

Supplementary Online Content

Smith EE, Fang J, Alibhai SM, et al. Derivation and external validation of a scoring system for predicting fracture risk after ischemic stroke in a Canadian cohort. *JAMA Neurol*. Published online May 13, 2019. doi:10.1001/jamaneurol.2019.1114

eTable. Data Sources and Algorithms for Study Variables

eFigure. Cumulative Incidence of Low Trauma Fracture in the Derivation and Validation Cohorts Based on Risk Score Quintiles From the Derivation Cohort

This supplementary material has been provided by the authors to give readers additional information about their work.

eTable. Data Sources and Algorithms for Study Variables

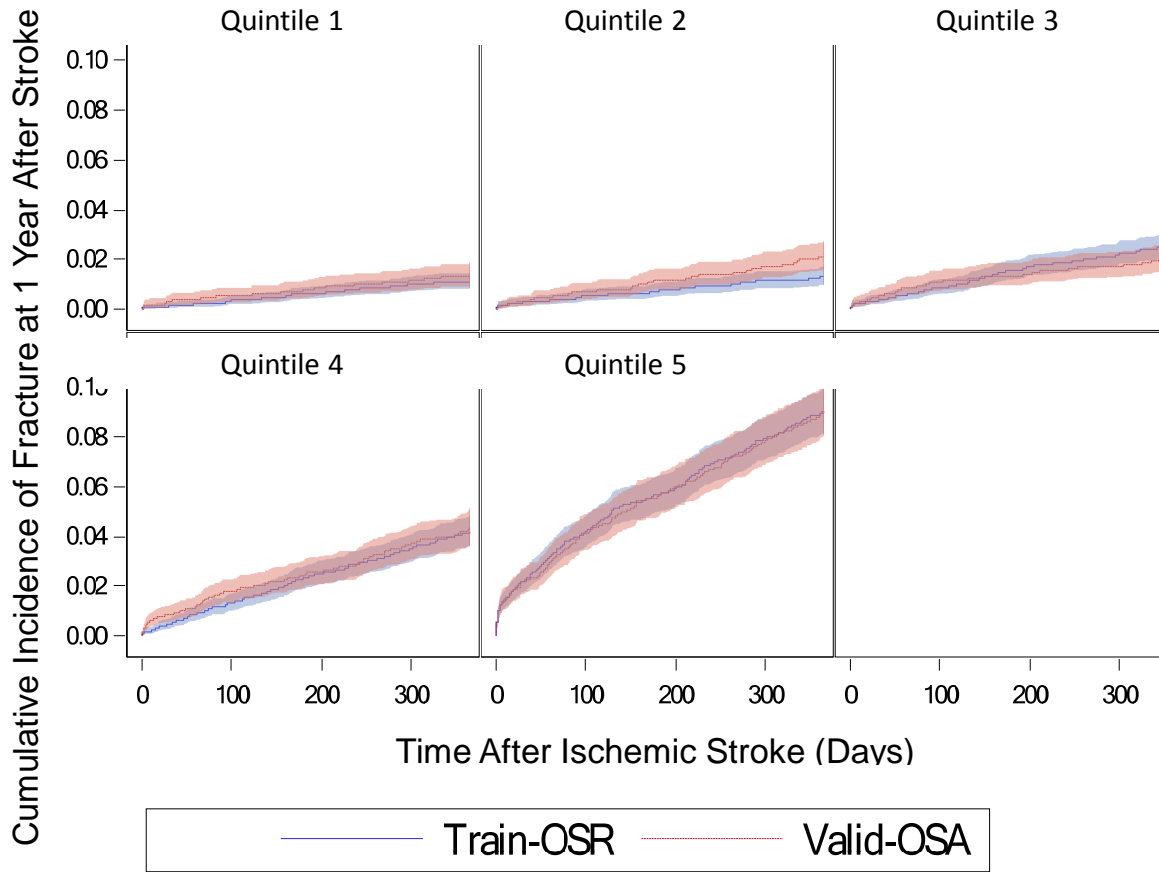
Variable	Data Source	Comment
Diagnosis of transient ischemic attack	OSR	Transient episode (< 24 hours) of neurological dysfunction with no evidence of acute infarction on neuroimaging; based on review of physician and nursing notes + investigations.
Stroke severity and symptoms: weakness; brain stem symptoms including instability; visual changes; seizures.	OSR	Based on signs and symptoms at presentation.
Age, sex, vascular risk factors, history of depression, cancer, functional status at discharge (based on modified Rankin score)	OSR	
Rheumatoid arthritis	CIHI DAD, CIHI NACRS, OHIP	ICD-10-CA codes M05, M06 ICD-9 code 714 Algorithm: 1 hospitalization/ED visit or 2 physician claims within a 2-year period, with ≥ 1 by a specialist
Hyperparathyroidism	CIHI DAD, CIHI NACRS, OHIP	ICD-10-CA code E21 ICD-9 code 252.x Algorithm: 1 hospitalization/ED visit or physician claim
Renal disease	CIHI DAD, CIHI NACRS, OHIP	ICD-10-CA codes E102, E112, E132, E142, I12, I13, N08, N18, N19 ICD-9 codes 403.0, 403.1, 403.9, 404.0, 404.1, 404.9, 585.x, 586.x, 588.8, 588.9 Algorithm: 1 hospitalization/ED visit or physician claim
Malabsorption syndromes	CIHI DAD, CIHI NACRS, OHIP	ICD-10-CA code K90 ICD-9 code 579 Algorithm: 1 hospitalization/ED visit or physician claim
Parkinson's disease	CIHI DAD, CIHI NACRS, OHIP	ICD-10-CA codes F02.3, G20, G21.0-G21.4, G21.8, G21.9, G22 ICD-9 code 322 Algorithm: 1 hospitalization/ED visit or 2 physician claims 30 days apart and within a 1-year period

