Guidance for Post-Exposure Prophylaxis in Health Care Workers

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Be Legendary.

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Only some vaccine-preventable diseases (VPD) responses include post-exposure prophylaxis (PEP)

- Invasive Meningococcal Disease (IMD)
  - Bacterial disease
    - Antibiotics are used in treatment of acute cases and those exposed
    - HCWs are not routinely vaccinated against IMD
    - Less pathogenic than pertussis or measles
- Pertussis
  - Bacterial disease
    - Antibiotics are used in the treatment of acute cases and those exposed
    - HCW are routinely vaccinated against pertussis
- Measles
  - Viral disease
    - If given within 72 hours of exposure, MMR vaccine may prevent or lessen severity of disease
    - HCW are routinely vaccinated
- Hepatitis A
  - Viral disease
    - If given within two weeks of exposure, Hepatitis A vaccine may prevent or lessen severity of disease
    - HCW are not routinely vaccinated

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What is meningitis?

- Meningitis is an inflammation (swelling) of the protective lining of the brain and spinal cord that can be caused by a bacterial infection. Several bacteria can cause meningitis. Leading U.S. causes vary by risk factors and include:
- *Streptococcus pneumoniae*
- Group B *Streptococcus*
- *Escherichia coli*
- *Haemophilus influenzae*
- *Neisseria meningitidis*
- *Listeria monocytogenes*
- *Mycobacterium tuberculosis*, which causes tuberculosis or TB, is a less common cause.

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Invasive Meningococcal Vaccines

The United States uses **3 types of meningococcal vaccines**. Each type helps protect against different serogroups of meningococcal disease.

MenACWY vaccines
•**4 serogroups**: A, C, W-135, and Y

MenB vaccines
•**1 serogroup**: B

MenABCWY vaccines
•**5 serogroups**: A, B, C, W-135, and Y

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MenACWY vaccination

- **11- to 12-year-old adolescents** are recommended to receive dose one of the **MenACWY** vaccine.
- **16-year-old adolescents** are recommended to receive a booster dose of the **MenACWY** vaccine.
  - The booster dose provides protection during the ages when adolescents are at highest risk.

Individuals at increased risk

traveling to meningitis endemic areas

immunosuppressed or taking certain medications

other medical conditions

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MenB vaccination

- MenB vaccination is recommended as shared clinical decision making for adolescents **16 through 18 years of age**.
- Administered as a 2-dose series with doses spaced 6 months apart.
- Healthcare providers who see college-bound adolescents during pre-college visits should take the opportunity to discuss MenB vaccine and initiate the series for those who choose to receive it.
- People desiring more rapid protection against serogroup B (e.g., students with less than 6 months before college entry) may receive a 3-dose series (0, 1–2, 6 months) to optimize rapid protection.

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Transmission in Healthcare Settings

- *N. meningitidis* can be transmitted person-to-person through unprotected direct contact with the respiratory secretions or saliva of a person with clinical disease, such as meningitis or bacteremia[1][11][12]. Exposures in healthcare may include mucous membrane contact with infectious secretions from close, face-to-face contact during activities such as mouth-to-mouth resuscitation, endotracheal tube placement or management, or open airway suctioning while not wearing or correctly using recommended personal protective equipment (PPE)[3][6][12][13].
- Brief, non-face-to-face contact, such as standing in the doorway of a patient's room, cleaning a patient's room, delivering a medication or food tray, starting an IV, or performing a routine physical exam, is generally not considered an exposure[1][4]. Unprotected direct contact with the respiratory secretions or saliva of a person colonized with *N. meningitidis,* without clinical disease, is not considered an exposure.

