained as related to patients and clinical personnel.

iv. Supervisors/Managers of other clinical services or ancillary departments will generate a list of all affected personnel and direct affected personnel to OH for exposure management.

v. Upon notification of exposures, OH will:
   a. Provide disease specific evaluation and treatment as outlined in Appendix II; when a protocol does not exist for a specific disease, IC will provide an exposure definition and make recommendations for treatment or prophylaxis in conjunction with OH;
   b. Alert Pharmacy to the type and expected volume of prophylaxis/treatment medications to be dispensed;
   c. Determine appropriate work restrictions for exposed personnel and provide documentation of any restrictions for release to the personnel's supervisor;
   d. Provide necessary follow-up and/or clearance for return to work duties; and
   e. Prior to the close of OH normal business hours, OH will notify the Administrative Director (AD) on-call as to whether the exposure event has been deemed urgent or emergent:
      1. All personnel will follow OH protocols on follow-up timing and location for urgent and emergent exposure events.

vi. Any susceptible personnel identified as having an infectious disease exposure is required to report to OH for evaluation and treatment; if an employee reports instead to his/her private physician for management, the following documentation must be provided to OH prior to returning to work:
   a. Written documentation of all medications provided to treat the infectious disease;
   b. Written documentation of any vaccinations provided in response to the exposure; and
   c. Documentation of medical decision not to treat, including rationale (ex. contraindications to prophylaxis, determination that no exposure occurred).
      NOTE: If restriction from work is indicated (by disease exposure), personnel **must** be given clearance from OH to return to work, regardless of whether treatment was provided outside of Children's National.

vii. IC will notify the supervisors/managers that have potentially exposed employees and OH that the timeline for effective post-exposure management is over; at this time, IC will obtain the finalized employee exposure list from OH.

viii. When a Children's National patient has been identified as an index case, the attending physician shall notify the patient and/or household members of the exposure, risks associated with exposure, and coordinate appropriate treatment and follow-up for the visiting household members and other close contacts of the index case; IC/ID will contact the attending physician regarding recommended prophylaxis and/or treatment, as appropriate.

