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Measles Clinical Assessment, Testing and Infection Control Guidance for Ambulatory Care Providers

Summary

The United States is experiencing a large multi-state measles outbreak following exposures linked to California theme parks in December 2014. As of February 13, a total of 125 measles cases have been confirmed in 7 states, Mexico and Canada in association with this outbreak. As of February 19, 2015, there have been no recent confirmed cases of measles identified in South Carolina. The South Carolina Department of Health and Environmental Control (DHEC) is closely monitoring this outbreak and continuing surveillance and response activities for febrile rash illnesses.

Measles is one of the most highly contagious diseases known and the possibility of measles importations remains a threat. In addition to cases resulting from exposure at the theme park, another 30% associated with this outbreak are the result of secondary transmission to close contacts in households and other community settings. Among reported cases the majority were either unvaccinated, including children too young to be vaccinated or had an unknown vaccination status. The current multi-state outbreak illustrates that unvaccinated individuals are at risk for measles from exposures due to importations and in venues with large numbers of international visitors like tourist attractions and airports. Critical measures to control the spread of measles include surveillance for measles through the appropriate evaluation of febrile rash illnesses and assuring high vaccination coverage in all populations. This Advisory and the attached Measles Clinical Assessment Guide provides information about the clinical assessment, testing and infection control guidance for health care providers in the ambulatory care setting in the evaluation of and management of suspect measles cases.

Clinical Assessment

- Consider measles in anyone with a febrile rash illness, and clinically compatible symptoms (cough, coryza, and or/ conjunctivitis) who has recently traveled abroad or from an area with a current outbreak.
- **Measles Clinical Assessment Guide** Because measles is no longer endemic in the U.S. the attached Guide provides information for providers who are unfamiliar with the classic measles presentation, progression and the characteristic pattern and distribution of the measles rash. Measles is unlikely in individuals who meet the criteria for immunity or do not have the typical, progressive rash illness. Serological testing of non-measles cases may result in false-positive

results. The likelihood of false positive IgM results is higher when testing for diseases that are not common in the population. Cross-reactivity can occur due to other viral conditions or rheumatologic diseases which results in lower positive predictive value of the laboratory test. False positives occur in individuals treated for another febrile illness with antibiotics which resulted in a rash. Thus, it is important to focus testing on those who are at risk for measles.

Measles Testing

- Notify your regional DHEC office regarding any suspect measles cases. If you have a patient that does not meet the clinical criteria with a clinical presentation or history that is concerning for measles in the attached Measles Clinical Assessment Guide, please call your regional DHEC office for further discussion of the case to determine if measles testing is recommended.
- If testing is determined to be indicated, the following tests are available at the DHEC Bureau of Laboratories
 - Measles PCR
 - Specimens should be collected within 3 days of rash onset for the most accurate results. Specimens collected after 3 days of onset have a higher risk of false negative results.
 - Specimens will be accepted when collected up to 14 days after rash onset.
 - Polyester tipped (ex. Dacron) throat swabs with an aluminum or plastic shaft are required for testing.
 - Specimens must be collected and immediately placed in viral transport media (pink fluid). Your regional DHEC office will assist you in obtaining the correct swab and viral transport media, if the necessary specimen collection material is not available.
 - The collected swab must be immediately placed in viral transport media and stored at refrigerated temperatures. The sample needs to arrive at the BOL within 48 hours of collection. If shipping is delayed, then the sample must be frozen at minus 70 and shipped on dry ice.
 - Testing will not be performed for specimens that are collected on alternate swabs (ie. cotton tips, calcium alginate tips, or wooden shafts), received more than 72 hours after collection that aren't stored frozen, improperly labeled, warm, or dry (in less than 200ul of transport medium).
 - Serology – IgM and IgG
 - Detection of specific IgM antibodies in a serum sample collected within the first few days of rash onset can provide presumptive evidence of a current or recent measles virus infection.
 - Collect specimens in a red top vacuum tube.
 - IgM antibodies usually appear 3-5 days after onset of rash and can be present for 30 days or longer.
 - Individuals with serologic specimens collected prior to the 3rd day after rash onset that are negative may require follow-up testing.
 - IgG serology testing is available for the determination of immunity status and convalescent serum testing.
 - Specimen must be maintained cold (2-8°C) during storage and shipment.

