



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

# CPCSSN Case Definitions

## 2021-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 being a case.

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.

# Updates

There was a major change to the database schema for 2020-Q2. Instead of a descriptive name (e.g., Diabetes Mellitus (ml)), diseases are now given an unqualified name (e.g., Diabetes Mellitus), a version number, and whether or not they are the CPCSSN default definition. The designation as the CPCSSN default means that if there are multiple case definition versions for a specific disease, the default is the one that CPCSSN believes is most accurate at classifying patients who have (and do not have) the disease. The default definition also indicates which case definition version is to be used when one case definition depends on another (e.g., Dyslipidemia requires Diabetes Mellitus, Version 3).

The following table describes the mapping between the 2019-Q4 and 2020-Q2 case definition naming conventions:

<i>Disease (2019-Q4)</i>	<i>Disease (2020-Q2)</i>	<i>Version (2020-Q2)</i>	<i>IsDefaultDefinition (2020-Q2)*</i>
CKD	CKD	1	1
COPD	COPD	1	1
Dementia	Dementia	1	1
Depression	Depression	1	1
Diabetes Mellitus	Diabetes Mellitus	1	0
Diabetes Mellitus (ml)	Diabetes Mellitus	2	0
-	Diabetes Mellitus	3	1
Dyslipidemia	Dyslipidemia	1	1
Epilepsy	Epilepsy	1	1
Herpes Zoster	Herpes Zoster	1	1
Hypertension	Hypertension	1	0
Hypertension (ml)	Hypertension	2	0
-	Hypertension	3	1
Osteoarthritis	Osteoarthritis	1	1
Osteoarthritis (ml)	Osteoarthritis	2	0
Parkinsons Disease	Parkinsons Disease	1	1
Pediatric Asthma	Pediatric Asthma	1	1
Pediatric Diabetes Mellitus	Pediatric Diabetes Mellitus	1	1

\**IsDefaultDefinition* = 1 if the case definition is the default (CPCSSN standard), and = 0 if it is not.

Note that any definition created after 2020-Q2 is assumed to be in the 2020-Q2 format, and so has not been included in the above table.

# List of CPCSSN Case Definitions

<i>Case Definition</i>	<i>Version</i>	<i>Method of Creation</i>	<i>Current Standard?</i>	<i>Quarter Last Updated</i>	<i>Page</i>
<a href="#">CKD</a>	1	Expert panel	<b>Yes</b>	2018-Q4	6
<a href="#">COPD</a>	1	Expert panel	<b>Yes</b>	2018-Q4	7
<a href="#">Dementia</a>	1	Expert panel	<b>Yes</b>	2018-Q4	8
<a href="#">Depression</a>	1	Expert panel	<b>Yes</b>	2018-Q4	9
<a href="#">Diabetes Mellitus</a>	1	Expert panel	<i>No</i>	2018-Q4	10
<a href="#">Diabetes Mellitus</a>	2	Machine learning	<i>No</i>	2018-Q2	11
<a href="#">Diabetes Mellitus</a>	3	Expert panel	<b>Yes</b>	2020-Q2	12
<a href="#">Dyslipidemia</a>	1	Expert panel	<b>Yes</b>	2019-Q4	13
<a href="#">Epilepsy</a>	1	Expert panel	<b>Yes</b>	2018-Q4	14
<a href="#">Herpes Zoster</a>	1	Expert panel	<b>Yes</b>	2018-Q2	15
<a href="#">Hypertension</a>	1	Expert panel	<i>No</i>	2018-Q4	16
<a href="#">Hypertension</a>	2	Machine learning	<i>No</i>	2018-Q4	18
<a href="#">Hypertension</a>	3	Expert panel	<b>Yes</b>	2021-Q4	19
<a href="#">Non-valvular Atrial Fibrillation (NVAF)</a>	1	Expert panel	<b>Yes</b>	2021-Q4	21
<a href="#">Osteoarthritis</a>	1	Expert panel	<b>Yes</b>	2010-Q1	22
<a href="#">Osteoarthritis</a>	2	Machine learning	<i>No</i>	2018-Q4	23
<a href="#">Parkinson's Disease</a>	1	Expert panel	<b>Yes</b>	2018-Q4	24
<a href="#">Pediatric Asthma</a>	1	Expert panel	<b>Yes</b>	2018-Q2	25
<a href="#">Pediatric Diabetes Mellitus</a>	1	Expert panel	<b>Yes</b>	2019-Q4	26