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If Chemoprophylaxis is recommended

- Chemoprophylaxis is administered as soon as possible after exposure, ideally less than 24 hours after identification of an index patient[1][3]. Chemoprophylaxis administered more than 14 days after onset of illness in an index patient is probably of limited or no value[1][2][13]. In the event of an exposure involving a patient with possible meningococcal meningitis without microbiologic confirmation (e.g., culture negative, Gram stain negative, or lumbar puncture (LP) unable to be performed), decisions about use of PEP are made on a case-by-case basis considering the epidemiologic and clinical likelihood *of N. meningitidis* in the source patient.
- Rifampin, ciprofloxacin, and ceftriaxone are 90%-95% effective in reducing nasopharyngeal carriage of *N. meningitidis* and are all acceptable antimicrobial agents for chemoprophylaxis[1][3][18]. Azithromycin is not routinely recommended, nor is it a first-line agent for PEP, but it may be used as chemoprophylaxis in situations such as sustained ciprofloxacin-resistant strains of *N. meningitidis* in a community[12][19][20]. Detailed information regarding dosage and administration of PEP for *N. meningitidis* is available in the *Manual for the Surveillance of Vaccine-Preventable Diseases* (https://www.cdc.gov/surv-manual/php/table-of-contents/chapter-8-meningococcal-disease.html) and at Public Health Strategies for Antibiotic-resistant *Neisseria meningitidis* (https://www.cdc.gov/meningococcal/php/antibiotic-resistant/index.html).[12]

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Cases of invasive meningococcal disease, 2025

- April 2025
  - Individual who was unresponsive upon a welfare check
  - First responder/EMS exposure to oral secretions
  - No obvious risk factors in individual
  - Bacteria could not be isolated, but typing was possible and determined this was a non-vaccine strain N. mening (non-typable, not A, B, C, W-135, or Y)
- November 2025
  - Individual with mild risk factors
  - Ambulatory – presented to ER due to symptoms and was admitted to a larger hospital
  - Bacteria could be isolated (original CSF sample) and was type B
  - Isolate sent to referent lab for WGS and later to CDC for surveillance testing
  - Resistance tests were delayed, but this was determined to be susceptible to antibiotics, including Cipro

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Table 1. Recommended chemoprophylaxis regimens for close contacts of persons with invasive meningococcal disease

Recommended chemoprophylaxis regimens for close contacts and persons with invasive meningococcal disease

Drug	Age	Dose	Duration	Efficacy (%)	Cautions
Rifampin	<1 month	5 mg/kg, orally, every 12 hours	2 days		Discussion with an expert for infants <1 month
	≥1 month	10 mg/kg (maximum 600 mg), orally, every 12 hours	2 days	90–95	Can interfere with efficacy of oral contraceptives and some seizure prevention and anticoagulant medications; may stain soft contact lenses. Not recommended for pregnant women.
Ceftriaxone	<15 years	125 mg, intramuscularly	Single dose	90–95	To decrease pain at injection site, dilute with 1% lidocaine.
	≥15 years	250 mg, intramuscularly	Single dose	90–95	
Ciprofloxacin[a]	≥1 month	20mg/kg (maximum 500 mg), orally	Single dose	90-95	Not recommended for pregnant women.
Azithromycin		10 mg/kg (maximum 500 mg)	Single dose	90	Not recommended routinely. Equivalent to rifampin for eradication of *N. meningitidis* from nasopharynx in one study

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Measles Disease Facts

- Symptoms: fever, malaise, cough, coryza, conjunctivitis, Koplik spots and maculopapular rash
- Incubation period: 7-21 days (average 12 days from exposure to illness onset)
- Duration: Prodrome (pre-rash) lasts from 2-8 days. Rash typically lasts from 4 to 7 days. Cough can persist for 2 weeks
- Hospitalization: 20%
- Period of infectivity: 4 days before rash onset to 4 days after rash onset
- Susceptibility: Born in 1957 or later and unvaccinated
- Mode of Spread: airborne, droplet, secretions, fomites
- Diagnosis: **rule zero=risk factors!! (not vaccinated and recent travel or known exposure a) PCR (NP/OP swab and urine+NP/OP)** b) IgM NOT TO BE DONE ALONE c) acute and convalescent titers; d) viral isolation
- Pre-exposure vaccine efficacy: 90-95% one dose, 97-99% two doses (2-4 weeks for complete immune response)
- Isolation and quarantine recommended: Yes
- Post-exposure prophylaxis: 72-hour window for vaccine; 6-day window for IG.
- Treatment: Supportive, severe measles (hospitalized) Vit A under guidance of physician

