

Rubella v1
Definition Factsheet & Technical Brief

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Acknowledgements

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Definition Purpose: Created by the CDC National Syndromic Surveillance Program (NSSP) for use with emergency department data to develop queries for all National Notifiable Diseases defined by the National Notifiable Diseases Surveillance System (NNDSS). Please note that while the disease queries are developed using the NNDSS case definition as the basis for identifying patient visits of interest, the queried patient visits themselves may or may not represent a case patient in NNDSS and further public health investigation will most often be required. This query is intended to be a version 1 and may be further improved upon by the NSSP community of practice in the future. This query is intended to be narrow and capture visits with specific terms to support greater monitoring and actionable public health data. More complex and/or broader queries may exist that more broadly capture symptoms or travel-based terms.

New or Revised Definition: New Definition

Date Added to ESSENCE: October 2025

Definition Description: Designed to capture emergency department visits with a diagnostic code or textual indicator of possible symptomatic rubella virus infections or congenital rubella syndrome. There are many inappropriate IgM tests performed for rubella, particularly common as screening tests during pregnancy. A recent study found that from 2019-2022, only 10.2% of IgM tests for rubella were appropriately performed using HealthVerity administrative data.¹ Inappropriate IgM tests can lead to false positive results and unnecessary public health response and action. The volume of inappropriate IgM positives for rubella outweighs true rubella incidence in the United States (since elimination in 2004, fewer than 10 cases have been reported annually each year). Thus, this query was designed to be specific to individuals presenting with congenital rubella syndrome, symptomatic rubella or known exposure to rubella, and not just diagnostic codes indicative of test positivity.

¹ Filardo TD, Masters NB, Leung J, Baca S, Egwuogu H, Guevara OR, Raykin J, Sugerman DE. Appropriateness of Immunoglobulin M Testing for Measles, Mumps, and Rubella. Am J Prev Med. 2024 Dec;67(6):973-977. doi: 10.1016/j.amepre.2024.07.014. Epub 2024 Jul 23. PMID: 39053655; PMCID: PMC12257548.

Use-Cases for Definition:

Case-finding: Primary

Trend monitoring: Secondary

Early outbreak detection: Tertiary

Emergent Condition: Not Intended as Use Case

Justification: No query definition exists for rubella virus infections or congenital rubella syndrome. CDC wants to use emergency department data to monitor trends and support supplemental case finding.

Data Source During Development: Emergency Department Visits. Chief Complaint Query Validation dataset (CCQV) in ESSENCE.

Development Methods:

1. The CDC team used the NNDSS case definition of rubella and congenital rubella syndrome to identify diagnostic codes (International Classification of Diseases, 9th & 10th Revision (ICD-9-CM, ICD-10-CM), SNOMED Clinical Terms (CT)) and chief complaint free-text for syndrome development.
2. The codes and free text were then categorized as inclusion or exclusion terms. These terms were formatted for querying in ESSENCE.
3. Text analysis was conducted on the initial query to find additional inclusion or exclusion terms.
4. The query was cross-checked internally as NSSP and by CDC subject matter experts as needed.

Validation Methods: This definition is part of the collection of definitions created by CDC NSSP for the rapid reportables project. The rapid reportables project is led by the CDC NSSP team to create definitions for all nationally reportable diseases. These definitions focus on chief complaint text and diagnostic codes of the disease or its causative agents with no mention of symptoms. Select members of the Community of Practice were then asked to review line-level results for their jurisdictions and provide feedback to ensure the intended results of the definitions were met.

Definition Fields and Structure:

The Chief Complaint Discharge Diagnosis (CCDD) parsed field is used to query both the discharge diagnosis codes and chief complaint free text, and exclusions are incorporated as necessary.