II. REVIEW OR REVISION DATE

Original: 01/2009
Revised: 04/2012
Revised: 02/2015

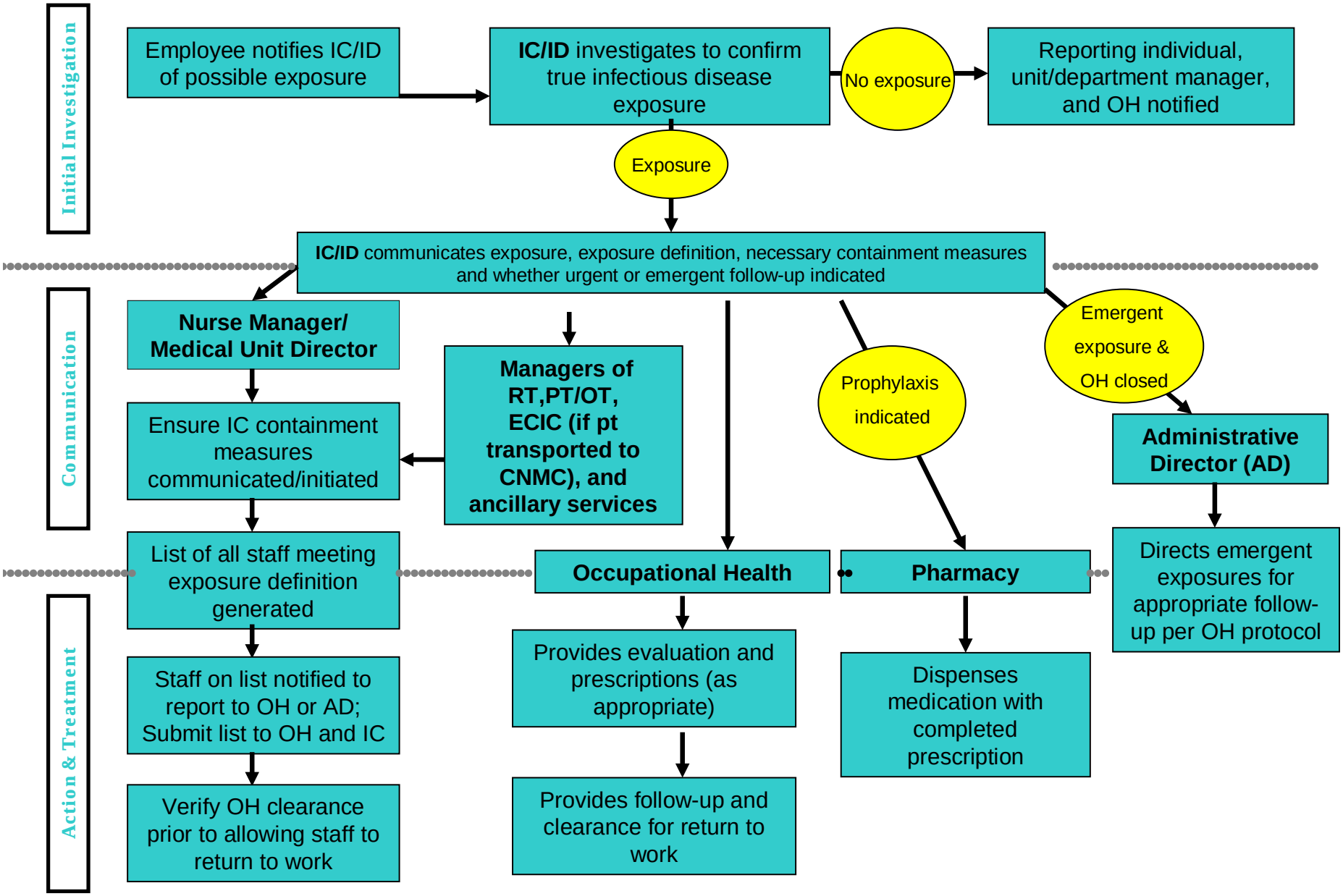
III. REFERENCES

Pickering, L.K. (Ed.). (2006). *Red Book 2012: 2012 Report of the committee on infectious diseases* (29th ed.). Chicago: American Academy of Pediatrics.

Bolyard, E.A., Tablan, O.C., Williams, W.W., Pearson, M.L., Shapiro, C.N., Deitchmann, S.D. and the Hospital Infection Control Practices Advisory Committee. (1998). *Guidelines for infection control in healthcare personnel.* Retrieved December 21, 2008, from Centers for Disease Control and Prevention website: http://www.cdc.gov/ncidod/hip/guide/InfectControl98.pdf

CHPC:I:10, Infection Control Management of Exposures to Non-Bloodborne Pathogens in Children's National Employees Policy

APPENDIX I. Exposure Investigation Pathway



APPENDIX II. Disease Specific Protocols for the Management/Treatment of Susceptible Employees Exposed in the Workplace

I. Hepatitis A Virus

Definition of exposure:
Unprotected contact with the stool of a patient with diagnosed Hepatitis A.

Post-Exposure Management:

A. All potentially exposed employees will be referred to Occupational Health for management; Occupational Health will evaluate the personnel for significant exposure, contraindications to treatment and signs or symptoms of infection.

B. Recommendations for post exposure prophylaxis:
   i. If it has been 2 weeks or less since the time of exposure:
      a. ≤40 years of age: Hepatitis A Vaccine
      b. >40 years of age: Immune Globulin (IG), 0.02mL/kg (note: Hepatitis A Vaccine can be used if IG is not available)
      c. Immunocompromised or liver disease (any age): Immune Globulin (IG), 0.02mL/kg
   ii. If it has been more than 2 weeks since the time of exposure:
      a. No prophylaxis; but Hepatitis A Vaccine may be indicated for ongoing exposure.

C. Immune Globulin may be obtained from Children's Hospital Pharmacy after the appropriate evaluation has been done.

II. Meningococcal Disease

Definition of exposure:
Close, direct and unprotected contact with the oral or respiratory secretions of individuals with invasive meningococcal disease; close, direct contact shall be defined as that which could occur through suctioning, intubation, mouth-to-mouth resuscitation or face-to-face contact (within 3 feet) of a coughing or sneezing patient or contamination from a laboratory specimen of a confirmed case.

Post-Exposure Management:

A. All potentially exposed employees will be referred to Occupational Health for management; Occupational Health will evaluate the employee for significant exposure, contraindications to treatment and signs or symptoms of infection.

B. Post-exposure prophylaxis is required for all employees with confirmed exposure; oral Rifampin, 600 mg twice daily for four doses or a single 500 mg dose of oral Ciprofloxacin may be prescribed.
   i. Pregnant individuals who are exposed to meningococcal disease will be given a single, 250mg, intramuscular (IM) dose of Ceftriaxone.

ii. Personnel may obtain their medications from the Children's Hospital Pharmacy after the appropriate evaluation has been done.