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Case Definition

The following **case definition for case classification** of measles cases, including case classifications for importation status, has been approved by the Council of State and Territorial Epidemiologists (CSTE) and was published in 2012. [29]

Clinical description:

An acute illness characterized by:

- generalized, maculopapular rash lasting ≥3 days; and temperature ≥101°F or 38.3°C; and cough, coryza, or conjunctivitis

Probable:

In the absence of a more likely diagnosis, an illness that meets the clinical description with:

- no epidemiologic linkage to a laboratory-confirmed measles case; AND
- noncontributory or no measles laboratory testing

Confirmed:

An acute febrile rash illness with:

- isolation of measles virus from a clinical specimen; OR detection of measles virus-specific nucleic acid from a clinical specimen using polymerase chain reaction; OR IgG seroconversion or a significant rise in measles immunoglobulin G antibody using any evaluated and validated method; OR a positive serologic test for measles immunoglobulin M antibody; OR direct epidemiologic linkage to a case confirmed by one of the methods above

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Classification

- Measles CASE
  - A "case" is someone who meets the case-definition for measles
  - Rash onset=Day 0
    - They are contagious -4 through +4
    - Day -5 would not be considered within their contagious period
  - Recommended to ISOLATE at home and only leave for medical treatment
    - Day +5 is the first day they are allowed to leave
- Measles CONTACT
  - A "contact" is someone who has shared an airspace with a case while the case was contagious
    - Measles can linger in the air for up to 2 hours
  - Incubation period = 7 through 21 days (average 11-14)
  - Recommended to QUARANTINE at home starting day five after the first exposure through day 21 after the last exposure
    - Quarantine could be longer than 21 days based on time between first and last exposure

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Measles Prevention

- Primary prevention through vaccination
  - MMR/MMRV (in US)
- Secondary prevention through post-exposure prophylaxis and case investigation
  - Vaccine can be given within 72 hours of exposure
  - IGIM/IGIV can be given within 6 days of exposure
- Tertiary prevention
  - Treatment for measles is supportive care.
  - No specific antivirals are approved for treatment.
  - Antibiotics may be used to treat secondary infections.

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MMR/MMRV Vaccine

- MMR (measles, mumps and rubella) vaccine is recommended for all children
  - First dose should be given at **12 to 15 months of age**
  - Second dose should be given at **4 to 6 years of age**
- One dose = 90%
- Two doses = 97% effective

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Source: CDC

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Know how to Diagnose Measles

- Be aware of the distinguishing features of measles rash versus other rash illnesses, as well as how this rash appears on a variety of skin tones.
- Screen patients for additional explanations for rash illness.
  - Dermatological reactions to recent antibiotic use are commonly mistaken for measles, but without proper travel history and testing, may be erroneously diagnosed when measles infection is responsible for the rash.
- Use the proper test for measles
  - Collect a PCR swab at a minimum and consider a blood test, if practical.
  - Both test may also be useful in checking for other diseases that are on the differential diagnosis.
  - People being screened for measles may also need to be screened for other common/seasonal respiratory diseases such as COVID-19, Influenza, Strep infection, etc.
  - **In general, IgM tests alone for many diseases are not able to confirm a clinical diagnosis and PCR should be collected whenever applicable.**

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Protect your staff

- **Make sure all staff are appropriately vaccinated against measles**
- Use airborne precautions (PPE)
- Use a negative pressure room if available
- Only vaccinated individuals should enter the room with a suspected or confirmed measles case
- Staff who are immune-suppressed (pregnancy, medication, etc.) should avoid being around suspected or confirmed measles cases
- Make sure staff are fit-tested for N95 masks and have them available for use in the event of a suspect measles case
  - Because measles is airborne, a regular surgical mask will not fully protect a person from contracting or passing along measles

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Limit exposure to your other patients and staff

- Have receptionists ask measles screening questions at intake. If an individual has symptoms of measles (febrile rash) and/or recent travel abroad, **room them as soon as possible after check-in.**
- Have staff working with suspect measles case use N-95 masks.
  - Other patients and individuals may use surgical masks, since N-95 masks will be of limited use without a prior fit test.
- Use a negative pressure room, if available.
- Sanitize any rooms or space that a suspect or confirmed measles case has been and do not use the room for a minimum of **TWO HOURS** after its use.
- Consider implementing drive-up testing or have contingency plans for testing outdoors or in the suspected case's vehicle when weather allows.