- Inclusion based on rubella complaint free text terms:
 - The visit is included if it contains:
 1. A chief complaint related to rubella – (“rubella” or “rubela” or “rubbella” or “german measles”) **OR**
- Inclusion based on ICD-10 discharge diagnosis codes related to rubella:
 - The visit is included if it contains:
 2. A discharge diagnosis code related to rubella virus infection with symptoms or complications– (B06.0 or B06.8) **OR**
 3. A discharge diagnosis code related to congenital rubella syndrome – (P35.0) **OR**
- Inclusion based on ICD-9 discharge diagnosis codes related to rubella:
 - The visit is included if it contains:
 - A discharge diagnosis code related to rubella virus infection with symptoms or complications – (056.0 or 056.7 or 056.8) **OR**
 - A discharge diagnosis code related to congenital rubella syndrome (771.0) **OR**
- Inclusion based on SNOMED discharge diagnosis codes related to rubella:
 - The visit is included if it contains:
 4. A discharge diagnosis code related to rubella virus infection with symptoms or complications - (253227001 or 64190005 or 231985001 or 19431000 or 277138006

or 192689006 or 128191000 or 13225007 or 111868009 or 232312000 or 79303006 or 1092361000119109 or 1092351000119107 or 240485004) **OR**

5. A discharge diagnosis code related to congenital rubella syndrome - (10082001 or 1857005 or 47082005 or 302811004) **OR**

A discharge diagnosis code related to rubella virus infection during pregnancy – (609434007) **OR**

- Chief complaint and discharge diagnosis coded (for asymptomatic or uncomplicated rubella) tested together with AND:
 - The visit is included if it contains:
 1. Chief complaint term related to rubella – (“rubella” or “rubela” or “rubbella” or “german measles” **OR**
 2. Chief complaint term for a rash – (“rash”) **AND**
 - And includes one of the following discharge diagnosis codes:
 1. An ICD-10 code for rubella without complication (B06.9) **OR**
 2. An ICD-9 code for Rubella without mention of complication (056.9) **OR**
 3. An ICD-9 code related to Rubella in the mother (647.50 or 647.51 or 647.52 or 647.53 or 647.54) **OR**
 4. A SNOMED code related to rubella (36653000 or 5210005) **OR**
 5. A SNOMED code related to rubella during pregnancy, childbirth, or puerperium (84939004 or 10759761000119100 or 274119009) **ANDNOT**
- All of the above must exclude:
 - Chief complaint text related to allergies – (“allerg”) **OR**
 - Chief complaint text related to vaccination or examination – (“annual” or “vac” or “vax” or “shot” or “immun” or “mmr” or “dose” or “booster”) **OR**
 - An ICD-10 code related to vaccination or examination – (Z00 or Z01 or Z23 or T50.B95A) **OR**
 - A SNOMED code related to vaccination – (293119009 or 192720004 or 293125008)

Suggested Use in Analysis

This definition combines all rubella virus infections, including rubella virus infections in pregnant patients and congenital rubella syndrome. To identify rubella in pregnant patients or congenital rubella syndrome, we suggest using ESSENCE fields like age group and CCDD category to identify these occurrences (details below).

Rubella virus infections in pregnant patients

- Combine rubella v1 definition **AND**
 - Age group =< 15 **AND**
 - CC and DD Category = “CDC Pregnancy and Pregnancy Loss and Delivery v1”

Congenital rubella syndrome

- Combine rubella v1 definition **AND**
 - Age group = 0-4

Detailed Definition Components

Table 1. Inclusion and exclusion terms.