C. Employees will be educated regarding potential side effects of antibiotic therapy and signs or symptoms associated with meningococcal infection.

III. Pertussis

Definition of exposure:
Direct contact with the respiratory secretions of a patient with Pertussis (example - extensive contact without respiratory protection during physical exam, suctioning, intubation, bronchoscopy or a patient coughing directly into an employee's face).

Post-Exposure Management:
A. All potentially exposed personnel will be referred to Occupational Health for management; Occupational Health will evaluate personnel for significant exposure, contraindications to treatment and signs or symptoms of infection.

B. Post-exposure prophylaxis is required for all staff with confirmed exposure and may include:
i. Azithromycin, 500 mg initial oral dose followed by 250 mg daily for days 2 through 5
ii. Erythromycin, 500 mg oral dose taken 4 times daily for 14 days
iii. Individuals who cannot tolerate macrolides may be given trimethoprim 340 mg oral dose daily and sulfamethoxazole 800 mg oral dose twice daily for 14 days
iv. Employees may obtain their medications from the Children's Hospital Pharmacy after the appropriate evaluation has been done.

Note: If 21 days have elapsed since cough onset in the index case, prophylaxis has limited value.

C. Occupational Health will educate personnel regarding the signs/symptoms of pertussis and potential side effects of antibiotic therapy.

D. Employees who develop signs or symptoms of pertussis will be evaluated by Occupational Health.
i. Evaluation may include obtaining a nasopharyngeal swab for Bordetella Pertussis PCR.
ii. Any exposed employee developing symptoms of pertussis infection will be relieved from work until:
a. Pertussis has been ruled out;
b. Until 21 days after cough onset; and
c. 5 days of antimicrobial treatment have been completed.

IV. Rabies

Definition of exposure:

Animal Exposure: Direct contact with the saliva of an animal with suspected or confirmed rabies through a bite, scratch or contact with an open wound.

Human Exposure: Employees bitten by a patient with rabies or whose mucous membranes or open wounds have come in contact with saliva, cerebrospinal fluid or brain tissue of a patient with rabies; other hospital contacts of a patient with rabies do not require immunization.

Post-Exposure Management:

A. Personnel with a potential exposure shall be instructed to cleanse wound(s) immediately with soap and water and will be referred to Occupational Health for further management.

B. Occupational Health will assess personnel with a significant exposure for evidence of immunity to rabies through:
   i. History of proper pre-exposure or previous post-exposure prophylaxis with either human diploid cell rabies vaccine (HDCV) or purified chicken embryo cell vaccine (PCECV); or
   ii. Adequate rabies titer.

C. Personnel meeting the above criteria will be treated with a 1 ml dose of HDCV intramuscularly (IM) on days 0 and 3 post-exposure:
   i. IM vaccine doses must be administered into the deltoid area; and
   ii. The vaccine should be administered as soon as possible after exposure, within 24 hours.

D. Personnel who do not meet the criteria for immunity will be treated with vaccine and human rabies immune globulin (RIG) concurrently.
   i. RIG 20 IU/kg to be administered as follows:
      a. As much of the dose as possible should be infiltrated into the area of the wound(s); the remainder shall be administered IM;
      b. Administer RIG immediately (it can be given up to 7 days post-exposure); and
      c. If RIG is not immediately available, vaccine should be given as indicated below.
   ii. HDCV 1 mL or PCECV 1 mL vaccine doses will be given IM on days 0, 3, 7 and 14, for a total of 4 doses:
      a. IM vaccine doses must be administered into the deltoid area;
      b. Do not inject vaccine and RIG into the same site; and
      c. If vaccine is not available, RIG will be provided alone and vaccination begun as available.

V. Scabies and/or Pediculosis (Lice)

Definition of Exposure:
Unprotected skin-to-skin contact with a patient with scabies/pediculosis.

Post-Exposure Management:

A. All potentially exposed employees will be referred to Occupational Health for management; Occupational Health will evaluate the employee for significant exposure, contraindications to treatment and signs or symptoms of infection.

