Pertussis v2 CCDD Parsed & Pertussis v2 DD Definition Factsheet & Technical Brief

Authored by the National Syndromic Surveillance Program Community of Practice

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Acknowledgments
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Definition Description: To assist state, local, tribal, territorial, and federal public health practitioners in monitoring emergency department (ED) visits related to Pertussis (Pertussis v2 CCDD Parsed) and diagnosed with Pertussis (Pertussis v2 DD).

New or Revised Definition: Revision of CDC Pertussis v1

Date Added to ESSENCE: May 2025

Use-Cases for Definition:
Case-finding: Secondary
Trend monitoring: Primary
Early outbreak detection: Primary
Emergent Condition: Not Intended as Use Case

Justification: This definition is a technical revision of CDC Pertussis v1 with the goal of adjusting the definition for accuracy and relevancy. Inactivated SNOMED concepts were removed. Codes related to parapertussis were removed and excluded with the intention of making this definition more specific to pertussis (compared to Pertussis v1).

Data Source During Development: CDC utilized emergency room data included in the Chief Complaint Query Validation (CCQV) data source to evaluate individual definition components.

Validation Methods: The original version, CDC Pertussis v1, was developed in collaboration with the NSSP Community of Practice. The query for these versions was developed iteratively by CDC subject matter experts with backgrounds in syndromic surveillance and bacterial respiratory diseases. CDC reviewed definition components for relevancy and accuracy, conducted systematic text mining to further identify needs, and shared results with the Community of Practice for feedback.

Definition Fields and Structure: Pertussis v2 CCDD Parsed is a CCDD Parsed version of the definition, utilizing the Chief Complaint Discharge Diagnosis Parsed (CCDD Parsed) field to query discharge diagnosis codes and chief complaint term free text. Pertussis v2 DD uses the Discharge Diagnosis Parsed field to only query discharge diagnosis codes. Both definitions identify visits with codes/terms indicating visits associated with pertussis (see Tables, inclusions) while excluding visits that contain certain codes or terms related to encounters for pertussis vaccination or parapertussis (see Tables 1, exclusions).

Syntax Plain Language Description: These definitions use chief complaint terms and discharge diagnosis codes to identify emergency department visits related to or diagnosed with pertussis, or whooping cough. The definition requires that the presence of one or more of the ICD-10-CM or ICD-9-CM discharge diagnosis codes or SNOMED concepts for Pertussis that are included in the definition be identified in the visit in order to be returned in results using this definition. Any visits identified that also indicate that the encounter is related to immunization for pertussis, or parapertussis, either through a discharge diagnosis code or chief complaint term, are excluded from results. Pertussis v2 CCDD Parsed and Pertussis v2 DD differ slightly from each other in that the Pertussis v2 CCDD Parsed leverages both discharge diagnosis codes and chief complaint terms in order to capture visits where there is a

diagnosis of pertussis made or mentions of pertussis by the patient, whereas Pertussis v2 DD only utilizes discharge diagnosis codes to capture visits where the visit resulted in a diagnosis of pertussis.

Detailed Definition Components

Table 1. *Inclusion and exclusion terms included in the Pertussis v2 CCDD Parsed and Pertussis v2 DD definitions.*

Terms	Description
Inclusion	
International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM)	
A37.0	Whooping cough due to Bordetella pertussis
A37.00	…… without pneumonia
A37.01	…… with pneumonia
A37.9	Whooping cough, unspecified species
A37.90	…… without pneumonia
A37.91	…… with pneumonia
International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM)	
033	Whooping cough
033.0	Whooping cough due to Bordetella pertussis [B. pertussis]
033.9	Whooping cough, unspecified organism
SNOMED Concepts	
5247005	Bordetella pertussis (organism)
93417001	Conjunctivitis caused by Bordetella pertussis (disorder)
170526005	Notification of whooping cough (procedure)
27836007	Pertussis (disorder)
59475000	Pneumonia in pertussis (disorder)
408682005	Healthcare associated pertussis (disorder)
271567008	Whooping cough-like syndrome (disorder)
60537006	Whooping respiration (finding)
782715005	Infection caused by Bordetella (disorder)
192650000	Meningitis caused by Bordetella pertussis (disorder)
Chief Complaint *	
pertuss	
whooping	
Exclusion	
International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM)	
Z23	Encounter for immunization
A37.1	Whooping cough due to Bordetella parapertussis
A37.10	…… without pneumonia
A37.11	…… with pneumonia
SNOMED Concepts	
26183002	Bordetella parapertussis (organism)
77116006	Infection caused by Bordetella parapertussis (disorder)
1092951000119106	Pneumonia caused by Bordetella parapertussis (disorder)
Chief Complaint*	
vacc	
immun	
proph	
[a-z]pertuss	

*Chief complaint terms apply only to Pertussis v2 CCDD Parsed. Pertussis v2 DD is a discharge diagnosis-only based definition, and does not include chief complaint terms.