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Pertussis aka "whooping Cough"

- *Bordatella pertussis*
  - *Not to be confused with parapertussis*
- Respiratory infection
- Year round, late summer/autumn peak
- Cyclic incidence, 5-10 year peaks
- Incubation period 4-21 days (7-10 avg)

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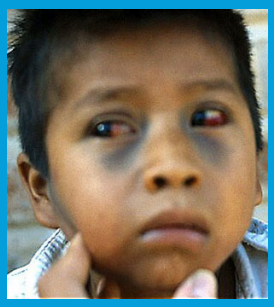
Symptoms of Pertussis

- Early Symptoms
  - Coryza (runny nose)
  - Low-grade fever
  - Mild cough
  - Apnea in babies
- Late Symptoms
  - Paroxysms (fits) of cough
  - Inspiratory "whoop" (gasp)
  - Post-tussive emesis (coughing that causes gagging/vomiting)
  - Other sequelae of extreme coughing fits
  - Cyanosis (turning blue)



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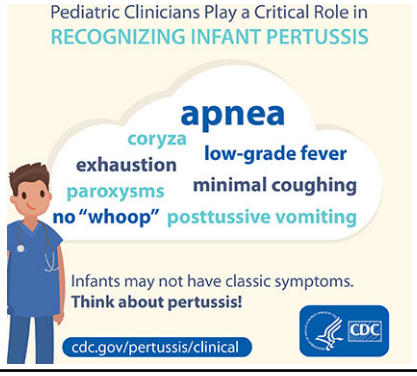

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CASE DEFINITION (2020)

Clinical Criteria

- In the absence of a more likely diagnosis, a cough illness lasting ≥2 weeks, with at least one of the following additional signs or symptoms:
  - Paroxysms of coughing; **OR**
  - Inspiratory whoop; **OR**
  - Post-tussive vomiting; **OR**
  - Apnea (with or without cyanosis)

Laboratory Criteria

- *Confirmatory laboratory evidence:*
  - Isolation of *B. pertussis* from a clinical specimen
  - Positive Polymerase Chain Reaction (PCR) for *B. pertussis*
- **Epidemiologic Linkage**
- Contact with a laboratory-confirmed case of pertussis

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Case Definition (continued)

Case Classification

Probable

- In the absence of a more likely diagnosis, illness meeting the clinical criteria

OR

- Illness with cough of any duration, with at least one of the following additional signs or symptoms:
  - Paroxysms of coughing; or
  - Inspiratory whoop; or
  - Post-tussive vomiting; or
  - Apnea (with or without cyanosis)

AND

- Contact with a laboratory confirmed case (epidemiologic linkage)

Confirmed

- Acute cough illness of any duration, with
- Isolation of *B. pertussis* from a clinical specimen
  - Optimal timing for culture is between 0-2 weeks after cough onset

OR

- PCR positive for *B. pertussis*
  - Optimal timing for PCR testing is between 0-4 weeks after cough onset
  - *NOTE: IgM is not diagnostic, for pertussis*

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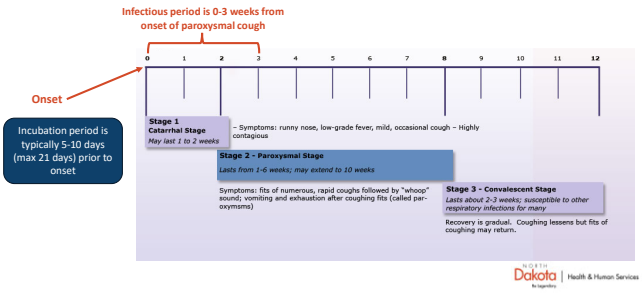
Disease Progression (weeks)



