



Canadian Primary Care Sentinel Surveillance Network
Réseau canadien de surveillance sentinelle en soins primaires

CPCSSN Case Definitions

2022-Q4

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Purpose

This document is intended to be the simplest unambiguous representation of CPCSSN's current case definitions, consistent with the original documented intent. It defines the criteria, in terms of CPCSSN data, that CPCSSN's case detection algorithms use to classify a patient as having a given condition.

This document is intended for use by:

- researchers needing to understand or use CPCSSN's case definitions,
- those wanting to propose modifications or create new case definitions,
- CPCSSN's developers to implement CPCSSN's case definitions

This document is not intended to include suggested changes or improvements to the case definitions. Proposed changes to existing case definitions or new case definitions should be submitted to CPCSSN's Case Definition Working Group, where they will be reviewed, possibly approved, and prioritised for implementation by CPCSSN's development team.

List of CPCSSN Case Definitions

In the 'Method of Creation' column, the following two terms are used:

1. *Expert panel*. The case definition was created by subject-matter experts, typically clinicians. They may or may not have based the definitions on CPCSSN data.
2. *Machine learning*. The case definition was created by applying a machine learning algorithm to the CPCSSN data.

All validation metrics (sensitivity, specificity, positive predictive value, and negative predictive value) for all validated case definitions are listed in [Appendix A](#). Legacy case definitions are listed in [Appendix B](#).

<i>Case Definition</i>	<i>Version</i>	<i>Method of Creation</i>	<i>Quarter Last Updated</i>	<i>Page</i>
Adult Asthma	1	Expert panel	2022-Q4	6
Cardiovascular Disease	1	Expert panel	2022-Q4	7
Cerebrovascular Disease	1	Expert panel	2022-Q4	8
Chronic Heart Failure	1	Expert panel	2022-Q2	9
Cirrhosis	1	Expert panel	2022-Q4	10
CKD	1	Expert panel	2018-Q4	11
COPD	2	Expert panel	2022-Q4	12
Coronary Artery Disease	1	Expert panel	2022-Q4	13
Dementia	1	Expert panel	2018-Q4	14
Depression	2	Expert panel	2022-Q4	15
Diabetic Neuropathy	1	Machine learning	2022-Q4	16
Diabetic Retinopathy	1	Machine learning	2022-Q4	17
Diabetes Mellitus	4	Expert panel	2022-Q4	18
Dyslipidemia	1	Expert panel	2019-Q4	19
Epilepsy	1	Expert panel	2018-Q4	20
Herpes Zoster	1	Expert panel	2018-Q2	21
Hypertension	4	Expert panel	2022-Q4	22

Multiple Sclerosis	1	Expert panel	2022-Q2	24
Non-valvular Atrial Fibrillation (NVAF)	1	Expert panel	2021-Q4	26
Osteoarthritis	3	Expert panel	2022-Q4	27
Parkinson's Disease	1	Expert panel	2018-Q4	28
Pediatric Asthma	1	Expert panel	2018-Q2	29
Pediatric Diabetes Mellitus	1	Expert panel	2019-Q4	30
PTSD	1	Expert panel	2022-Q2	31

Interpretation

The following pages contain the logic used to classify each CPCSSN patient's disease status for a host of disease case definitions. For each disease Case Definition, any single **Scenario** is sufficient to warrant classification as a case. Within a **Scenario**, all criteria joined by "AND" must be satisfied to warrant classification as a case. Conditions followed by "EXCEPT" define exceptions to the disease case definitions. That is, these conditions negate other criteria within the **Scenario**, so any other criteria in the **Scenario** alone are insufficient to define a disease case.

The text 'including [all] sub-codes' indicates a wildcard match is to be applied to the listed codes. The **date of case detection** for a case is defined to be the earliest of the individual (qualifying) criteria dates for the case.

The following pages contain the most current versions of CPCSSN case definitions and are the ones applied to the most recent data set. Old case definition versions are listed in [Appendix B](#).

CPCSSN Case Definitions

Adult Asthma

Note: Patient age must be ≥ 18 years.

Scenario A

<p>Any of the following ICD-9 codes (including all sub-codes) in the Billing, EncounterDiagnosis, or Health Condition table:</p> <p>493: ASTHMA</p>	<p>EXCEPT</p>	<p>If the Billing table contains at least one of the following ICD-9 codes (including all sub-codes), the asthma diagnosis is not sufficient to define a case:</p> <p>491: CHRONIC BRONCHITIS 492: EMPHYSEMA 493: CHRONIC AIRWAY OBSTRUCTION, NOT ELSEWHERE CLASSIFIED</p>
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Cardiovascular Disease

Scenario A

Any of the following ICD-9 codes (including all sub-codes) in the **Billing, EncounterDiagnosis, or Health Condition** table:

410: ACUTE MYOCARDIAL INFARCTION
411: OTHER ACUTE AND SUBACUTE FORMS OF ISCHEMIC HEART DISEASE
412: OLD MYOCARDIAL INFARCTION
413: ANGINA PECTORIS
414: OTHER FORMS OF CHRONIC ISCHEMIC HEART DISEASE
430: SUBARACHNOID HEMORRHAGE
431: INTRACEREBRAL HEMORRHAGE
432: OTHER AND UNSPECIFIED INTRACRANIAL HEMORRHAGE
433: OCCLUSION AND STENOSIS OF PRECEREBRAL ARTERIES
434: OCCLUSION OF CEREBRAL ARTERIES
435: TRANSIENT CEREBRAL ISCHEMIA
436: ACUTE, BUT ILL-DEFINED, CEREBROVASCULAR DISEASE
437: OTHER AND ILL-DEFINED CEREBROVASCULAR DISEASE
438: LATE EFFECTS OF CEREBROVASCULAR DISEASE
440: ATHEROSCLEROSIS
443: OTHER PERIPHERAL VASCULAR DISEASE