Ambulatory Infection Control Recommendations

Measles is transmitted by contact with an infected person through coughing and sneezing; infected people are contagious from 4 days before their rash starts through 4 days afterwards. After an infected person leaves a location, the virus remains viable for up to 2 hours on surfaces and in the air.

- Immediately place suspect measles patients into an airborne isolation (negative pressure) room. If an airborne isolation room is not available, place a surgical mask on the patient and place the patient into an exam room with a closed door.
- Facilities without a negative pressure room for airborne isolation should have a plan to handle patients with a history or clinical presentation suggestive of highly contagious diseases transmitted by the airborne route including measles:
 - Apply a surgical mask to any patient suspected of having measles and immediately take them directly through a predetermined low traffic area into an exam room. It is advisable to have the patient come at the end of the day or enter through an alternate entrances to prevent any potential exposures.
 - All efforts should be made to utilize a room with light traffic flow for the examination of a suspected measles case. This room should remain closed for at least 2 hours to allow adequate air exchange and thorough surface cleaning should be performed. At all times this door should remain closed.
- Healthcare workers (HCW) without presumptive evidence of immunity should not enter the isolation room if immune HCW are available. If a susceptible HCW is exposed to measles then the susceptible HCW should be excluded from duty from day 5 after first exposure to day 21 after last exposure, regardless of post-exposure vaccination.
- Because of the possibility, albeit low, of MMR vaccine failure in healthcare providers exposed to infected patients, they should all observe airborne precautions in caring for patients with measles. Regardless of presumptive immunity status, respiratory protection consistent with airborne infection control protection is recommended for all healthcare staff entering the room. Because N95 respirators are not available in most ambulatory care settings, the use of a surgical mask is recommended for the patient and the HCW. Use of an N95 respirator or a respirator with similar effectiveness in preventing airborne transmission is recommended in hospital settings.
- Patients diagnosed with measles must be isolated and restricted from activities during the contagious period which can be up to 4 days after the rash onset.

Contact your regional DHEC office for assistance and instructions for measles specimen collection and test submission.

Resources for Additional Information

- Guidelines for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings 2007: <http://www.cdc.gov/hicpac/pdf/isolation/Isolation2007.pdf>
- CDC. Measles—United States, January 1–May 23, 2014. MMWR. 2014;63:496-499 <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6322a4.htm>
- CDC’s Measles (Rubeola) website. <http://www.cdc.gov/measles/index.html>
- CDC’s Measles Vaccination website. <http://www.cdc.gov/measles/vaccination.html>
- DHEC Health Alerts and Notifications: <http://www.scdhec.gov/Health/FHPF/HealthAlertsNotifications/>

MEASLES CLINICAL ASSESSMENT GUIDE

Assess for measles in susceptible individuals considering the classic presentation and/or epidemiologic links that would strongly suggest evidence of measles. Because measles is no longer endemic in the U.S. this Guide may assist providers who are unfamiliar with the distinctive presentation and clinical course of measles when considering it in the differential diagnosis of individuals presenting with rash illness.

Measles is unlikely in individuals who either: meet the criteria for immunity, do not have the classic prodromal illness, typical, progressive maculopapular rash, or do not manifest with the illness progression described below. Conduct a clinical assessment for measles as follows:

| | Yes | No |
|---|-----|----|
| Evidence of Immunity | | |
| Documentation of age-appropriate vaccination with a live measles virus-containing vaccine | | |
| <ul style="list-style-type: none"> ○ One previous dose of MMR? < 5% remain susceptible ○ Two previous doses of MMR? < 1% remain susceptible | | |
| Laboratory evidence of immunity | | |
| Laboratory confirmation of disease | | |
| Birth before 1957 | | |
| Clinical Presentation | | |
| Prodrome present? | | |
| <ul style="list-style-type: none"> • Fever (>101° F or 38.3°C) • Cough • Coryza • Conjunctivitis | | |
| <i>Measles is unlikely if “No” responses to the above signs/symptoms in individuals with a rash.</i> | | |
| <ul style="list-style-type: none"> • Koplik’s spots (bluish gray specks on a red base on the buccal mucosa) most often on the mucosa adjacent to the 2nd molars. • Malaise, anorexia, diarrhea, other? | | |
| Prodrome of at least several days? | | |
| Rash Characteristics | | |
| Did rash follow prodrome after several days? | | |
| Did rash begin on the face? | | |
| Did rash progress over the course of days from the face, down the body involving the extremities last? | | |
| Is the rash maculopapular and becoming confluent? | | |
| <i>Measles is unlikely if “No” responses to the above rash characteristics</i> | | |
| Is the individual moderately to severely ill with fever? | | |
| Epidemiologic Link | | |
| Possible contact with measles case or measles transmission area in the past 10 – 14 days? | | |