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Pertussis Treatment and Chemoprophylaxis Recommendations

Antibiotic	Infants (< 6 months of age)	Infants (≥ 6 months of age) and Children	Adults
Azithromycin*** (Zithromax®)	< 1 month: Recommended agent. 10 mg/kg/day in a single dose for 5 days 1-5 months: 10 mg/kg/day in a single dose for 5 days	10 mg/kg in a single dose on day 1 then 5 mg/kg per day on days 2-5 (Max 500mg)	500 mg in a single dose on day 1 then 250 mg per day on days 2-5
Erythromycin (E-mycin®, Eryc®, EryTab®)	< 1 month: Not preferred, associated with IHPS.* 1-5 months: 40-50 mg/kg per day in 4 divided doses for 14 days	40-50 mg/kg/day PO, in 4 divided doses for 14 days (Max 2 g/day)	2 g per day in 4 divided doses for 14 days
Clarithromycin (Biaxin®)	< 1 month: Not recommended 1-5 months: 15 mg/kg/day in 2 divided doses for 7 days	15 mg/kg/day PO in 2 divided doses for 7 days (Max 1 g/day)	1 g per day in 2 divided doses for 7 days
Trimethoprim-Sulfamethoxazole (Bactrim™, Septra®)	<2 months: Contraindicated 2-5 months: TMP 8 mg/kg/day, SMZ 40 mg/kg/day in 2 divided doses for 14 days	TMP 8 mg/kg/day, SMZ 40 mg/kg/day in 2 divided doses for 14 days	TMP 320 mg/day, SMZ 1600 mg/day in 2 divided doses for 14 days

SMZ = sulfamethoxazole, should not be given to pregnant women near term, nursing mothers, or infants < 2 months of age
TMP = trimethoprim, should not be given to pregnant women near term, nursing mothers, or infants < 2 months of age

Source: Centers for Disease Control and Prevention. Recommended Antimicrobial Agents for Treatment and Postexposure Prophylaxis of Pertussis. MMWR 2005;54 (No. RR-14):10.

*Infantile hypertrophic pyloric stenosis.

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Only High Risk HCW are recommended for PEP

- High-risk contacts definition: those at highest risk of severe disease or of transmitting to others who are at risk for severe disease, including:
  - Infants (under 12mo), especially <4mo and those without a history of DTaP vaccine
  - Pregnant women in third trimester
  - People who care for or live with infants
  - All who attend or work at childcare setting with infants or pregnant woman in 3rd trimester

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Lower Risk contacts are not recommended for PEP

- Non-pregnant staff and students at childcare facility or school setting
- PEP is not necessarily needed, but contacts should be advised to monitor for symptoms for 21 days and seek care as soon as possible if early symptoms (cold-like) develop

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Exposed Healthcare Workers

- If unmasked exposure occurrs:
  - Contact may be offered PEP
  - Contact may self-monitor for symptoms for 21 days
- Guidance should consider the patient population served by HCW
  - PEP and exclusion are preferred if working with high-risk patients
- HAI/ICN should be notified/consulted

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Who Needs PEP?

- All household contacts
- Infants under 12 months of age
- Individuals with pre-existing health conditions
- Those who are in contact with high-risk individuals
  - Especially those who work in NICU, prenatal care, childcare
- Potentially more individuals, in the event of an outbreak

Note: PEP has limited value if 21 days have passed since exposure

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Recommendations for Cases & Contacts

- Confirmed and probable cases are recommended to isolate at home until:
  - they have been on antibiotics for 5 days; or
  - 21 days have passed since cough onset
- There is no recommendation for quarantine for contacts of confirmed or probable cases
- May attend childcare, school, and/or work while on antibiotics
- Are recommended to isolate should symptoms develop

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Thank you!

Questions?

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