RUBELLA (GERMAN MEASLES)
Includes Confirmed and Possible Cases

Background

This case definition was developed by the Armed Forces Health Surveillance Branch (AFHSB) for the purpose of epidemiological surveillance of rubella infection. The methodology used in this case definition captures cases of *confirmed* rubella infection and attempts to identify individuals that may have had rubella infection in the past (i.e., *possible* cases).

Clinical Description

Rubella, commonly known as "German Measles", is a virus classified as a togovirus, genus *Rubivirus*. Following respiratory transmission, replication of the virus occurs in the nasopharynx and regional lymph nodes with an approximate incubation period of 14 days. Symptoms are often mild and may be subclinical in up to 50% of individuals. In children a characteristic maculopapular rash is usually the first symptom. In older children the rash is preceded by low-grade fever, malaise, lymphadenopathy, and upper respiratory symptoms. The clinical course is variable with the rash lasting two to three days and lymphadenopathy resolving over several weeks. Recovery from primary infections usually results in lifetime immunity. Receipt of the rubella vaccine is preventative and is required for entry into military service.[1]

Case Definition and Incidence Rules

For surveillance purposes, a *confirmed* case of rubella is defined as:

- One record of a reportable medical event *with* laboratory or epidemiological confirmation.

For surveillance purposes, a *possible* case of rubella is defined as:

- One record of a reportable medical event of rubella *without* laboratory or epidemiological confirmation.

- *One hospitalization or outpatient medical encounter* with any of the defining diagnoses of a *possible* case of rubella in the *primary* diagnostic position; *plus* a "rubella associated symptom" (see ICD9 and ICD10 code lists below) in *any* other diagnostic position.

Incidence rules:

For individuals who meet the case definition:

- The incidence date is considered the date of onset documented in a reportable medical event report, or the first hospitalization or outpatient medical encounter that includes a defining diagnosis of rubella.

(continued on next page)

[1] Rubella Virus. Centers for Disease Control and Prevention (CDC). Epidemiology and Prevention of Vaccine-Preventable Diseases, 13th ed. April, 2015. Available at: www.cdc.gov/.../pubs/pinkbook/downloads/rubella.pdf. Accessed January 2018.

Case Definition and Incidence Rules *(continued)*

- An individual is considered an incident case only *once per lifetime*.

Exclusions: *(applies to possible cases of rubella infection only)*:

- Cases with *one* medical encounter with evidence of rubella immunization *within 7 days* before or after the case-defining encounter; as indicated by the following vaccine administered (CVX) codes: 003 (MMR), 004 (M/R), 006 (rubella) 038 (rubella/mumps), 094 (MMRV)

- Individuals with evidence of a positive test for serologic immunity to rubella *within 7 days* before or after the case defining encounter.

- Cases with *one* Current Procedure Code (CPT) or *one* ICD9/ICD10 procedure code indicating rubella vaccination or antibody testing recorded during the *same* medical encounter; as indicated by the following codes.

  - ICD9 codes: V04.3 (rubella alone), V04.8 (other viral diseases), V04.89 (other viral diseases), V05.8 (other specified disease), V05.9 (unspecified single disease), V06.4 (MMR), V06.8 (other combinations), V06.9 (unspecified combined vaccine), 99.47 (rubella vaccine), 98.48 (MMR vaccine), In ICD10 use Z23 (encounter for immunization) plus procedure code for type of immunization.

  - CPT codes: 90706 (rubella vaccine), 90707 (MMR vaccine), 90708 (measles and rubella vaccine), 90709 (rubella and mumps vaccine), 90710 (MMRV vaccine)

Codes

The following ICD9 and ICD10 codes are included in the case definition:

Condition	ICD-10-CM Codes	ICD-9-CM Codes
Varicella zoster infection *(Possible case)*	*B06 (rubella [German measles])*	*056 (rubella)*
	B06.0 (rubella with neurological complications)	056.0 (rubella with neurologic complications)
	- B06.00 (rubella with neurological complication, unspecified)	- 056.00 (rubella with unspecified neurological complication)
	- B06.01 (rubella encephalitis)	- 056.01 (encephalomyelitis due to rubella)
	- B06.02 (rubella meningitis)	- 056.09 (rubella with other neurological complications)
	- B06.09 (other neurological complications of rubella)	*(continued on next page)*

