

Brain disorders featured in the report and their related algorithms

Brain Disorder	Evidence Grade	Reference	Algorithm	ICD-09 (CM) codes	ICD-10 codes	OHIP Dx codes	ODB drugs name	OMHRS codes	Age Restriction
Brain tumor, non-malignant (benign)	III	Clinical and health administrative data expertise	1 hospitalization record	225.0, 225.2	D32.0, D32.9, D33.0, D33.1, D33.2	N/A	N/A	N/A	None
Brain tumor, primary malignant	I	Validated algorithm	1 cancer registry record with histologic confirmation	OCR: ICD (curr_topog_cd) = C71	N/A	N/A	N/A	N/A	None
Cerebral palsy	II	Accepted algorithm	1 hospitalization record <u>or</u> 1 physician claim record	343	G80	343	N/A	N/A	For incidence: Birth to 20 years of age. after 20 years: incidence = 0
Dementia (including Alzheimer's disease)	I	Accepted/validated algorithm	1 hospitalization record <u>or</u> 3 physician claim records at least 30 days apart in a 2-year period <u>or</u> 1 prescription drug reimbursement record	46.1, 290.0, 290.1, 290.2, 290.3, 290.4, 294, 331.0, 331.1, 331.5,	F00, F01, F02, F03, G30		Cholinesterase inhibitors = Donepezil, Galantamine, Memantine, Rivastigmine, Tacrine	N/A	40 years and older

Epilepsy	I	Validated algorithm	<p><i>For individuals &lt;18 years:</i> 3 physician claim records at least 30 days apart in a 2-year period</p> <p><i>For individuals 18 years and older:</i> 1 hospitalization record <u>or</u> 3 physician claim records at least 30 days apart in a 2-year period</p>	345.0, 345.1, 345.4, 345.5, 345.6, 345.7, 345.8, 345.9	G40.x	345	N/A	N/A	None
Motor neuron disease	II	Accepted algorithm <sup>c</sup>	1 hospitalization record <u>or</u> 1 physician claim record	335	G12	335	N/A	N/A	None
Multiple sclerosis	I	Validated algorithm	1 hospitalization record <u>or</u> 5 physician claim records in a 2-year period	340	G35	340	N/A	N/A	20 years and older
Parkinsonism (including Parkinson's disease)	I	Validated algorithm	1 hospitalization record <u>or</u> 2 physician claim records at least 30 days apart in a 1-year period	332.0, 332.1	F02.3, G20, G21.0, G21.1, G21.2, G21.3, G21.4, G21.8, G21.9, G22	332	N/A	N/A	20 years and older
Schizophrenia	II	Accepted algorithm	1 hospitalization record <u>or</u> 3 physician claim records in a 3-year period	295	F20, F25	295	N/A	DSM-IV= 295	None
Spina bifida	II	Accepted algorithm <sup>e</sup>	1 hospitalization record	741	Q05, Q07.0	N/A	N/A	N/A	None

Spinal cord injury	II	Accepted algorithm <sup>c</sup>	1 hospitalization record	806, 907.2, 952	S14.0, S14.1, S24.0, S24.1, S34.0, S34.1, S34.3, T06.0, T06.1	N/A	N/A	N/A	18 years and older
Stroke and transient ischemic attack	I	Validated algorithm <sup>d</sup> adapted to clinical expert feedback	Incidence: 1 hospitalization record  Prevalence: 1 hospitalization record <u>or</u> 2 physician claim records in a 1-year period	362.3, 430, 431, 434.0, 434.1, 434.9, 435.0, 435.1, 435.2, 435.3, 435.8, 435.9, 436	G45.0, G45.1, G45.2, G45.3, G45.8, G45.9, H34.0, H34.1, I60, I61 (except I61.7), I63.0, I63.1, I63.2, I63.3, I63.4, I63.5, I63.8, I63.9, I64	435, 436, 432	N/A	N/A	20 years and older
Traumatic brain injury	II	Accepted algorithm <sup>c</sup>	1 hospitalization record <u>or</u> 1 emergency department visit record or 1 outpatient physician claim: FP/GP, pediatrician, or specialist (spec='18' '19' '23' '24' '31')	3102, 8001, 8003, 8011, 8013, 8026, 8027, 8031, 8033, 8041, 8043, 850, 851, 852, 853, 854, 9071, 925	F072, S020, S021, S023, S027, S028, S029, S06, S07, T020, T060, T905	850, 854	N/A	N/A	None