Where multiple versions of a case definition exist, we recommend using those that are indicated with a 'Yes' under 'Current Standard?'.

# Interpretation

The following pages contain the logic used to classify each CPCSSN patient's disease status for a host of disease case definitions. There are three naming conventions used in the headings for each disease:

1. For diseases with only a single version, neither the version number nor the IsDefaultDefinition flag are included in the heading.
2. For diseases with multiple versions, the version number is included in the name.
  - a. If the disease definition is not the CPCSSN default (i.e., IsDefaultDefinition = 0), no extra information is included.
  - b. If the disease definition is the CPCSSN default (i.e., IsDefaultDefinition = 1), the words "CPCSSN Standard" follow the case definition version number.

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.

# CKD

## Scenario A

Two **Plasma Creatinine Clearance (eGFR)** tests (LOINC = 12195-4) in the **Lab** table having results < 60 ml/min/1.73 m<sup>2</sup> separated by between 3 months and 18 months, inclusive.

# COPD

**Note: For all scenarios, patient age at onset must be  $\geq 35$  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 <b>Medication</b> table:  R03BB: ANTICHOLINERGICS R03AK04: SALBUTAMOL AND SODIUM CROMOGLICATE R03AL: ADRENERGICS IN COMBINATION WITH ANTICHOLINERGICS INCLUDING TRIPLE COMBINATIONS WITH CORTICOSTEROIDS	EXCEPT	If the <b>HealthCondition</b> 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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# 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** 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

# Diabetes Mellitus, Version 1

## 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  $\leq 2$  years apart:  
  
250: DIABETES MELLITUS

## Scenario B

The following ATC code (including all sub-codes) in the <b>Medication</b> table:  A10: DRUGS USED IN DIABETES	EXCEPT	If the <b>HealthCondition</b> 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
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## Scenario C

Any **Hemoglobin A1c (HbA1c)** test (LOINC = 17856-6) in the **Lab** table with a result  $\geq 7$   
AND  
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  $\leq 1$  year apart.

# Diabetes Mellitus, Version 2

## 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  $\leq 2$  years apart:

250: DIABETES MELLITUS

# Diabetes Mellitus, Version 3 (CPCSSN Standard)

## 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  $\leq 2$  years apart:  
  
250: DIABETES MELLITUS

## Scenario B

The following ATC code (including all sub-codes) in the <b>Medication</b> table:  A10: DRUGS USED IN DIABETES	EXCEPT	If the <b>HealthCondition</b> 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
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## Scenario C

Any **Hemoglobin A1c (HbA1c)** test (LOINC = 17856-6) in the **Lab** table with a result  $\geq 6.5$   
AND  
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  $\leq 1$  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 <b>Medication</b> table:</p> <p>C10: LIPID MODIFYING AGENTS</p> <p>excluding any of the following ATC codes (including all sub-codes) in the <b>Medication</b> table:</p> <p>C10AC: BILE ACID SEQUESTRANTS</p>	<p>EXCEPT</p>	<p>If the <b>DiseaseCase</b> 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  $\geq 3.5$  mmol/L

OR

Any **Cholesterol Total/Cholesterol in HDL Ratio (TCh/HDL)** test (LOINC = 9830-1) in the **Lab** table with a result  $\geq 4.3$  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, Version 1