Terms	Description
Inclusion	
International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM)	
B06.0	Rubella with neurological complications
B06.8	Rubella with other complications
P35.0	Congenital rubella syndrome
International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM)	
056.0	Rubella with neurological complications
056.7	Rubella with other specified complications
056.8	Rubella with unspecified complications
771.0	Congenital rubella
SNOMED Concepts	
253227001	Rubella cataract (disorder)
64190005	Rubella myocarditis (disorder)
231985001	Rubella retinopathy (disorder)
19431000	Infective arthritis caused by Rubella virus (disorder)
277138006	Rubella arthralgia (disorder)
192689006	Rubella encephalitis (disorder)
128191000	Encephalomyelitis due to rubella (disorder)
13225007	Meningoencephalitis caused by Rubella virus (disorder)
111868009	Rubella infection of central nervous system (disorder)
232312000	Endocochlear rubella (disorder)
79303006	Expanded rubella syndrome (disorder)
1092361000119109	Rubella pneumonia (disorder)
1092351000119107	Meningitis caused by Rubella virus (disorder)
240485004	Hemorrhagic rubella (disorder)
609434007	Fetal damage from maternal rubella (disorder)
10082001	Progressive rubella panencephalitis (disorder)
1857005	Congenital rubella syndrome (disorder)
47082005	Congenital pneumonia caused by rubella (disorder)
302811004	Progressive congenital rubella encephalomyelitis (disorder)
Chief Complaint	
"rubella"	Disease/pathogen name
"rubela"	Disease/pathogen name
"rubbella"	Disease/pathogen name
"german measles"	Disease name
ICD-10-CM – Nested Together with Chief Complaint* using AND	
B06.9	Rubella without complication
ICD-9-CM – Nested Together with Chief Complaint* using AND	
056.9	Rubella without mention of complication
647.50	Rubella in the mother, unspecified as to episode of care or not applicable
647.51	Rubella in the mother, delivered, with or without mention of antepartum condition
647.52	Rubella in the mother, delivered, with mention of postpartum complication
647.53	Rubella in the mother, antepartum condition or complication
647.54	Rubella in the mother, postpartum condition or complication
SNOMED – Nested Together with Chief Complaint* using AND	
36653000	Rubella (disorder)
84939004	Rubella in mother complicating pregnancy, childbirth AND/OR puerperium (disorder)
10759761000119100	Rubella in mother complicating childbirth (disorder)

274119009	Rubella in pregnancy (disorder)
5210005	Rubella virus (organism)
Chief Complaint* - Nested Together with ICD-9-CM, ICD-10-CM, and SNOMED Concepts	
"rash"	
<i>Exclusion</i>	
International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM)	
Z00	Encounter for general examination without complaint, suspected or reported diagnosis
Z01	Encounter for other special examination without complaint, suspected or reported diagnosis
Z02	Encounter for administrative evaluations
Z23	Encounter for immunization
T50.B95A	Adverse effect of other viral vaccines, initial encounter
Z36	antenatal screening of mother
SNOMED Concepts	
293119009	Adverse reaction to component of vaccine product containing Rubella virus antigen (disorder)
192720004	Post rubella vaccination encephalitis (disorder)
293125008	Adverse reaction to component of vaccine product containing only Measles morbillivirus and Mumps orthorubulavirus and Rubella virus antigens (disorder)
Chief Complaint	
"allerg"	
"annual"	
"vac", "vax"	
"shot"	
"immun"	
"mmr"	
"dose"	
"booster"	
"titer" or "titre"	
"follow up" or "followup"	
"screening"	
"return"	
"refer"	

