

Appendix: Definition of death, cardiovascular events using valid diagnostic and procedural codes in Ontario healthcare databases [posted as supplied by author]

Condition	Database	Codes	Validity ^{a,b}
Death	RPDB, CIHI	Vital status field	Sensitivity: 94% ¹ Positive predictive value: 100% ¹
Acute myocardial infarction	CIHI–diagnostic	ICD-9 410x	Sensitivity: 89% ² Positive predictive value: 89% ²
	CIHI–diagnostic	ICD-10-CA I21	Sensitivity: 89% ³ Positive predictive value: 87% ³
Stroke, non-subarachnoid haemorrhagic or infarction	CIHI–diagnostic	ICD-9 431, 432.9, 434x, 436	Positive predictive value: 79–88% ⁴
	CIHI–diagnostic	ICD-10-CA I61, I62, I63, I64	Sensitivity: 75–81% ³ Positive predictive value: 69–87% ³
Coronary artery angioplasty or coronary artery bypass graft surgery	CIHI–procedure	CCI 1IJ50, 1IJ76	Sensitivity: 99–100% ³ Positive predictive value: 97–100% ³
	CIHI–procedure	CCP 48.02, 48.03, 48.09, 48.11–48.19	Sensitivity: 99% ^{5,6} Positive predictive value: 100% ^{5,6}
	OHIP–procedure	OHIP Z434, R742, R743 ^c	
Carotid endarterectomy	OHIP–procedure	OHIP N220, R792 ^c	
Abdominal aortic aneurysm repair and aortic bypass	CIHI–procedure	CCI 1KA76	Sensitivity: 79% ³ Positive predictive value: 75% ³
	CIHI–procedure	CCP 50.24, 50.34	
	OHIP–procedure	OHIP R802, R816, R817, R783, R784, R785, R814 ^c	
Peripheral vascular bypass surgery	CIHI–procedure	CCI 1KG76	Sensitivity: 87% ³ Sensitivity: 87% ³ 88% ³
	CIHI–procedure	CCP 51.25	
	OHIP–procedure	OHIP R787, R780, R797, R804 ^c	

^a Information regarding specificity and negative predictive value is omitted. In almost all instances these parameters were high and precise because of the low underlying prevalence of the diagnoses or procedures in the dataset.

^b Validation performed against the following reference standards: chart review ¹, patient registry ², chart abstraction and recoding ³⁻⁶. Diagnostic conditions were considered present in the discharge abstract for any hospitalization if it was listed as the primary reason for the majority of length of hospital stay.

^c Approximately 95% of Ontario physicians operate under the fee for service payment structure of the Ontario Health Insurance Plan. The sensitivity and positive predictive value of these procedure codes is expected to be high ⁷, as shown with other service payments ⁸. Other studies have reported the value of using physician billing data in combination with other administrative health care data to improve the identification of relevant procedures ⁹.

CCI, Canadian Classification of Health Interventions; CCP, Canadian Classification of Diagnostic, Therapeutic and Surgical Procedures; CIHI, Canadian Institute for Health Information hospital discharge abstract database; ICD-9-CM, International Classification of Disease, Ninth Revision, Clinical Modification; ICD-10, International Classification of Disease, Tenth Revision; ICD-10-CA, International Classification of Disease, Tenth Revision, Canadian Enhancement; OHIP, Ontario Health Insurance Plan database; RPDB, Registered Persons Database of Ontario.

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