## 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  $\leq 2$  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 <b>Medication</b> 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 <b>HealthCondition</b> 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

## 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 (CPCSSN Standard)

## 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  $\leq 2$  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 <b>Medication</b> 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 <b>HealthCondition</b> 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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# Non-Valvular Atrial Fibrillation (NVAF), Version 1 (CPCSSN Standard)

## Scenario A

<p>Any of the following <u>exact</u> ICD-9 codes in the <b>Billing, EncounterDiagnosis</b>, or <b>HealthCondition</b> 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 <b>Billing, EncounterDiagnosis</b>, or <b>HealthCondition</b> 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, Version 1 (CPCSSN Standard)

## 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

## Scenario A

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

715: OSTEOARTHROSIS AND ALLIED DISORDERS

# Parkinsons 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  $\leq 2$  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  $\geq 6.5$

# 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
<a href="#">CKD*</a>	1	Expert panel	-	-	-	-	6
<a href="#">COPD<sup>1</sup></a>	1	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)	7
<a href="#">Dementia<sup>1</sup></a>	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)	8
<a href="#">Depression<sup>1</sup></a>	1	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)	9
<a href="#">Diabetes Mellitus<sup>1</sup></a>	1	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)	10
<a href="#">Diabetes Mellitus<sup>2</sup></a>	2	Machine learning	93.5 (90.0-95.8)	99.0 (98.3-99.4)	94.9 (91.7-97.0)	98.7 (98.0-99.2)	11
<a href="#">Diabetes Mellitus**</a>	3	Expert panel	-	-	-	-	12
<a href="#">Dyslipidemia<sup>†</sup></a>	1	Expert panel	94.8 (87.2-98.6)	100.0 (-)	100.0 (-)	97.3 (93.3-99.3)	13
<a href="#">Epilepsy<sup>1</sup></a>	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)	14
<a href="#">Herpes Zoster<sup>3,4</sup></a>	1	Expert panel	100.0 (97.8-100.0)	73.77 (65.0- 81.3)	83.9 (79.5-87.5)	100 (-)	15
<a href="#">Hypertension<sup>1</sup></a>	1	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)	16
<a href="#">Hypertension<sup>2</sup></a>	2	Machine learning	93.1 (91.3-94.6)	93.2 (91.4-94.7)	93.2 (91.4-94.7)	93.1 (91.3-94.6)	18
<a href="#">Hypertension***</a>	3	Expert panel	See comment	See comment	See comment	See comment	19
<a href="#">Non-valvular Atrial Fibrillation (NVAF)<sup>5‡</sup></a>	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)	21
<a href="#">Osteoarthritis<sup>1</sup></a>	1	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)	22
<a href="#">Osteoarthritis<sup>2</sup></a>	2	Machine learning	82.0 (78.7-85.0)	93.8 (92.3-95.0)	86.0 (82.9-88.7)	91.8 (90.2-93.2)	23
<a href="#">Parkinsons Disease<sup>1</sup></a>	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)	24
<a href="#">Pediatric Asthma<sup>6</sup></a>	1	Expert panel	96.9 (91.3-99.4)	Not reported	100.0 (-)	Not reported	25
<a href="#">Pediatric Diabetes Mellitus<sup>7</sup></a>	1	Expert panel	94.9 (88.4-98.3)	100.0 (-)	100.0 (-)	100.0 (-)	26

\* 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. No revalidation completed.

\*\*\* Updated version of Hypertension, Version 1 by removal of a rarely used drug (Metolazone). Validation metrics are expected to be extremely similar to Hypertension, Version 1.

† Unpublished results.

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

Note: Where there are multiple versions of a case definition (e.g., versions 1, 2, and 3 for Diabetes Mellitus), the choice of version will depend on the goal of an individual study. In general, high sensitivity is preferred for prevalence studies whereas high PPV is preferred for study recruitment or Quality Improvement studies.

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