\*References:

**Brain Tumour, Primary Malignant:** McLaughlin JR, Kreiger N, Marrett LD, Holowaty EJ. Cancer incidence registration and trends in Ontario. *Eur J Cancer*. 1991; 27(11):1520-4. doi: 10.1016/0277-5379(91)90041-b

**Cerebral Palsy:** Amankwah, N, Oskoui M, Garner R, Bancej C, Manuel DG, Wall R, Finès P, Bernier J, Tu K, Reimer K. Cerebral palsy in Canada, 2011–2031: results of a microsimulation modelling study of epidemiological and cost impacts. *Health Promotion and Chronic Disease Prevention in Canada*. 2020; 40(2). doi: 10.24095/hpcdp.40.2.01

**Dementia:** Liisa JR, Bronskill SE, Tierney MC, Herrmann N, Green D, Young J, Ivers N, Butt D, Widdifield J, Tu K. Identification of Physician-Diagnosed Alzheimer's Disease and Related Dementias in Population-Based Administrative Data: A Validation Study Using Family Physicians' Electronic Medical Records. *Journal of Alzheimer's Disease*. 2016; 54(1): 337-349. doi: 10.3233/JAD-160105

**Epilepsy 18+:** Tu K, Wang M, Jaakkimainen RL, Butt D, Ivers NM, Young J, et al. Assessing the validity of using administrative data to identify patients with epilepsy. *Epilepsia*. 2014; 55(2):335-43. doi: 10.1111/epi.12506

**Multiple Sclerosis:** Widdifield J, Ivers NM, Young J, Green D, Jaakkimainen L, Butt DA, et al. Development and validation of an administrative data algorithm to estimate the disease burden and epidemiology of multiple sclerosis in Ontario, Canada. *Mult Scler*. 2015; 21(8): 1045-54. doi: 10.1177/1352458514556303

**Parkinsonism:** Butt DA, Tu K, Young J, Green D, Wang M, Ivers N, Jaakkimainen L, Lam R, Guttman M. A validation study of administrative data algorithms to identify patients with Parkinsonism with prevalence and incidence trends. *Neuroepidemiology*. 2014; 43(1):28-37. doi: 10.1159/000365590

**Schizophrenia:** Kurdyak P, Lin E, Green D, Vigod S. Validation of a Population-Based Algorithm to Detect Chronic Psychotic Illness. *Can J Psychiatry*. 2015; 60(8):362-8. doi: 10.1177/070674371506000805.

**Spinal Cord Injury:** Couris CM, Guilcher SJ, Munce SE, Fung K, Craven BC, Verrier M, Jaglal SB. Characteristics of adults with incident traumatic spinal cord injury in Ontario, Canada. *Spinal Cord*. 2010; 48(1):39-44. doi: 10.1038/sc.2009.77

**Stroke:** Tu K, Wang M, Young J, Green D, Ivers NM, Butt D, et al. Validity of administrative data for identifying patients who have had a stroke or transient ischemic attack using EMRALD as a reference standard. *Can J Cardiol*. 2013; 29(11):1388-94. doi: 10.1016/j.cjca.2013.07.676

#### Communications:

<sup>c</sup>Written communication with Dr. Christina Bancej, Working Group on Health and Economic Modelling of Neurological Conditions, Public Health Agency of Canada, April 2013

<sup>d</sup>Written communication with Catherine Pelletier and Asako Bienek, Canadian Chronic Disease Surveillance System for Neurological Conditions Working Group, Public Health Agency of Canada, April 2013

<sup>e</sup>Written communication with Jocelyn Rouleau, Maternal Health and Infant Section, Public Health Agency of Canada, June 2013