

## Appendix 1. Supplementary tables

**Table S1. Administrative data codes used to define vertebral surgical procedures**

<b>Procedure Category</b>	<b>Code</b>
<b>Ontario Health Insurance Plan (OHIP) Fee Codes</b>	
Decompression/Vertebrectomy	E373, E386, N500-N508, N510-N512, N579
Fusion	E366, E370, E371, E375, E377, E384, E387, N513-N515, N519, N528, N532, N572, N573, N582
Fixation	N540
Instrumentation/Removal of hardware	N541, N568
Spinal osteomyelitis (incision, drainage, sequestrectomy)	N548-N550
Stereotactic Surgery	N316, E378, E379
Kyphoplasty	N583, E392, E393
Vertebroplasty [J codes used between 2002 and 2005]	E388, E391, J016, J054, N570
Tumour Removal – Vertebral Spine [codes used prior to 2006]	E914, N313, N314, N317
<b>Canadian Classification of Health Intervention (CCI) Codes</b>	
Any vertebral surgical procedure	1.AW.27, 1.AW.72, 1.SA.74, 1.SA.75, 1.SA.80, 1.SA.89, 1.SC.74, 1.SC.75, 1.SC.80, 1.SC.87, 1.SC.89, 1.SE.53, 1.SE.87, 1.SE.89, 1.SF.80

Note: Spinal surgical procedures were identified if any of the above OHIP fee codes AND if any of the above CCI codes appeared  $\pm 5$  days from the procedure OHIP fee code.

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DOI: 10.1503/cjs.000921

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**Table S2. International Classification of Diseases for Oncology, third edition (ICD-O-3) codes for identifying primary cancer by site**

<b>Primary cancer site</b>	<b>Codes</b>
Lung	C34.0–C34.9
Prostate	C619
Breast	C50.0-C50.9
Lymphoma	C024, C098-C099, C111, C142, C379, C422, C770-C779
Myeloma	C42, C77
Urinary System (Kidney, Bladder, Renal Pelvis, Ureter)	C649, C659, C670-C679, C649, C659, C669, C680-C689
Lower gastrointestinal	C180- C189, C260, C199, C209, C210-C212, C218
Upper gastrointestinal	C150- C179
Thyroid	C739
Melanoma	C440-C449
Liver, Pancreas, and Intrahepatic Bile Duct	C220, C221, C239, C240-C249, C250-C259, C480, C481-C482, C268-C269, C488
Other sites and unknown primaries	All other ICD-O codes

**Table S3. Secondary Outcome Definitions**

<b>Outcome</b>	<b>ICD-10 Codes</b>
Vertebral Fracture during follow-up	An inpatient, same day record (SDS), or an ED visit (NACRS) with a most responsible diagnosis of spine fracture any diagnosis of spine fracture. <i>ICD-10 CODES:</i> S22.0 Fracture of thoracic vertebrae S22.1 Multiple fractures of the thoracic spine S32.0 Fracture of lumbar vertebra S32.7 Multiple fractures of lumbar spine and pelvis S32.8 Fracture and other and unspecified parts of lumbar spine and pelvis M966 Fracture of bone following insertion of orthopaedic implant, joint prosthesis, or bone plate
Complication of the surgery itself	Complications of surgical and medical care (defined as any of these codes (in any position) ascertained from CIHI DAD or NACRS (ER) within 30 days of surgery. T800, Air embolism following infusion, transfusion and therapeutic injection T801, Vascular complications following infusion, transfusion and therapeutic injection T802, Infections following infusion, transfusion and therapeutic injection T803, ABO incompatibility reaction T804, Rh incompatibility reaction T805, Anaphylactic shock due to serum T806, Other serum reactions T808, Other complications following infusion, transfusion and therapeutic injection T809, Unspecified complication following infusion, transfusion and therapeutic injection T810, Haemorrhage and haematoma complicating a procedure, not elsewhere classified T811, Shock during or resulting from a procedure, not elsewhere classified T812, Accidental puncture and laceration during a procedure, not elsewhere classified T813, Disruption of operation wound, not elsewhere classified T814, Infection following a procedure, not elsewhere classified T8150, Adhesions due to foreign body accidentally left in body cavity or operation wound following procedure T8151, Obstruction due to foreign body accidentally left in body cavity or operation wound following procedure T8152, Perforation due to foreign body accidentally left in body cavity or operation wound following a procedure T8158, Other specified complication due to foreign body left in body cavity or operation wound following a procedure T8159, Unspecified complication due to foreign body accidentally left in body cavity or operation wound following a procedure T816, Acute reaction to foreign substance accidentally left during a procedure T817, Vascular complications following a procedure, not elsewhere classified T8180, Complication of inhalation therapy T8181, Emphysema (subcutaneous) resulting from a procedure