	B06.8 (rubella with other complications)	056.7 (rubella with other specified complications)
	- B06.81 (rubella pneumonia)	- 056.79 (rubella with other specified complications)
	- B06.82 (rubella arthritis)	- 056.71 (arthritis due to rubella)
	- B06.89 (other rubella complications)	- 052.8 (rubella with unspecified complication)
	B01.9 (rubella without complication)	056.9 (rubella without mention of complication)

Symptoms	ICD-10-CM Codes	ICD-9-CM Codes
Rubella associated symptoms	B09 (unspecified viral infection characterized by skin and mucous membrane lesions)	057.9 (viral exanthema, unspecified)
	B30.8 (other viral conjunctivitis)	077.8 (other viral conjunctivitis)
	B30.9 (viral conjunctivitis, unspecified)	077.99 (unspecified diseases of conjunctiva due to viruses)
	H10 (conjunctivitis)	372.0x (acute conjunctivitis)
	H10.0 (mucopurulent conjunctivitis)	372.02 (acute follicular conjunctivitis)
	H10.01 (acute follicular conjunctivitis)	
	- H10.011 (… right eye)	
	- H10.012 (… left eye)	
	- H10.013 (… bilateral)	
	- H10.019 (… unspecified eye)	
	H10.02 (other mucopurulent conjunctivitis)	372.03 (other mucopurulent conjunctivitis)
	- H10.021 (… right eye)	
	- H10.022 (… left eye)	
	- H10.023 (… bilateral)	
	- H10.029 (… unspecified eye)	
	H10.1 (acute atopic conjunctivitis)	372.05 (acute atopic conjunctivitis)
	- H10.10 (… unspecified eye)	
	- H10.11 (… right eye)	
	- H10.12 (… left eye)	
	- H10.13 (… bilateral)	*(continued on next page)*

	H10.2 (other acute conjunctivitis)	--
	H10.22 (pseudomembranous conjunctivitis)	372.04 (pseudomembranous conjunctivitis)
	- H10.221 (… right eye)	
	- H10.222 (… left eye)	
	- H10.223 (… bilateral)	
	- H10.229 (… unspecified eye)	
	H10.23 (serous conjunctivitis, except viral)	372.01 (serous conjunctivitis, except viral)
	- H10.231 (… right eye)	
	- H10.232 (…left eye)	
	- H10.233 (… bilateral)	
	- H10.239 (… unspecified eye)	
	H10.3 (unspecified acute conjunctivitis)	372.00 (acute conjunctivitis, unspecified)
	- H10.30 (… unspecified eye)	
	- H10.31 (… right eye)	
	- H10.32 (… left eye)	
	- H10.33 (... bilateral)	
	H10.8 (other conjunctivitis)	372.3x (other and unspecified conjunctivitis)
	H10.89 (other conjunctivitis)	372.30 (conjunctivitis, unspecified)
	H10.9 (unspecified conjunctivitis)	372.33 (conjunctivitis in mucocutaneous disease) 372.39 (other conjunctivitis)
	J00 (acute nasopharyngitis; common cold)	460 (acute nasopharyngitis; common cold)
	M25.5 (pain in joint)	719.4 (pain in joint…)
	M25.50 (pain in unspecified joint)	719.40 (site unspecified) 719.48 (other specified sites)
	- M25.51 [1,2,9] (pain in *shoulder*: right, left, unspecified)	- 719.41 (shoulder region)
	- M25.52 [1,2,9] (pain in *elbow*: right, left, unspecified)	- 719.42 (upper arm)
	- M25.53 [1,2,9] (pain in *wrist*: right, left, unspecified)	- 719.43 (wrist)
	- M25.54 [1,2,9] (pain in *joints of hand*: right, left, unspecified)	- 719.44 (hand) *(continued on next page)*