DHEC contact information for reportable diseases and reporting requirements

Reporting of measles is consistent with South Carolina Law requiring the reporting of diseases and conditions to your state or local public health department. (State Law # 44-29-10 and Regulation # 61-20) as per the DHEC 2015 List of Reportable Conditions available at:

<http://www.scdhec.gov/Library/CR-009025.pdf>

Federal HIPAA legislation allows disclosure of protected health information, without consent of the individual, to public health authorities to collect and receive such information for the purpose of preventing or controlling disease. (HIPAA 45 CFR §164.512).

| Regional Public Health Offices – 2015 | | | |
|--|---|--|--|
| Mail or call reports to the Epidemiology Office in each Public Health Region | | | |
| MAIL TO: | | | |
| Lowcountry 4050 Bridge View Drive, Suite 600 N. Charleston, SC 29405 Fax: (843) 953-0051 | Midlands 2000 Hampton Street Columbia, SC 29204 Fax: (803) 576-2993 | Pee Dee 145 E. Cheves Street Florence, SC 29506 Fax: (843) 661-4859 | Upstate 200 University Ridge Greenville, SC 29602 Fax: (864) 282-4373 |
| CALL TO: | | | |
| Lowcountry Berkeley, Charleston, Dorchester Phone: (843) 953-0043 Nights/Weekends: (843) 441-1091 Beaufort, Colleton, Hampton, Jasper Phone: (843) 322-2453 Nights/Weekends: (843) 441-1091 Allendale, Bamberg, Calhoun, Orangeburg Phone: (803) 943-3878 Nights/Weekends: (843) 441-1091 | Midlands Kershaw, Lexington, Newberry, Richland Phone: (803) 576-2749 Nights/Weekends: (888) 801-1046 Chester, Fairfield, Lancaster, York Phone: (803) 286-9948 Nights/Weekends: (888) 801-1046 Aiken, Barnwell, Edgefield, Saluda Phone: (803) 642-1618 Nights/Weekends: (888) 801-1046 | Pee Dee Chesterfield, Darlington, Dillon, Florence, Marlboro, Marion Phone: (843) 661-4830 Nights/Weekends: (843) 915-8845 Clarendon, Lee, Sumter Phone: (803) 773-5511 Nights/Weekends: (843) 915-8845 Georgetown, Horry, Williamsburg Phone: (843) 915-8804 Nights/Weekends: (843) 915-8845 | Upstate Anderson, Oconee Phone: (864) 260-5801 Nights/Weekends: (866) 298-4442 Abbeville, Greenwood, Laurens, McCormick Phone: (864) 227-5947 Nights/Weekends: (866) 298-4442 Cherokee, Greenville, Pickens, Spartanburg, Union Phone: (864) 372-3133 Nights/Weekends: (866) 298-4442 |
| For information on reportable conditions, see http://www.scdhec.gov/Health/FHPF/ReportDiseasesAdverseEvents/ReportableConditionsInSC/ | | DHEC Bureau of Disease Control Division of Acute Disease Epidemiology 2100 Bull St • Columbia, SC 29201 Phone: (803) 898-0861 • Fax: (803) 898-0897 Nights / Weekends: 1-888-847-0902 | |

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- Health Alert** Conveys the highest level of importance; warrants immediate action or attention.
- Health Advisory** Provides important information for a specific incident or situation; may not require immediate action.
- Health Update** Provides updated information regarding an incident or situation; unlikely to require immediate action.
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