Cerebrovascular Disease

Scenario A

Any of the following ICD-9 codes (including all sub-codes) in the **Billing, EncounterDiagnosis, or Health Condition** table:

- 430: SUBARACHNOID HEMORRHAGE
- 431: INTRACEREBRAL HEMORRHAGE
- 432: OTHER AND UNSPECIFIED INTRACRANIAL HEMORRHAGE
- 433: OCCLUSION AND STENOSIS OF PRECEREBRAL ARTERIES
- 434: OCCLUSION OF CEREBRAL ARTERIES
- 435: TRANSIENT CEREBRAL ISCHEMIA
- 436: ACUTE, BUT ILL-DEFINED, CEREBROVASCULAR DISEASE
- 437: OTHER AND ILL-DEFINED CEREBROVASCULAR DISEASE
- 438: LATE EFFECTS OF CEREBROVASCULAR DISEASE

Chronic Heart Failure

Scenario A

Any of the following ICD-9 codes (including all sub-codes) in the **Billing, EncounterDiagnosis**, or **Health Condition** table:

425: CARDIOMYOPATHY

428: HEART FAILURE

Scenario B

One or occurrences of an ATC code (including all sub-codes) in from **all three of the following groups** in the **Medication** table:

Group 1: Diuretics

C03BA11: INDAPAMIDE

C03CA01: FUROSEMIDE

C03DA01: SPIRONOLACTONE

C03DA04: EPLERENONE

AND

Group 2: Beta-Blockers

C07AB: BETA BLOCKING AGENTS, SELECTIVE

C07AG: ALPHA AND BETA BLOCKING AGENTS

AND

Group 3: ACE inhibitors, ARB and Combinations with Beta Blockers or Renin-Angiotensin blockers

C09: AGENTS ACTING ON THE RENIN-ANGIOTENSIN SYSTEM

Cirrhosis

Scenario A

Any of the following exact ICD-9 codes in the **Billing, EncounterDiagnosis, or Health Condition** table:

571: CHRONIC LIVER DISEASE AND CIRRHOSIS
571.2: ALCOHOLIC CIRRHOSIS OF LIVER
571.5: CIRRHOSIS OF LIVER WITHOUT MENTION OF ALCOHOL
789.59: OTHER ASCITES

CKD (Chronic Kidney Disease)

Scenario A

Two **Plasma Creatinine Clearance (eGFR)** tests (LOINC = 12195-4) in the **Lab** table having results < 60 ml/min/1.73 m² separated by between 3 months and 18 months, inclusive.

COPD (Congestive Obstructive Pulmonary Disorder)

Note: For all scenarios, patient age at onset must be ≥ 35 years.

Scenario A

Any of the following ICD-9 codes (including all sub-codes) in the **Billing, EncounterDiagnosis, or Health Condition** table:

491.2: OBSTRUCTIVE CHRONIC BRONCHITIS
492: EMPHYSEMA
496: CHRONIC AIRWAY OBSTRUCTION, NOT ELSEWHERE CLASSIFIED

Scenario B

Any of the following ATC codes (including all sub-codes) in the **Medication** table:

R03BB: ANTICHOLINERGICS
R03AK04: SALBUTAMOL AND SODIUM CROMOGLICATE
R03AL: ADRENERGICS IN COMBINATION WITH ANTICHOLINERGICS INCLUDING TRIPLE COMBINATIONS WITH CORTICOSTEROIDS

EXCEPT

If the **HealthCondition** table contains the following ICD-9 code (including all sub-codes), the medications are insufficient for defining a disease case:

493: ASTHMA

Coronary Artery Disease

Scenario A

Any of the following ICD-9 codes (including all sub-codes) in the **Billing, EncounterDiagnosis, or Health Condition** table:

- 410: ACUTE MYOCARDIAL INFARCTION
- 411: OTHER ACUTE AND SUBACUTE FORMS OF ISCHEMIC HEART DISEASE
- 412: OLD MYOCARDIAL INFARCTION
- 413: ANGINA PECTORIS
- 414: OTHER FORMS OF CHRONIC ISCHEMIC HEART DISEASE

Dementia

Scenario A

Any of the following ICD-9 codes (including sub-codes) in the **Billing, Encounter Diagnosis, or Health Condition** table:

290: DEMENTIAS
294.1: DEMENTIA IN CONDITIONS CLASSIFIED ELSEWHERE
294.8: OTHER PERSISTENT MENTAL DISORDERS DUE TO
CONDITIONS CLASSIFIED ELSEWHERE
331: OTHER CEREBRAL DEGENERATIONS

excluding sub-codes:

290.8: OTHER SPECIFIED SENILE PSYCHOTIC CONDITIONS
290.9: UNSPECIFIED SENILE PSYCHOTIC CONDITION
331.3: COMMUNICATING HYDROCEPHALUS
331.4: OBSTRUCTIVE HYDROCEPHALUS
331.5: IDIOPATHIC NORMAL PRESSURE HYDROCEPHALUS (INPH)
331.81: REYE'S SYNDROME

Scenario B

Any of the following ATC codes (including all sub-codes) in the **Medication** table:

N06DA: ANTICHOLINESTERASES
N06DX01: MEMANTINE

Depression

Scenario A

Any of the following ICD-9 codes (including all sub-codes) in the **Billing, EncounterDiagnosis, or Health Condition** table:

296: EPISODIC MOOD DISORDERS
311: DEPRESSIVE DISORDER, NOT ELSEWHERE CLASSIFIED

Scenario B

Any of the following ATC codes (including all sub-codes) in the **Medication** table:

N06AB: SELECTIVE SEROTONIN REUPTAKE
INHIBITORS
N06AF04: TRANYLCYPROMINE
N06AG02: MOCLOBEMIDE
N06AX11: MIRTAZAPINE
N06CA01: AMITRIPTYLINE AND PSYCHOLEPTICS

EXCEPT

If the **HealthCondition** table contains the following ICD-9 code (including all sub-codes), the medications are insufficient for defining a disease case:

300: ANXIETY DISORDER

Diabetic Neuropathy

Note: For all scenarios, patients must have Diabetes Mellitus as defined by the CPCSSN case finding algorithm.

Scenario A

One or more occurrences of the following exact ICD-9 code in the **Billing, EncounterDiagnosis, or Health Condition** table:

357.2: POLYNEUROPATHY IN DIABETES

OR

two or more occurrences of the following ICD-9 code (including all sub-codes) across any of the **Billing, EncounterDiagnosis, or Health Condition** tables:

250.6: DIABETES WITH NEUROLOGICAL MANIFESTATIONS

Scenario B

One or more occurrences of any of the following terms in the **DiagnosisText_orig** in the **Billing, EncounterDiagnosis, or Health Condition** table:

'neuropathy'

OR

'neuropathie'

Uncertain and negated terms (e.g., 'neuropathy?', 'no neuropathy') are ignored.

Diabetic Retinopathy

Note: For all scenarios, patients must have Diabetes Mellitus as defined by the CPCSSN case finding algorithm.

Scenario A

One or more occurrences of the following exact ICD-9 code in the **Billing, EncounterDiagnosis, or Health Condition** table:

362.0: DIABETIC RETINOPATHY

Scenario B

One or more occurrences of any of the following terms in the **DiagnosisText_orig** field of the **Billing, EncounterDiagnosis, or Health Condition** table:

'retinopathy'

OR

'retinopathie'

OR

'rétinopathie'

Uncertain and negated terms (e.g., 'retinopathy?', 'no retinopathy') are ignored.

Diabetes Mellitus

Scenario A

The following ICD-9 code (including all sub-codes) in the **EncounterDiagnosis** or **Health Condition** table
OR
at least two (identical or different) of the following ICD-9 code (including all sub-codes) in the **Billing** table that are recorded on different dates that are ≤ 2 years apart:

250: DIABETES MELLITUS

Scenario B

<p>The following ATC code (including all sub-codes) in the Medication table:</p> <p>A10: DRUGS USED IN DIABETES</p>	<p>EXCEPT</p>	<p>If the HealthCondition table contains any of the following ICD-9 codes (including all sub-codes), the medications are insufficient for defining a disease case:</p> <p>249: SECONDARY DIABETES MELLITUS 256.4: POLYCYSTIC OVARIES 648.8: ABNORMAL GLUCOSE TOLERANCE OF MOTHER, COMPLICATING PREGNANCY, CHILDBIRTH, OR THE PUERPERIUM 775.1: NEONATAL DIABETES MELLITUS 790.29: OTHER ABNORMAL GLUCOSE</p>
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Scenario C

Any **Hemoglobin A1c (HbA1c)** test (LOINC = 17856-6) in the **Lab** table with a result ≥ 6.5
OR
at least two **Fasting Blood Glucose (FBG)** tests (LOINC = 14771-0) in the **Lab** table having results strictly > 7 that are recorded on different dates that are ≤ 1 year apart.

Dyslipidemia

Scenario A

The following ICD-9 code (including sub-codes) in the **Billing, Encounter Diagnosis, or Health Condition** table:

272: DISORDERS OF LIPOID METABOLISM

Scenario B

<p>Any of the following ATC codes (including all sub-codes) in the Medication table:</p> <p>C10: LIPID MODIFYING AGENTS</p> <p>excluding any of the following ATC codes (including all sub-codes) in the Medication table:</p> <p>C10AC: BILE ACID SEQUESTRANTS</p>	<p>EXCEPT</p>	<p>If the DiseaseCase table contains the following disease, the medications are insufficient for defining a disease case:</p> <p>Diabetes Mellitus, Version 3</p>
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Scenario 3

Any **Cholesterol in LDL (LDLc)** test (LOINC = 22748-8) in the **Lab** table with a result ≥ 3.5 mmol/L

OR

Any **Cholesterol Total/Cholesterol in HDL Ratio (TCh/HDL)** test (LOINC = 9830-1) in the **Lab** table with a result ≥ 4.3 mmol/L

Epilepsy

Scenario A

The following ICD-9 code (including sub-codes) in the **Billing, Encounter Diagnosis, or Health Condition** table:

345: EPILEPSY AND RECURRENT SEIZURES

excluding sub-codes:

345.2: PETIT MAL STATUS, EPILEPTIC

345.3: GRAND MAL STATUS, EPILEPTIC

Scenario B

Any of the following ICD-9 codes (including all sub-codes) in the **Billing, Encounter Diagnosis, or Health Condition** table:

345.2: PETIT MAL STATUS, EPILEPTIC

345.3: GRAND MAL STATUS, EPILEPTIC

780.3: CONVULSIONS

AND

Any of the following ATC codes (including sub-codes) in the **Medication** table:

N03A: ANTIEPILEPTICS

N05BA06: LORAZEPAM

N05BA09: CLOBAZAM

excluding sub-codes:

N03AE01: CLONAZEPAM

N03AX12: GABAPENTIN

Herpes Zoster

Scenario A

The following ICD-9 code (including all sub-codes) in the **Billing, Encounter Diagnosis, or Health Condition** table:

053: HERPES ZOSTER

Hypertension

Scenario A

Any of the following ICD-9 codes (including all sub-codes) in the **EncounterDiagnosis** or **Health Condition** table

OR

at least two (identical or different) of the following ICD-9 codes (including all sub-codes) in the **Billing** table that are recorded on different dates that are ≤ 2 years apart:

401: ESSENTIAL HYPERTENSION

402: HYPERTENSIVE HEART DISEASE

403: HYPERTENSIVE CHRONIC KIDNEY DISEASE

404: HYPERTENSIVE HEART AND CHRONIC KIDNEY DISEASE

405: SECONDARY HYPERTENSION

Scenario B

<p>Any of the following ATC codes (including all sub-codes) in the Medication table:</p> <p>C02: ANTIHYPERTENSIVES C03AA03: HYDROCHLOROTHIAZIDE C03BA04: CHLORTALIDONE C03BA11: INDAPAMIDE C03DB01: AMILORIDE C03DB02: TRIAMTERENE C03EA01: HYDROCHLOROTHIAZIDE AND POTASSIUM-SPARING AGENTS C07AA06: TIMOLOL C07AB03: ATENOLOL C07AB04: ACEBUTOLOL C07AG02: CARVEDILOL C07CB03: ATENOLOL AND OTHER DIURETICS C08CA01: AMLODIPINE C08CA02: FELODIPINE C08DA01: VERAPAMIL C09AA01: CAPTOPRIL C09AA02: ENALAPRIL C09AA03: LISINOPRIL C09AA07: BENAZEPRIL C09AA08: CILAZAPRIL C09AA09: FOSINOPRIL C09AA10: TRANDOLAPRIL C09BA02: ENALAPRIL AND DIURETICS C09BA03: LISINOPRIL AND DIURETICS C09CA02: EPROSARTAN C09CA03: VALSARTAN C09CA04: IRBESARTAN C09CA07: TELMISARTAN C09DA01: LOSARTAN AND DIURETICS C09DA02: EPROSARTAN AND DIURETICS C09DA04: IRBESARTAN AND DIURETICS C09XA02: ALISKIREN</p>	<p>EXCEPT</p>	<p>If the HealthCondition table contains any of the following ICD-9 codes (including all sub-codes), the medications are insufficient for defining a disease case:</p> <p>250: DIABETES MELLITUS 333.1: ESSENTIAL AND OTHER SPECIFIED FORMS OF TREMOR 346: MIGRAINE 410: ACUTE MYOCARDIAL INFARCTION 412: OLD MYOCARDIAL INFARCTION 413: ANGINA PECTORIS 427: CARDIAC DYSRHYTHMIAS 428: HEART FAILURE 456.0: ESOPHAGEAL VARICES WITH BLEEDING 456.1: ESOPHAGEAL VARICES WITHOUT MENTION OF BLEEDING 572.3: PORTAL HYPERTENSION 592: CALCULUS OF KIDNEY AND URETER</p>
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Multiple Sclerosis

Note: For all three scenarios, patient age must be ≥ 18 years.

Scenario A

At least **two** (identical or different) of the following ICD-9 code (including all sub-codes) in the **Billing** or **EncounterDiagnosis** table that are recorded on different dates that are ≤ 2 years apart:

340: MULTIPLE SCLEROSIS

OR

one or more occurrences of the following ICD-9 code (including all sub-codes) in the **Health Condition** table:

340: MULTIPLE SCLEROSIS

Scenario B

One or more (identical or different) of the following ATC codes in the **Medication** table:

L03AB07: INTERFERON BETA-1A

L03AB08: INTERFERON BETA-1B

L03AB13: PEGINTERFERON BETA-1A

L03AX13: GLATIRAMER ACETATE

L04AA23: NATALIZUMAB

L04AA27: FINGOLIMOD

L04AA31: TERIFLUNOMIDE

L04AC01: DACLIZUMAB

N07XX09: DIMETHYL FUMARATE

Scenario C

<p>One or more of the following ATC code in the Medication table:</p> <p>L04AA34: ALEMTUZUMAB</p>	<p>EXCEPT</p>	<p>If the Billing, EncounterDiagnosis, or HealthCondition table contains any of the following ICD-9 codes (including all sub-codes), the medications are insufficient for defining a disease case:</p> <ul style="list-style-type: none">204: LYMPHOID LEUKEMIA205: MYELOID LEUKEMIA206: MONOCYTIC LEUKEMIA207: OTHER SPECIFIED LEUKEMIA208: LEUKEMIA OF UNSPECIFIED CELL TYPE209: NEUROENDOCRINE TUMORS
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Non-Valvular Atrial Fibrillation (NVAF)