Table 2. *ESSENCE syntax for the CCDD parsed field*

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(,^rubella^,OR,^rubela^,OR,^rubbella^,OR,^german
measles^,OR,^;B06[08]^,OR,^;P350^,OR,^;056[078];^,OR,^;7710;^,OR,^;253227001;^,OR,^;64190005;^
,OR,^;231985001;^,OR,^;19431000;^,OR,^;277138006;^,OR,^;192689006;^,OR,^;128191000;^,OR,^;13
225007;^,OR,^;111868009;^,OR,^;232312000;^,OR,^;79303006;^,OR,^;1092361000119109;^,OR,^;1092
351000119107;^,OR,^;240485004;^,OR,^;609434007;^,OR,^;10082001;^,OR,^;1857005;^,OR,^;470820
05;^,OR,^;302811004;^,OR,^(,^;B069^,OR,^;0569;^,OR,^;6475[0-
4];^,OR,^;36653000;^,OR,^;84939004;^,OR,^;10759761000119100;^,OR,^;274119009;^,OR,^;5210005;^
,^),AND,^rash^,^),ANDNOT,(,^;Z0[012]^,OR,^;Z23^,OR,^;Z36^,OR,^;293119009;^,OR,^;192720004;^,OR,^
;293125008;^,OR,^allerg^,OR,^annual^,OR,^va[cx]^,OR,^shot^,OR,^immun^,OR,^mmr^,OR,^dose^,OR,
^booster^,OR,^titer^,OR,^titre^,OR,^follow
up^,OR,^followup^,OR,^screening^,OR,^refer^,OR,^return^,OR,^;T5B95A^,)
```

Use the following URL and click Configuration Options to see the query setup:

[https://essence2.syndromicsurveillance.org/nssp_essence/servlet/TemporalTimeSeriesViewer?datasource=va_hosp&startDate=29Dec2024&medicalGroupingSystem=essencesyndromes&userId=5024&endDate=29Mar2025&percentParam=noPercent&agtTarget=TimeSeries&geographySystem=hospital&detector=nodetector&CCDDParsedFreeText=\(,%5E%5Erubella%5E,OR,%5E%5Erubela%5E,OR,%5E%5Erubbella%5E,OR,%5E%5Egerman%5E,OR,%5E%5E;B06%5B08%5D%5E,OR,%5E%5E;P350%5E,OR,%5E%5E;056%5B078%5D%5E,OR,%5E%5E;7710;%5E,OR,%5E%5E;253227001;%5E,OR,%5E%5E;64190005;%5E,OR,%5E%5E;231985001;%5E,OR,%5E%5E;19431000;%5E,OR,%5E%5E;277138006;%5E,OR,%5E%5E;192689006;%5E,OR,%5E%5E;128191000;%5E,OR,%5E%5E;13225007;%5E,OR,%5E%5E;111868009;%5E,OR,%5E%5E;232312000;%5E,OR,%5E%5E;79303006;%5E,OR,%5E%5E;1092361000119109;%5E,OR,%5E%5E;1092351000119107;%5E,OR,%5E%5E;240485004;%5E,OR,%5E%5E;609434007;%5E,OR,%5E%5E;10082001;%5E,OR,%5E%5E;1857005;%5E,OR,%5E%5E;47082005;%5E,OR,%5E%5E;302811004;%5E,OR,\(,%5E%5E;B069%5E,OR,%5E%5E;0569;%5E,OR,%5E%5E;6475%5B0-4%5D;%5E,OR,%5E%5E;36653000;%5E,OR,%5E%5E;84939004;%5E,OR,%5E%5E;10759761000119100;%5E,OR,%5E%5E;274119009;%5E,OR,%5E%5E;5210005;%5E,^\),AND,%5E%5Erash%5E,^\),ANDNOT,\(,%5E%5E;Z0%5B012%5D%5E,OR,%5E%5E;Z23%5E,OR,%5E%5E;Z36%5E,OR,%5E%5E;293119009;%5E,OR,%5E%5E;192720004;%5E,OR,%5E%5E;293125008;%5E,OR,%5E%5Eallerg%5E,OR,%5E%5Eannual%5E,OR,%5E%5Eva%5Bcx%5D%5E,OR,%5E%5Eshot%5E,OR,%5E%5Eimmun%5E,OR,%5E%5Emmr%5E,OR,%5E%5Edose%5E,OR,%5E%5Ebooster%5E,OR,%5E%5Etiter%5E,OR,%5E%5Etitre%5E,OR,%5E%5Efollow%5E,OR,%5E%5Efollowup%5E,OR,%5E%5Escreening%5E,OR,%5E%5Erefer%5E,OR,%5E%5Ereturn%5E,OR,%5E%5E;T5B95A%5E,^\)%5E&timeResolution=weekly](https://essence2.syndromicsurveillance.org/nssp_essence/servlet/TemporalTimeSeriesViewer?datasource=va_hosp&startDate=29Dec2024&medicalGroupingSystem=essencesyndromes&userId=5024&endDate=29Mar2025&percentParam=noPercent&agtTarget=TimeSeries&geographySystem=hospital&detector=nodetector&CCDDParsedFreeText=(,%5E%5Erubella%5E,OR,%5E%5Erubela%5E,OR,%5E%5Erubbella%5E,OR,%5E%5Egerman%5E,OR,%5E%5E;B06%5B08%5D%5E,OR,%5E%5E;P350%5E,OR,%5E%5E;056%5B078%5D%5E,OR,%5E%5E;7710;%5E,OR,%5E%5E;253227001;%5E,OR,%5E%5E;64190005;%5E,OR,%5E%5E;231985001;%5E,OR,%5E%5E;19431000;%5E,OR,%5E%5E;277138006;%5E,OR,%5E%5E;192689006;%5E,OR,%5E%5E;128191000;%5E,OR,%5E%5E;13225007;%5E,OR,%5E%5E;111868009;%5E,OR,%5E%5E;232312000;%5E,OR,%5E%5E;79303006;%5E,OR,%5E%5E;1092361000119109;%5E,OR,%5E%5E;1092351000119107;%5E,OR,%5E%5E;240485004;%5E,OR,%5E%5E;609434007;%5E,OR,%5E%5E;10082001;%5E,OR,%5E%5E;1857005;%5E,OR,%5E%5E;47082005;%5E,OR,%5E%5E;302811004;%5E,OR,(,%5E%5E;B069%5E,OR,%5E%5E;0569;%5E,OR,%5E%5E;6475%5B0-4%5D;%5E,OR,%5E%5E;36653000;%5E,OR,%5E%5E;84939004;%5E,OR,%5E%5E;10759761000119100;%5E,OR,%5E%5E;274119009;%5E,OR,%5E%5E;5210005;%5E,^),AND,%5E%5Erash%5E,^),ANDNOT,(,%5E%5E;Z0%5B012%5D%5E,OR,%5E%5E;Z23%5E,OR,%5E%5E;Z36%5E,OR,%5E%5E;293119009;%5E,OR,%5E%5E;192720004;%5E,OR,%5E%5E;293125008;%5E,OR,%5E%5Eallerg%5E,OR,%5E%5Eannual%5E,OR,%5E%5Eva%5Bcx%5D%5E,OR,%5E%5Eshot%5E,OR,%5E%5Eimmun%5E,OR,%5E%5Emmr%5E,OR,%5E%5Edose%5E,OR,%5E%5Ebooster%5E,OR,%5E%5Etiter%5E,OR,%5E%5Etitre%5E,OR,%5E%5Efollow%5E,OR,%5E%5Efollowup%5E,OR,%5E%5Escreening%5E,OR,%5E%5Erefer%5E,OR,%5E%5Ereturn%5E,OR,%5E%5E;T5B95A%5E,^)%5E&timeResolution=weekly)

Syntax Plain Language Description The definition uses discharge diagnosis codes and free-text chief complaint terms. The definition requires that an emergency department visit contains a reference to the disease by its discharge diagnosis code (in at least one of the following: ICD-10-CM, ICD-9-CM, SNOMED diagnostic codes), or by the disease or pathogen name listed in the chief complaint text. Therefore, the rubella syndromic surveillance definition includes ICD-10-CM, ICD-9-CM, and SNOMED diagnostic codes for rubella, along with direct mentions of rubella using “rubella” and potential misspellings of rubella in chief complaint text. To ensure that only acute rubella infections were captured, we nested together chief complaint mentions of rubella or rash with discharge diagnosis codes for non-specific rubella codes that excluded complications and excluded records with discharge diagnosis codes and chief complaint text related to vaccination or examination: ‘annual’, ‘vac’, ‘vax’, ‘shot’, ‘immun’, ‘mmr’, ‘dose’, ‘booster’, ‘titer’, ‘titre’, ‘follow up’, ‘followup’, ‘screening’, ‘return’, ‘refer’.