- M25.55 [1,2,9] (pain in *hip*: right, left, unspecified)	- 719.45 (pelvic region and thigh)
- M25.56 [1,2,9] (pain in *knee*: right, left, unspecified)	- 719.46 (lower leg)
- M25.57 [1,2,9] (pain in *ankle and joints of foot*: right, left, unspecified)	- 719.47 (ankle and foot)
R59 (enlarged lymph nodes)	785.6 (enlargement of lymph nodes)
- R59.0 (localized enlarged lymph nodes)	
- R59.1 (generalized enlarged lymph nodes)	
- R59.9 (enlarged lymph nodes, unspecified)	
R21 (rash and nonspecific skin eruption)	782.1 (rash and other nonspecific skin eruption)
R50 (fever of other and unknown origin)	780.6 (fever and other physiologic disturbances of temperature regulation)
- R50.8 (other specified fever)	--
- R50.81 (fever presenting with conditions classified elsewhere)	780.61 (fever presenting with conditions classified elsewhere)
R50.9 (fever, unspecified)	780.60 (fever, unspecified)
R53 (malaise and fatigue)	780.7 (malaise and fatigue)
- R53.1 (weakness)	780.79 (other malaise and fatigue)
- R53.8 (other malaise and fatigue)	
- R53.81 (other malaise)	
- R53.83 (other fatigue)	

Development and Revisions

- This case definition for rubella was developed in October 2017 by the Medical Surveillance Monthly Report (MSMR) staff for use in a MSMR article on measles, mumps, rubella, and varicella. [2] The case definition was developed based on reviews of the ICD9 and ICD10 codes, the scientific literature, and previous AFHSB analyses.

Case Definition and Incidence Rule Rationale

- An RME with a diagnosis of rubella infection characterized as "probable" or "suspected" and never amended as "confirmed" is treated as a "possible" case. As a result, "possible" cases may include both "true" cases for which there were no follow-up RMEs indicating confirmation; and "true" cases for which diagnoses were documented in inpatient or outpatient records but no RMEs were ever transmitted by local military public health officials.

[2] Armed Forces Health Surveillance Branch. Measles, Mumps, Rubella, and Varicella Among Service Members and Other Beneficiaries of the Military Health System, 2010-2016. *Medical Surveillance Monthly Report (MSMR);* 2017 October; Vol 24(10): 2-10.

- During the development of the case definition, examination of *possible* cases revealed rubella infection recorded in health records often represents misdiagnoses, tentative "rule out" diagnoses, or miscodings of encounters for vaccinations or laboratory testing. Restrictive case finding criteria is used to focus on confirmed cases. The AFHSB encourages the cautious interpretation of data about *possible* cases of rubella infection, given the uncertainty about the specificity of the case definition.

- A line-listing review of cases was used to determine the symptoms most commonly used and entered in the medical record with a primary diagnosis of rubella. The resultant symptom list generated using this methodology may not reflect the symptoms most commonly associated with a clinical case of rubella. As such, investigators using this case definition may want to consider an alternative list of symptoms.

- The vaccine exclusions used for the case definition apply *only* to *possible* cases of rubella infection. The list of vaccine exclusions includes vaccination codes specific for, and related to, rubella vaccination. Related vaccinations given during the same medical encounter as the rubella diagnosis would cast doubt on the accuracy of the diagnosis.

Code Set Determination and Rationale

- Following a January 2018 review by the SMS working group, the following updates were made to the list of codes for rubella-associated symptoms : B30.9 (viral conjunctivitis, unspecified), J00 (acute nasopharyngitis, common cold), and R53 (malaise and fatigue) *were added*. M12.8^^ (other specified arthropathies, not elsewhere classified), M13 (other arthritis), M25.[0-4,6-9] (other joint disorder, not elsewhere classified) and P39.1 (neonatal conjunctivitis) *were removed*. M25.5^^ (pain in joint) remains in the code set. The updates were made to more accurately reflect the acute symptomatology of rubella, so the code set documented here differs from the one published in the 2017 MSMR article. All ICD9 codes associated with these modifications were also updated.

Reports

AFHSB reports on rubella in the following reports:

- AFHSB Reportable Events Monthly Report. Available on the Defense Health Agency (DHA) website at: https://health.mil/Military-Health-Topics/Health-Readiness/Armed-Forces-Health-Surveillance-Branch/Reports-and-Publications.

Review

January 2018   Case definition reviewed and adopted by the AFHSC Surveillance Methods and Standards (SMS) working group.

October 2017   Case definition developed by AFHSB MSMR staff.

Comments

Armed Forces Reportable Events: Rubella is a reportable medical event in the Armed Forces Reportable Medical Events surveillance system.