Scenario A

<p>Any of the following <u>exact</u> ICD-9 codes in the Billing, EncounterDiagnosis, or HealthCondition table:</p> <p>427.3: ATRIAL FIBRILLATION AND FLUTTER 427.31: ATRIAL FIBRILLATION 427.32: ATRIAL FLUTTER</p>	<p>EXCEPT</p>	<p>If <u>any</u> of the Billing, EncounterDiagnosis, or HealthCondition tables contains any of the following <u>exact</u> ICD-9 codes, the ICD-9 codes in the first column are insufficient for defining a disease case:</p> <p>394: DISEASES OF MITRAL VALVE 394.0: MITRAL STENOSIS 394.1: RHEUMATIC MITRAL INSUFFICIENCY 394.2: MITRAL STENOSIS WITH INSUFFICIENCY 394.9: OTHER AND UNSPECIFIED MITRAL VALVE DISEASES 395: DISEASES OF AORTIC VALVE 395.0: RHEUMATIC AORTIC STENOSIS 395.1: RHEUMATIC AORTIC INSUFFICIENCY 395.2: RHEUMATIC AORTIC STENOSIS WITH INSUFFICIENCY 395.9: OTHER AND UNSPECIFIED RHEUMATIC AORTIC DISEASES 396: DISEASES OF MITRAL AND AORTIC VALVES 396.0: MITRAL VALVE STENOSIS AND AORTIC VALVE STENOSIS 396.1: MITRAL VALVE STENOSIS AND AORTIC VALVE INSUFFICIENCY 396.2: MITRAL VALVE INSUFFICIENCY AND AORTIC VALVE STENOSIS 396.3: MITRAL VALVE INSUFFICIENCY AND AORTIC VALVE INSUFFICIENCY 396.8: MULTIPLE INVOLVEMENT OF MITRAL AND AORTIC VALVES 396.9: MITRAL AND AORTIC VALVE DISEASES, UNSPECIFIED 424: OTHER DISEASES OF ENDOCARDIUM 424.0: MITRAL VALVE DISORDERS 424.1: AORTIC VALVE DISORDERS 424.2: TRICUSPID VALVE DISORDERS, SPECIFIED AS NONRHEUMATIC 424.3: PULMONARY VALVE DISORDERS 424.9: ENDOCARDITIS, VALVE UNSPECIFIED 424.90: ENDOCARDITIS, VALVE UNSPECIFIED, UNSPECIFIED CAUSE 424.91: ENDOCARDITIS IN DISEASES CLASSIFIED ELSEWHERE 424.99: OTHER ENDOCARDITIS, VALVE UNSPECIFIED V43.3: HEART VALVE REPLACED BY OTHER MEANS</p>
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Osteoarthritis

Scenario A

Any of the following ICD-9 codes (including all sub-codes) in the **Billing, EncounterDiagnosis, or Health Condition** table:

715: OSTEOARTHROSIS AND ALLIED DISORDERS

721: SPONDYLOSIS AND ALLIED DISORDERS

Parkinson's Disease

Scenario A

The following ICD-9 code (including all sub-codes) in the **Billing, Encounter Diagnosis, or Health Condition** table:

332: PARKINSON'S DISEASE

Pediatric Asthma

Note: For all scenarios, patient age must be between 1 and 17 years, inclusive.

Scenario A

The following ICD-9 code (including all sub-codes) in the **Billing, Encounter Diagnosis, or Health Condition** table:

493: ASTHMA

Scenario B

At least two (identical or different) of the following ATC codes in the **Medication** table:

H02AB02: DEXAMETHASONE
H02AB06: PREDNISOLONE
H02AB07: PREDNISON
R03AC02: SALBUTAMOL
R03AC03: TERBUTALINE
R03AC04: FENOTEROL
R03AC12: SALMETEROL
R03AC13: FORMOTEROL
R03AC18: INDACATEROL
R03AK06: SALMETEROL AND FLUTICASONE
R03AK07: FORMOTEROL AND BUDESONIDE
R03AK08: FORMOTEROL AND BECLOMETASONE
R03AK09: FORMOTEROL AND MOMETASONE
R03BA01: BECLOMETHASONE
R03BA02: BUDESONIDE
R03BA05: FLUTICASONE
R03BA06: TRIAMCINOLONE
R03BA07: MOMETASONE
R03BA08: CICLESONIDE
R03BB01: IPRATROPIUM BROMIDE
R03DC01: ZAFIRLUKAST
R03DC03: MONTELUKAST

Pediatric Diabetes Mellitus

Note: For all scenarios, patient age at onset must be < 18 years.

Scenario A

The following ICD-9 code (including all sub-codes) in the **Health Condition** table

OR

at least two (identical or different) of the following ICD-9 code (including all sub-codes) in the **Billing** table that are recorded on different dates that are ≤ 2 years apart:

250: DIABETES MELLITUS

Scenario B

The following ATC code (including all sub-codes) in the **Medication** table:

A10: DRUGS USED IN DIABETES

Scenario C

Two or more **Hemoglobin A1c (HbA1c)** test (LOINC = 17856-6) in the **Lab** table with a result ≥ 6.5

PTSD (Post-Traumatic Stress Disorder)

Scenario A

The following ICD-9 code (including all sub-codes) in the **Billing, Encounter Diagnosis, or Health Condition** table:

309.81: POSTTRAUMATIC STRESS DISORDER

Scenario B

<p>Any of the following ICD-9 codes in the Billing, EncounterDiagnosis, or HealthCondition table:</p> <p>290: DEMENTIAS 291: ALCOHOL-INDUCED MENTAL DISORDERS 292: DRUG-INDUCED MENTAL DISORDERS 293: TRANSIENT MENTAL DISORDERS DUE TO CONDITIONS CLASSIFIED ELSEWHERE 294: PERSISTENT MENTAL DISORDERS DUE TO CONDITIONS CLASSIFIED ELSEWHERE 295: SCHIZOPHRENIC DISORDERS 296: EPISODIC MOOD DISORDERS 297: DELUSIONAL DISORDERS 298: OTHER NONORGANIC PSYCHOSES 299: PERVASIVE DEVELOPMENTAL DISORDERS 300: ANXIETY, DISSOCIATIVE AND SOMATOFORM DISORDERS 301: PERSONALITY DISORDERS 302: SEXUAL AND GENDER IDENTITY DISORDERS 303: ALCOHOL DEPENDENCE SYNDROME 304: DRUG DEPENDENCE 305: NONDEPENDENT ABUSE OF DRUGS 306: PHYSIOLOGICAL MALFUNCTION ARISING FROM MENTAL FACTORS 307: SPECIAL SYMPTOMS OR SYNDROMES, NOT ELSEWHERE CLASSIFIED 308: ACUTE REACTION TO STRESS 309: ADJUSTMENT REACTION 310: SPECIFIC NONPSYCHOTIC MENTAL DISORDERS DUE TO BRAIN DAMAGE 311: DEPRESSIVE DISORDER NEC 312: DISTURBANCE OF CONDUCT, NOT ELSEWHERE CLASSIFIED 313: DISTURBANCE OF EMOTIONS SPECIFIC TO CHILDHOOD AND ADOLESCENCE 314: HYPERKINETIC SYNDROME OF CHILDHOOD 315: SPECIFIC DELAYS IN DEVELOPMENT 316: PSYCHIC FACTOR W OTH DIS</p>	<p>AND</p>	<p>the DiagnosisText_orig for the same record matches the following case-insensitive and regex patterns (the dot "." indicates matches to any one character):</p> <p>'ptsd'</p> <p>OR</p> <p>'post.traumatic stress'</p> <p>OR</p> <p>'stress post.traumatique'</p>
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Appendix A - Validation Results and References

Case Definition	Version	Method of Creation	Sensitivity % (95% CI)	Specificity % (95% CI)	PPV % (95% CI)	NPV % (95% CI)	Page
Adult Asthma [‡]	1	Expert panel	80.6 (69.5-88.9)	96.4 (94.7-97.7)	70.7 (59.7-80.3)	97.9 (96.5-98.8)	6
Cardiovascular Disease ¹⁰	1	Expert panel	76.9 (70.4-82.5)	97.2 (96.3-97.9)	75.4 (69.8-80.2)	97.4 (96.7-98.0)	7
Cerebrovascular Disease ¹⁰	1	Expert panel	77.6 (65.8-86.9)	98.6 (97.9-99.0)	65.0 (55.7-73.3)	99.2 (98.8-99.5)	8
Chronic Heart Failure ^{7‡}	1	Expert panel	99.3 (98.4-99.8)	98.8 (98.2-99.2)	96.1 (94.6-97.3)	99.8 (99.5-99.9)	9
Cirrhosis ¹¹	1	Expert panel	84.6 (83.1-86.0)	99.3 (99.1-99.4)	94.8 (93.9-95.7)	97.5 (97.3-97.7)	10
CKD [*]	1	Expert panel	-	-	-	-	11
COPD ^{1#}	2	Expert panel	82.1 (76.0-88.2)	97.3 (96.5-98.0)	72.1 (65.4-78.8)	98.4 (97.9-99.0)	12
Coronary Artery Disease ¹⁰	1	Expert panel	91.6 (84.6-96.1)	98.3 (97.6-98.8)	74.8 (67.8-80.7)	99.5 (99.1-99.7)	13
Dementia ¹	1	Expert panel	96.8 (93.3-100.0)	98.1 (97.5-98.7)	72.8 (65.0-80.6)	99.8 (99.6-100.0)	14
Depression ^{1#}	2	Expert panel	81.1 (77.2-85.0)	94.8 (93.7-95.9)	79.6 (75.7-83.6)	95.2 (94.1-96.3)	15
Diabetic Neuropathy [^]	1	Machine learning	79.6 (71.8-85.7)	97.3 (96.5-98.0)	70.5 (62.1-77.7)	98.4 (97.7-98.8)	16
Diabetic Retinopathy [^]	1	Machine learning	92.1 (86.0-95.8)	98.4 (97.8-98.9)	80.2 (72.4-86.1)	99.5 (99.0-99.7)	17
Diabetes Mellitus ^{1**}	4	Expert panel	95.6 (93.4-97.9)	97.1 (96.3-97.9)	87.0 (83.5-90.5)	87.0 (83.5-90.5)	18
Dyslipidemia [†]	1	Expert panel	94.8 (87.2-98.6)	100.0 (-)	100.0 (-)	97.3 (93.3-99.3)	19
Epilepsy ¹	1	Expert panel	98.6 (96.6-100.0)	98.7 (98.2-99.2)	85.6 (80.2-91.1)	99.9 (99.7-100.0)	20
Herpes Zoster ^{2,3}	1	Expert panel	100.0 (97.8-100.0)	73.77 (65.0- 81.3)	83.9 (79.5-87.5)	100 (-)	21
Hypertension ^{1***}	4	Expert panel	84.9 (82.6-87.1)	93.5 (92.0-95.1)	92.9 (91.2-94.6)	86.0 (83.9-88.2)	22
Multiple Sclerosis ^{8‡}	1	Expert panel	93.3 (89.2-96.2)	99.6 (99.2-99.9)	97.7 (94.6-99.0)	98.9 (98.1-99.2)	24
Non-valvular Atrial Fibrillation (NVAf) ^{4‡}	1	Expert panel	78.1 (66.0-87.5)	99.5 (99.1-99.7)	80.7 (70.0-88.1)	99.4 (99.0-99.6)	26
Osteoarthritis ^{1#}	3	Expert panel	77.8 (74.5-81.1)	94.9 (93.8-96.1)	87.7 (84.9-90.5)	90.2 (88.7-91.8)	27
Parkinson's Disease ¹	1	Expert panel	98.8 (96.4-100.0)	99.0 (98.6-99.5)	82.0 (74.5-89.5)	99.9 (99.8-100.0)	28

Pediatric Asthma ⁵	1	Expert panel	96.9 (91.3–99.4)	Not reported	100.0 (-)	Not reported	29
Pediatric Diabetes Mellitus ⁶	1	Expert panel	94.9 (88.4-98.3)	100.0 (-)	100.0 (-)	100.0 (-)	30
PTSD ^{9†}	1	Expert panel	95.3 (90.0-98.3)	98.4 (94.3-99.8)	98.4 (93.9-99.6)	95.2 (90.2-97.8)	31

* Definition is based solely on laboratory results, thus reference standard validation cannot be completed.

