

**SUPPLEMENTARY ONLINE CONTENT**

**Supplementary Table 1.** Description of administrative databases used in the study.

<b>Database</b>	<b>Description</b>
CIHI Discharge Abstract Database (CIHI-DAD)	Demographic, administrative, and clinical data on acute care hospital separations in Ontario.
National Ambulatory Care Reporting System (NACRS)	Captures administrative, demographic, and clinical data for emergency department and ambulatory care visits in Ontario.
Ontario Health Insurance Plan (OHIP)	Claims data for services provided by eligible providers (includes physicians, nurse practitioners, and laboratories).
Ontario Trauma Registry (OTR)	Contains diagnostic, therapeutic information, and outcomes for patients admitted to Lead Trauma Hospitals in Ontario.
Ontario Registrar General Death (ORGD)	Cause of death diagnostic codes.
Registered Persons Database (RPDB)	Contains data on vital status for all Ontario residents that are eligible for the OHIP.

**Supplementary Table 2. Key variable definitions used in the study.**

Variable	Database (Codes)
<b>Inclusion and exclusion criteria</b>	
<i>Inclusion Criteria (1 +2)</i>	
1. Aortic injury	CIHI-DAD, NACRS or OTR (ICD-10 CA codes): S25.0
2. Blunt trauma	CIHI-DAD, NACRS or OTR (ICD-10 CA codes): V01-V89, V95-V97, V99, W09, W11-W17, W20-W49, W51-W52, X72-X74, X78-X82, X93-X96, X99-Y04, Y22-Y25, Y28-Y32
<i>Exclusion Criteria</i>	
Penetrating trauma	CIHI-DAD, NACRS or OTR (ICD-10 CA codes): S25.0
<b>Exposures</b>	
Thoracic endovascular aortic repair (TEVAR)	CIHI-DAD, NACRS or OTR (CCI codes): 1ID80GQNRN  OHIP fee code: R875, or E627
Surgical repair	CIHI-DAD, NACRS or OTR (ICD-10 CA codes): 1IA57LAGXN, 1IA79LA, 1ID80LA, 1ID80LAXXA, 1ID80LAXXK, 1ID80LAXXN, 1ID80LAXXQ, 1ID80QFXXA, 1ID80QFXXK, 1ID80QFXXN, 1ID80QFXXQ, 1ID82LA, 1ID82LAXXA, 1ID82LAXXN, 1ID82LAXXQ, 1ID87LA, 1ID87LAXXA, 1ID87LAXXK, 1ID87LAXXN, 1ID87LAXXQ, 1ID87QFXXA, 1ID87QFXXK, 1ID87QFXXN, 1ID87QFXXQ  OHIP fee codes: R830, R831, R832, E659, E667, R799, R800, R801, E667
Hybrid repair	CIHI-DAD, NACRS or OTR (CCI codes) and/or OHIP fee codes for TEVAR <i>and</i> surgical repair (as above)
Non-operative management	CIHI-DAD, NACRS or OTR (CCI codes) and/or OHIP fee codes: No codes for either TEVAR or open surgical repair (as above)
<b>Covariates</b>	
External causes of injury	CIHI-DAD ICD10CA codes:

Motor vehicle collision	V01-V79, X82
Other transport collisions	V80-V89, V95-V99, Y03
Person struck	W20-W31, W36-W52, X81
Fall from height	W11-W19, X80
Other	None of the above codes
Associated injuries	CIHI-DAD ICD10CA codes:
Skull fracture and/or traumatic brain injury	S02.0, S02.000, S02.001, S02.1, S02.100, S02.101, S06-S09
Cervical spine fracture and/or cervical spinal cord injury	S12.0, S12.1, S12.2, S12.7, S12.9, S14.0, S14.1, S14.2, S14.5
Severe chest injury	S27.41, S27.48, S27.51, S27.58, S27.71, S27.78, S27.8, S27.9, S28
Severe abdominal visceral injury	S35, S36.02, S36.03, S36.04, S36.12, S36.13, S36.14, S36.18, S36.22, S36.23, S36.24, S36.31, S36.41, S36.42, S36.46, S36.51, S36.61, S36.71, S36.78, S36.81, S36.91, S37.02, S37.03, S37.11, S37.21, S37.61, S37.71, S37.81, S37.91, S38.2, S38.3, S39.6, T04.1, T04.7, T05.8, T06.5
Open fracture of a long bone	S42.2_1, S42.3_1, S42.4_1, S52.0_1, S52.1_1, S52.201, S52.301, S52.401, S52.701, S52.801, S52.901, S72.0_1, S72.1_1, S72.201, S72.301, S72.4_1, S72.701, S72.801, S72.901, S82.101, S82.201, S82.301, S82.701, S82.901, T02.21, T02.31, T02.41, T02.51, T02.61
Type of aortic injury	OTR AIS predot code:
Aorta, thoracic not further specified (NFS)	420299.4
Intimal tear, no disruption	420202.4, 420204.5
Laceration; perforation; puncture NFS	420206.4
Minor; superficial; incomplete circumferential involvement; blood loss <=20%	420208.4
	420210.5, 420212.5, 420216.5, 420218.6

Major; rupture; transection; segmental loss; blood loss >20%

### Outcomes

Survival to maximum follow-up	RPDB: vital status “alive”
Aortic reintervention	CIHI-DAD, NACRS or OTR (CCI codes): Any code listed for TEVAR or open surgical repair under “exposures”
Stroke	CIHI-DAD or NACRS (ICD-10 CA codes): I63, I64
Chronic renal failure with dialysis	CIHI-DAD or NACRS (ICD-10 CA codes for Chronic renal failure): N18 <i>plus</i> CIHI-DAD or NACRS (CCI codes for dialysis): 1PZ21HPD4, 1PZ21HQBR
Death from Aortic dissection, rupture, or complication	ORGD (ICD-10 CA codes): I71, S25.0, T82.3

AIS: Abbreviated injury score, CCI: Canadian Classification of Interventions, CIHI-DAD: CIHI Discharge Abstract Database, ICD-10 CA: International Classification of Diseases 10<sup>th</sup> Edition (Canadian), NACRS: National Ambulatory Care Reporting System, OHIP: Ontario health insurance plan, OTR: Ontario Trauma Registry, RPDB: Registered Persons Database.