B. Treatment and follow up examination will be performed under the direction of Occupational Health; exposed employees will be treated as follows:
   i. Scabies exposure
      a. The treatment of scabies can be accomplished using permethrin 5% - applied topically once; employees will be given instructions on the application, including the length of time the cream or lotion must remain on the body/hair before rinsing.
      b. The use of oral antihistamines and topical corticosteroids can help relieve the itching, since itching may not subside for several weeks as the lesions are a result of a hypersensitivity reaction to the mite.
      c. Because of safety concerns and availability of other treatments, Lindane should not be used for the treatment of scabies.
   ii. Pediculosis exposure - the treatment of pediculosis can be accomplished using one of several products including the following:
      a. Permethrin 1% (topical)
         1. Available without a prescription
         2. Retreatment is sometimes recommended 9-10 days after the first one, especially if hair is washed within a week after the first treatment:
            - Product labeling recommends a second treatment 7 or more days after the first application if live lice are seen.
         3. Some lice are resistant to this product.
      b. Pyrethrin with piperonyl butoxide
         1. Available without a prescription
         2. Repeated application 7-10 days after the first is required to kill newly hatched lice.
      c. Malathion 0.5% (topical)
         1. A second application 7-9 days later may be necessary if live lice are seen.

C. Employees may obtain their initial medication from the Children's Hospital Pharmacy after the appropriate evaluation has been performed

VI. Tuberculosis (TB)

Definition of Exposure:
Unprotected contact (i.e. N-95 not worn) with a patient who has been diagnosed with active, infectious pulmonary or laryngeal TB or with aerosolized particles from tissue that is positive for acid fast bacilli (AFB) on smear; the standard exposure is defined as 2 continuous hours within 4 feet of the active infectious person.

Post-Exposure Management:
A. The employees with possible exposure will be referred to Occupational Health for evaluation, education and preventive therapy, if indicated.

B. Employees with previously negative PPD skin tests will have a PPD skin test placed after exposure unless they have been tested in the past (3) three months.

i. If negative, a repeat skin test will be placed 10-12 weeks after the exposure:
   a. If the repeat test is negative, the employee will return to the routine annual PPD placement schedule.

ii. Employees with a previous negative PPD result of 0 mm will be considered as having a positive reaction if ≥ 5 mm induration is observed; otherwise, results of ≥ 10 mm will be considered positive for new infection; any staff with a positive PPD result will be evaluated for evidence of pulmonary TB:
   a. Evaluation will include assessment for clinical signs or symptoms of active disease and a chest radiograph;
   b. Employees with signs or symptoms of pulmonary disease will be relieved from work until active pulmonary TB has been ruled out;
   c. Employees without evidence of active pulmonary disease will be referred to their private physician or to a public health clinic for possible preventive treatment and follow-up; and
   d. Employees must provide written documentation of any recommended treatment to the Occupational Health office prior to returning to work.

C. Employees with previously positive PPD skin test results will be evaluated by Occupational Health for signs or symptoms of pulmonary TB; after initial evaluation is completed, re-evaluation will be done in 10-12 weeks after the exposure:
   i. Employees with signs or symptoms of pulmonary disease will be relieved from work until active TB has been ruled out; and
   ii. Employees without signs or symptoms of TB may return to work and resume their previous schedule of TB screening.

D. Employees with evidence of active pulmonary or laryngeal TB must be relieved from work and referred to a physician or health clinic for treatment.
   i. The employee may return to work only after providing written medical documentation of:
      a. An adequate antimicrobial regimen;
      b. Three (3) negative, consecutive daily AFB sputum smears; and
      c. Resolved cough.

E. The Occupational Health Provider will provide all exposed employees with education about disease, the signs and symptoms of disease, the meaning of a positive skin test, preventive treatment options, the risks of developing active pulmonary disease if skin test positive, indications for repeat chest x-rays and who to notify if symptoms develop.

VII. Varicella/Zoster Virus (VZV)

Definition of Exposure:
A healthcare worker will be considered as having been susceptible to VZV if the employee:
- Has no history or a questionable history of varicella pending serologic test results; and
- Has not received 2 doses of varicella vaccine;

And will be considered exposed to VZV with:

- Varicella - Face-to-face contact (for 5 or more minutes) with a person who has or develops VZV infection within 48 hours of contact; or
- Herpes Zoster (shingles) - Direct contact with any patient having open, weeping lesions.

Post-Exposure Evaluation:
Potentially exposed employees will be referred to Occupational Health for evaluation; Occupational Health will assess personnel with exposure for evidence of immunity to varicella through:

- Documentation in the employee health record of a past history of infection; or
- Documentation of a positive titer for IgG antibodies; employees with a negative VZV IgG titer ≥ one year old will have a new titer drawn; or
- Documentation of receipt of 2 doses of varicella vaccine.