Dementia	CIHI DAD, CIHI NACRS, OHIP, ODB	ICD-10-CA codes: G30, F00, F01, F02, F03 ICD-9 codes: 290, 294, 331 Algorithm: 1 hospitalization/ED visit OR 3 physician claims at least 30 days apart and within a 2-year period. IF age > 66 years, one ODB claim for donepezil, galantamine, memantine, rivastigmine, tacrine.
Osteoporosis	CIHI DAD, CIHI NACRS, OHIP	ICD-10-CA codes M80-M82 ICD-9 code 733 Algorithm: 1 hospitalization/ED visit or physician claim
Falls	CIHI DAD, CIHI NACRS, OHIP	ICD-10-CA codes W00-W19 ICD-9 codes E880 to E888 Algorithm: 1 hospitalization/ED visit or physician claim
Medications: corticosteroids, aromatase inhibitors, androgen deprivation therapy, thyroid hormones, warfarin, heparin, anticonvulsants, proton pump inhibitors, statins, oral glucose lowering agents, insulin, diuretics, calcium channel blockers, angiotensin converting enzyme inhibitors, angiotensin receptor blockers, cholinesterase inhibitors, benzodiazepines, opioids, antipsychotics, antidepressants, bisphosphonates, raloxifene, denosumab, teriparatide, calcitonin, estrogens	ODBD	Only available for patients aged over 65 years.

Low-trauma fracture	CIHI DAD, CIHI NACRS, OHIP	ICD-10-CA codes S72.0-72.2 (hip), S52 (forearm), S42.2 (upper arm), S32.1-32.5, S32.7, S32.8 (pelvis), S22.0, S22.1, S32.0 (vertebrae). ICD-9 codes 820-821 (hip), 810-812 (upper arm), 813 (forearm), 805.6, 805.7, 808 (pelvis), 805-806 (vertebrae). Algorithm: 1 hospitalization or 1 ED visit or 1 physician claim. Exclude fractures that occur as a result of trauma, motor vehicle accidents or fall from a height (codes V01-06, V9, V43-45, V47).
Death	RPDB	All-cause mortality

Table Legend: CIHI DAD, Canadian Institute for Health Information’s Discharge Abstract Database; CIHI NACRS, Canadian Institute for Health Information’s National Ambulatory Care Reporting System; ODB, Ontario Drug Benefits ;OHIP, Ontario Health Insurance Plan; RPDB, Ontario Registered Persons Database.

eFigure 1. Cumulative Incidence of Low Trauma Fracture in the Derivation and Validation Cohorts Based on Risk Score Quintiles From the Derivation Cohort



Legend: Train-OSR, derivation cohort derived from 11 stroke centers in Ontario. Valid-OSA, validation cohort derived from the population-based Ontario Stroke Audit. The pink and blue bands indicate the 95% confidence limits.