	<p>T8182, Persistent postoperative fistula            T8188, Other complications of procedures, not elsewhere classified            T819, Unspecified complication of procedure            T8423, Mechanical complication of internal fixation device of spinal vertebrae            T8424, Mechanical complication of internal fixation device of pelvis            T8428, Mechanical complication of internal fixation device of other bones            T843, Mechanical complication of other bone devices, implants and grafts            T844, Mechanical complication of other internal orthopaedic devices, implants and grafts            T8458, Infection and inflammatory reaction due to other joint prosthesis            T8459, Infection and inflammatory reaction due to unspecified joint prosthesis            T8468, Infection and inflammatory reaction due to internal fixation device of bones at other site            T8469, Infection and inflammatory reaction due to internal fixation device of bones of limb NOS            T847, Infection and inflammatory reaction due to other internal orthopaedic prosthetic devices, implants and grafts            T848, Other complications of internal orthopaedic prosthetic devices, implants and grafts            T849, Unspecified complication of internal orthopaedic prosthetic device, implant and graft            T880, Infection following immunization            T881, Other complications following immunization, not elsewhere classified            T882, Shock due to anaesthesia            T883, Malignant hyperthermia due to anaesthesia            T884, Failed or difficult intubation            T885, Other complications of anaesthesia            T886, Anaphylactic shock due to adverse effect of correct drug or medicament properly administered            T887, Unspecified adverse effect of drug or medicament            T888, Other specified complications of surgical and medical care, not elsewhere classified            T889, Complication of surgical and medical care, unspecified</p>
Deep vein thrombosis (DVT)	<p><b><u>Hospitalized DVT</u></b>            I801, Phlebitis and thrombophlebitis of femoral vein            I802, Phlebitis and thrombophlebitis of other deep vessels of lower extremities            I803, Phlebitis and thrombophlebitis of lower extremities, unspecified            I809, Phlebitis and thrombophlebitis of unspecified site            I822, Embolism and thrombosis of vena cava            I823, Embolism and thrombosis of renal vein            I828, Embolism and thrombosis of other specified veins            I829, Embolism and thrombosis of unspecified vein</p>
Pulmonary embolism	<p>I260, Pulmonary embolism with mention of acute cor pulmonale            I269, Pulmonary embolism without mention of acute cor pulmonale</p>
Major vascular event	<p><b><u>Hospitalized Vascular Events</u></b>            I21 to I22, Acute myocardial infarction</p>

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DOI: 10.1503/cjs.000921

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I60, I61, I63 (excluding I63.6), I64, H341, Stroke

**Abbreviations:**

CIHI: Canadian Institute for Health Information

SDS: Same Day Surgery Database.

DAD: Discharge Abstract Database

NACRS: National Ambulatory Care Reporting System

DOI: 10.1503/cjs.000921

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**Supplementary Table 4.** Prevalence of 30-day readmission or complication following surgery for spinal metastases according to year of surgery, 2006-2016

Outcome	Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Individuals readmitted to hospital within 30 days post-surgery, n (%)		34 (24.5%)	48 (23.5%)	42 (18.5%)	41 (16.6%)	54 (23.6%)	48 (18.9%)	50 (21.6%)	62 (21.8%)	52 (20.2%)	70 (24.4%)	52 (18.2%)
Individuals with at least one surgical complication or any major event* within 30 days post-surgery, n (%)		12 (8.6%)	19 (9.3%)	17 (7.5%)	18 (7.3%)	32 (14.0%)	24 (9.4%)	13 (5.6%)	20 (7.0%)	19 (7.4%)	39 (13.6%)	27 (9.5%)
Complication of the surgery itself, n (%)		16 (11.5%)	27 (13.2%)	27 (11.9%)	23 (9.3%)	37 (16.2%)	29 (11.4%)	22 (9.5%)	30 (10.5%)	29 (11.3%)	48 (16.7%)	35 (12.3%)