Post Exposure Management

A. Exposed, susceptible employees will be provided varicella vaccine unless medically contraindicated:
   i. Employees who have received only 1 varicella vaccine will be provided a second dose within 3-5 days of exposure provided more than 4 weeks has elapsed since first dose; and
   ii. A 7 day course of oral acyclovir (800 mg 4 times a day, unless contraindicated) may be provided for employees when vaccine is contraindicated:
      a. Acyclovir post-exposure prophylaxis should begin 7 to 10 days after exposure; and
      b. Employees may obtain their medications from the Children's Hospital Pharmacy after the appropriate evaluation has been done.

B. Susceptible (seronegative), immunocompromised employees will be offered Immune Globulin Intravenous (IGIV) within 10 days of exposure.

C. All exposed employees susceptible to VZV will be removed from direct patient care activities from the 8th day after their first exposure to the 21st day after their last exposure to contagious individuals:
   i. Employees who receive IGIV will be removed from direct patient care activities from day 8 through the 28th day after their last VZV exposure;
   ii. Staff may arrange for alternate assignments during this period that do not carry the potential for exposure of susceptible patients, staff or visitors to the employee; and
   iii. Employees who develop active varicella infection, either natural or vaccine-induced, will be excluded from work until all lesions have dried and crusted:
      a. Employees who develop active varicella infection must have their infection confirmed by their private physician or by Occupational Health; confirmatory testing (e.g. VZV DFA and/or PCR) may be required to confirm the diagnosis.

D. All exposed, non-susceptible employees will be asked to monitor themselves for signs or symptoms of varicella infection and inform Occupation Health if symptoms develop.

E. Follow up will be performed under the direction of Occupational Health:

i. All employees restricted from work must be cleared by Occupational Health before returning to direct patient care activities.

F. Occupational Health will maintain all records of employees' exposures, treatments and outcomes in the employees' personal health records.

G. Administrative leave will only be provided to exposed staff during post-exposure furlough, under the following circumstances:
i. If the employee develops skin lesions following VZV immunization and until lesions are crusted over;
ii. If the employee is exposed prior to the second VZV immunization to be provided by Occupational Health;
iii. If the employee has medical contraindications to pre-exposure immunization; or
iv. If the employee had evidence of immunity prior to exposure.

VIII. Parvovirus B-19

Definition of Exposure:
A pregnant healthcare worker who had contact with the patient during the incubation period or illness irrespective of whether this pregnant healthcare worker wore the correct personal protective equipment (PPE).

Post-Exposure Management:
Potentially exposed employees will be referred to Occupational Health for further evaluation; these women may be advised to follow-up with their personal OB physician to undergo serologic testing for IgG antibody to Parvovirus B-19 to determine their susceptibility to infection.

IX. Measles

Definition of Exposure: A healthcare worker will be considered as having been exposed to Measles if the employee:
- Has no laboratory evidence of immunity or confirmation of disease;
- Has not received 2 doses of the live-virus measles vaccine; **and**
- Had direct contact with infectious droplets or aerosolized particles from an infected person:
  1. Airborne transmission via aerosolized droplet nuclei has been documented in closed areas for up to 2 hours after a person with measles occupied the area.

Post-Exposure Management:
A. Exposed, susceptible employees will be provided measles vaccine unless medically contraindicated, within 72 hours of exposure or IG within 6 days.

B. IG may be considered for pregnant women without evidence of measles immunity and people with severely compromised immune systems.

C. Exposed, susceptible employees will be excluded from work from 5 days after the first exposure to 21 days after the last exposure, regardless of prophylaxis.

D. Follow up will be performed under the direction of Occupational Health:
   i. All employees restricted from work must be cleared by Occupational Health before returning to direct patient care activities.

E. Occupational Health will maintain all records of employees' exposures, treatments and outcomes in the employees' personal health records.

F. Administrative leave will only be provided to exposed staff during post-exposure furlough under the following circumstances:
   i. If the employee has medical contraindications to pre-exposure immunization; or
   ii. If the employee had evidence of immunity prior to exposure.

APPENDIX III. Exposed Employee Line List

<u>Instructions</u>: Only include the employees that met the exposure definition on the line list. The list should be sent to Occupational Health (OH) and Infection Control (IC) upon completion.

Exposure Date(s):_____
Department Name:_____
Organism:_____

Department Use ONLY			Occupational Health (OH) Use ONLY		
Employee Name	**Exposed Date**	**Notified of Exposure**	**Visited OH?**	**Received Post-Exposure Prophylaxis (Yes, No, Refused)**	**Cleared for Work?**