** Updated HbA1C cut-off from greater than equal to 7.0 to greater than equal to 6.5, as per clinical guidelines, and the EncounterDiagnosis table has been included for case detection by ICD-9 code. No revalidation completed.

*** Updated version of [Hypertension \(Version 1\)](#) by removal of a rarely used drug (Metolazone) and inclusion of the EncounterDiagnosis table for case detection by ICD-9 code. Validation metrics are expected to be similar to Hypertension (Version 1).

† Unpublished results.

‡ Quoted metrics are from an unpublished validation on a sample of the CPCSSN National Data Set.

^ Publication in progress (as of **2023-02-06**).

Validation metrics are for the original case definitions, published in reference 1. The updated case definitions shown in this document now include the EncounterDiagnosis table for identification of cases by ICD-9. The validation metrics are not expected to be much altered by this change.

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Appendix B - Legacy Case Definitions

The following pages contain all previously implemented CPCSSN case definitions, and include the date ranges for which they were in use.

COPD (Version 1): 2012-Q2 to 2022-Q2

Note: For all scenarios, patient age at onset must be ≥ 35 years.

Scenario A

Any of the following ICD-9 codes (including all sub-codes) in the **Billing** or **Health Condition** table:

491.2: OBSTRUCTIVE CHRONIC BRONCHITIS
492: EMPHYSEMA
496: CHRONIC AIRWAY OBSTRUCTION, NOT ELSEWHERE CLASSIFIED

Scenario B

Any of the following ATC codes (including all sub-codes) in the Medication table: R03BB: ANTICHOLINERGICS R03AK04: SALBUTAMOL AND SODIUM CROMOGLICATE R03AL: ADRENERGICS IN COMBINATION WITH ANTICHOLINERGICS INCLUDING TRIPLE COMBINATIONS WITH CORTICOSTEROIDS	EXCEPT	If the HealthCondition table contains the following ICD-9 code (including all sub-codes), the medications are insufficient for defining a disease case: 493: ASTHMA
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Depression (Version 1): 2018-Q2 to 2022-Q2

Scenario A

Any of the following ICD-9 codes (including all sub-codes) in the **Billing, EncounterDiagnosis, or Health Condition** table:

296: EPISODIC MOOD DISORDERS
311: DEPRESSIVE DISORDER, NOT ELSEWHERE CLASSIFIED

Scenario B

Any of the following ATC codes (including all sub-codes) in the **Medication** table:

N06AB: SELECTIVE SEROTONIN REUPTAKE
INHIBITORS
N06AF04: TRANYLCPROMINE
N06AG02: MOCLOBEMIDE
N06AX11: MIRTAZAPINE
N06CA01: AMITRIPTYLINE AND PSYCHOLEPTICS

EXCEPT

If the **HealthCondition** table contains the following ICD-9 code (including all sub-codes), the medications are insufficient for defining a disease case:

300: ANXIETY DISORDER

Diabetes Mellitus (Version 1): 2012-Q2 to 2022-Q2

Scenario A

The following ICD-9 code (including all sub-codes) in the **Health Condition** table

OR

at least two (identical or different) of the following ICD-9 code (including all sub-codes) in the **Billing** table that are recorded on different dates that are ≤ 2 years apart:

250: DIABETES MELLITUS

Scenario B

The following ATC code (including all sub-codes) in the **Medication** table:

A10: DRUGS USED IN DIABETES

EXCEPT

If the **HealthCondition** table contains any of the following ICD-9 codes (including all sub-codes), the medications are insufficient for defining a disease case:

249: SECONDARY DIABETES MELLITUS

256.4: POLYCYSTIC OVARIES

648.8: ABNORMAL GLUCOSE TOLERANCE OF MOTHER, COMPLICATING PREGNANCY, CHILDBIRTH, OR THE PUERPERIUM

775.1: NEONATAL DIABETES MELLITUS

790.29: OTHER ABNORMAL GLUCOSE

Scenario C

Any **Hemoglobin A1c (HbA1c)** test (LOINC = 17856-6) in the **Lab** table with a result ≥ 7

OR

at least two **Fasting Blood Glucose (FBG)** tests (LOINC = 14771-0) in the **Lab** table having results strictly > 7 that are recorded on different dates that are ≤ 1 year apart.