Table 2. *ESSENCE syntax for CCDD Parsed Free Text Field, Pertussis v2 CCDD Parsed*

(,^;A37[09]^,OR,^;5247005;^,OR,^;93417001;^,OR,^;170526005;^,OR,^;27836007;^,OR,^;59475000;^,OR,^;408682005;^,OR,^;271567008;^,OR,^;60537006;^,OR,^;782715005;^,OR,^;192650000;^,OR,^;033;^,OR,^;033[09];^,OR,^whooping^,OR,^ pertuss^,OR,^pertuss^,ANDNOT,^[a-z]pertuss^,),ANDNOT,(,^vacc^,OR,^immun^,OR,^proph^,OR,^;Z23^,OR,^;A371^,OR,^;26183002;^,OR,^;77116006;^,OR,^;1092951000119106;^,)

Table 3. *ESSENCE syntax for DD parsed field, Pertussis v2 DD*

(,^;A37[09]^,OR,^;5247005;^,OR,^;93417001;^,OR,^;170526005;^,OR,^;27836007;^,OR,^;59475000;^,OR,^;408682005;^,OR,^;271567008;^,OR,^;60537006;^,OR,^;782715005;^,OR,^;192650000;^,OR,^;033;^,OR,^;033[09];^,),ANDNOT,(,^;Z23^,OR,^;A371^,OR,^;26183002;^,OR,^;77116006;^,OR,^;1092951000119106;^,)

Appendix

Additions. The following codes and terms are additions to Pertussis v2 CCDD Parsed and Pertussis v2 DD in comparison to CDC Pertussis v1.

Terms	Description
Inclusion	
International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM)	
033	Whooping cough
033.0	Whooping cough due to Bordetella pertussis [B. pertussis]
033.9	Whooping cough, unspecified organism
SNOMED Concepts	
60537006	Whooping respiration (finding)
782715005	Infection caused by Bordetella (disorder)
192650000	Meningitis caused by Bordetella pertussis (disorder)
Exclusion	
International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM)	
A37.1	Whooping cough due to Bordetella parapertussis
A37.10	…… without pneumonia
A37.11	…… with pneumonia
SNOMED Concepts	
26183002	Bordetella parapertussis (organism)
77116006	Infection caused by Bordetella parapertussis (disorder)
1092951000119100	Pneumonia caused by Bordetella parapertussis (disorder)
Chief Complaint*	
[a-z]pertuss	

*Chief complaint terms apply only to Pertussis v2 CCDD Parsed. Pertussis v2 DD is a discharge diagnosis-only based definition, and does not include chief complaint terms.

Removals. The following codes were removed from Pertussis v2 CCDD Parsed and Pertussis v2 DD in comparison to CDC Pertussis v1.

Terms	Description
Inclusion	
International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM)	
A37.1	Whooping cough due to Bordetella parapertussis
A37.10	…… without pneumonia
A37.11	…… with pneumonia
A37.8	Whooping cough due to other Bordetella species
A37.80	…… without pneumonia
A37.81	…… with pneumonia
SNOMED Concepts	
17191002	Pseudomonas pertucinogena (organism)
82670009	Whooping Cough Due To Organism Other Than Bordetella Pertussis (Disorder)
104275005	Measurement of Bordetella species antibody (procedure)
120662001	Bordetella pertussis antibody (substance)
120747009	Bordetella species antibody (substance)
121074009	Antigen of Bordetella pertussis (substance)
121941006	Measurement of Bordetella parapertussis antibody (procedure)
121942004	Measurement of Bordetella pertussis antibody (procedure)
122182009	Bordetella parapertussis antigen assay (procedure)
122183004	Bordetella pertussis antigen assay (procedure)
122206002	Bordetella pertussis culture (procedure)
143594005	(inactive code)**

147780008	(inactive code)**
148351004	(inactive code)**
154300007	(inactive code)**
161422003	History of pertussis (situation)
166230003	(inactive code)
171130007	Pertussis screening (procedure)
186351008	(inactive code)**
186353006	(inactive code)**
186355004	(inactive code)**
313273004	Pertussis swab (procedure)
315073006	Bordetella pertussis antibody level (procedure)
316616002	(inactive code)**
390793003	(inactive code)**
432356003	(inactive code)**
444387000	Exposure to Bordetella pertussis (event)
707562007	Immunoglobulin A antibody to Bordetella pertussis (substance)
708081009	(inactive code)**
708082002	Immunoglobulin A antibody to Bordetella pertussis filamentous hemagglutinin (substance)
708083007	Immunoglobulin A antibody to Bordetella pertussis toxin (substance)
708162003	Deoxyribonucleic acid of Bordetella pertussis (substance)
709784002	Antibody to Bordetella pertussis Yamaguchi (substance)
710378002	Immunoglobulin G antibody to Bordetella pertussis (substance)
710597001	Immunoglobulin M antibody to Bordetella pertussis (substance)
155556004	(inactive code)**
186350009	(inactive code)**
186356003	(inactive code)**
187325000	(inactive code)**