Diabetes Mellitus (Version 2): 2018-Q2 to 2022-Q2

Scenario A

The following ICD-9 code (including all sub-codes) in the **Health Condition** table

OR

at least two (identical or different) of the following ICD-9 code (including all sub-codes) in the **Encounter Diagnosis** table that are recorded on different dates that are ≤ 2 years apart:

250: DIABETES MELLITUS

Diabetes Mellitus (Version 3): 2020-Q2 to 2022-Q2

Scenario A

The following ICD-9 code (including all sub-codes) in the **Health Condition** table

OR

at least two (identical or different) of the following ICD-9 code (including all sub-codes) in the **Billing** table that are recorded on different dates that are ≤ 2 years apart:

250: DIABETES MELLITUS

Scenario B

The following ATC code (including all sub-codes) in the **Medication** table:

A10: DRUGS USED IN DIABETES

EXCEPT

If the **HealthCondition** table contains any of the following ICD-9 codes (including all sub-codes), the medications are insufficient for defining a disease case:

249: SECONDARY DIABETES MELLITUS

256.4: POLYCYSTIC OVARIES

648.8: ABNORMAL GLUCOSE TOLERANCE OF MOTHER, COMPLICATING PREGNANCY, CHILDBIRTH, OR THE PUERPERIUM

775.1: NEONATAL DIABETES MELLITUS

790.29: OTHER ABNORMAL GLUCOSE

Scenario C

Any **Hemoglobin A1c (HbA1c)** test (LOINC = 17856-6) in the **Lab** table with a result ≥ 6.5

OR

at least two **Fasting Blood Glucose (FBG)** tests (LOINC = 14771-0) in the **Lab** table having results strictly > 7 that are recorded on different dates that are ≤ 1 year apart.

Hypertension (Version 1): 2012-Q2 to 2022-Q2

Scenario A

Any of the following ICD-9 codes (including all sub-codes) in the **Health Condition** table

OR

at least two (identical or different) of the following ICD-9 codes (including all sub-codes) in the **Billing** table that are recorded on different dates that are ≤ 2 years apart:

- 401: ESSENTIAL HYPERTENSION
- 402: HYPERTENSIVE HEART DISEASE
- 403: HYPERTENSIVE CHRONIC KIDNEY DISEASE
- 404: HYPERTENSIVE HEART AND CHRONIC KIDNEY DISEASE
- 405: SECONDARY HYPERTENSION

Scenario B

<p>Any of the following ATC codes (including all sub-codes) in the Medication table:</p> <p>C02: ANTIHYPERTENSIVES C03AA03: HYDROCHLOROTHIAZIDE C03BA04: CHLORTALIDONE C03BA08: METOLAZONE C03BA11: INDAPAMIDE C03DB01: AMILORIDE C03DB02: TRIAMTERENE C03EA01: HYDROCHLOROTHIAZIDE AND POTASSIUM-SPARING AGENTS C07AA06: TIMOLOL C07AB03: ATENOLOL C07AB04: ACEBUTOLOL C07AG02: CARVEDILOL C07CB03: ATENOLOL AND OTHER DIURETICS C08CA01: AMLODIPINE C08CA02: FELODIPINE C08DA01: VERAPAMIL C09AA01: CAPTOPRIL C09AA02: ENALAPRIL C09AA03: LISINOPRIL C09AA07: BENAZEPRIL C09AA08: CILAZAPRIL C09AA09: FOSINOPRIL C09AA10: TRANDOLAPRIL C09BA02: ENALAPRIL AND DIURETICS C09BA03: LISINOPRIL AND DIURETICS C09CA02: EPROSARTAN C09CA03: VALSARTAN C09CA04: IRBESARTAN C09CA07: TELMISARTAN C09DA01: LOSARTAN AND DIURETICS C09DA02: EPROSARTAN AND DIURETICS C09DA04: IRBESARTAN AND DIURETICS C09XA02: ALISKIREN</p>	<p>EXCEPT</p>	<p>If the HealthCondition table contains any of the following ICD-9 codes (including all sub-codes), the medications are insufficient for defining a disease case:</p> <p>250: DIABETES MELLITUS 333.1: ESSENTIAL AND OTHER SPECIFIED FORMS OF TREMOR 346: MIGRAINE 410: ACUTE MYOCARDIAL INFARCTION 412: OLD MYOCARDIAL INFARCTION 413: ANGINA PECTORIS 427: CARDIAC DYSRHYTHMIAS 428: HEART FAILURE 456.0: ESOPHAGEAL VARICES WITH BLEEDING 456.1: ESOPHAGEAL VARICES WITHOUT MENTION OF BLEEDING 572.3: PORTAL HYPERTENSION 592: CALCULUS OF KIDNEY AND URETER</p>
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Hypertension (Version 2): 2018-Q4 to 2022-Q2

Scenario A

The following ICD-9 code (including all sub-codes) in the **Encounter Diagnosis** or **Health Condition** table:

401: ESSENTIAL HYPERTENSION

Scenario B

The following ATC code in the **Medication** table:

C08CA01: AMLODIPINE

Hypertension (Version 3): 2021-Q4 to 2022-Q2

Scenario A

Any of the following ICD-9 codes (including all sub-codes) in the **Health Condition** table

OR

at least two (identical or different) of the following ICD-9 codes (including all sub-codes) in the **Billing** table that are recorded on different dates that are ≤ 2 years apart:

- 401: ESSENTIAL HYPERTENSION
- 402: HYPERTENSIVE HEART DISEASE
- 403: HYPERTENSIVE CHRONIC KIDNEY DISEASE
- 404: HYPERTENSIVE HEART AND CHRONIC KIDNEY DISEASE
- 405: SECONDARY HYPERTENSION

Osteoarthritis (Version 1): 2010-Q1 to 2022-Q2

Scenario A

Any of the following ICD-9 codes (including all sub-codes) in the **Billing** or **Health Condition** table:

715: OSTEOARTHROSIS AND ALLIED DISORDERS
721: SPONDYLOSIS AND ALLIED DISORDERS

Osteoarthritis (Version 2): 2018-Q4 to 2022-Q2

Scenario A

The following ICD-9 code (including all sub-codes) in the **Encounter Diagnosis** or **Health Condition** table:

715: OSTEOARTHROSIS AND ALLIED DISORDERS