

SUPPLEMENTARY FILES

Supplementary Table 1. ICD-9 diagnoses used to identify low back pain-related claims in the WorkSafeBC claim file

ICD-9 Codes ¹	ICD-9 Diagnosis
722.1	Displacement of thoracic or lumbar intervertebral disc without myelopathy
722.2	Displacement of intervertebral disc, site unspecified, without myelopathy
722.3	Schmorl's nodes
722.5	Degeneration of thoracic or lumbar intervertebral disc
722.6	Degeneration of intervertebral disc, site unspecified
722.9	Other and unspecified disc disorder
724.0	Spinal stenosis other than cervical
724.2	Lumbago
724.3	Sciatica
724.4	Thoracic or lumbosacral neuritis or radiculitis, unspecified
724.5	Backache, unspecified
724.6	Disorders of sacrum
724.7	Disorders of coccyx
724.8	Other symptoms referable to back
724.9	Other unspecified back disorders
846.0	Sprains and strains of sacroiliac region, Lumbosacral (joint) (ligament)
846.1	Sprains and strains of sacroiliac region, Sacroiliac ligament
846.2	Sprains and strains of sacroiliac region, Sacrospinatus (ligament)
846.3	Sprains and strains of sacroiliac region, Sacrotuberous (ligament)
846.8	Sprains and strains of sacroiliac region, Other specified sites of sacroiliac region
846.9	Sprains and strains of sacroiliac region, Unspecified site of sacroiliac region
847.2	Sprains and strains of other and unspecified parts of back, Lumbar
847.3	Sprains and strains of other and unspecified parts of back, Sacrum
847.4	Sprains and strains of other and unspecified parts of back, Coccyx
847.9	Sprains and strains of other and unspecified parts of back, Unspecified

Abbreviations: ICD-9=International Classification of Diseases, 9th Revision

¹ICD-9 diagnoses are coded to 4 digits in the WorkSafeBC claim file.

Supplementary Table 2. ICD-9 and ICD-10-CA diagnoses used to exclude claimants with low back pain-related hospitalizations or serious low back pain-related outpatient health care visits and/or hospitalizations within 5 days of injury date

ICD-9		ICD-10-CA	
Code ^{1,2}	ICD-9 Diagnosis	Code ^{1,2}	ICD-10-CA Diagnosis
170	Malignant neoplasm of bone and articular cartilage	C40 C41	Malignant neoplasm of bone and articular cartilage of limbs Malignant neoplasm of bone and articular cartilage of other and unspecified sites
171	Malignant neoplasm of connective and other soft tissue	C49	Malignant neoplasm of other connective and soft tissue
192	Malignant neoplasm of other and unspecified parts of nervous system	C70 C72	Malignant neoplasm of meninges Malignant neoplasm of spinal cord, cranial nerves, and other parts of central nervous system
195	Malignant neoplasm of other and ill-defined sites	C76	Malignant neoplasm of other and ill-defined sites
198	Secondary malignant neoplasm of other specified sites	C79	Secondary malignant neoplasm of other and unspecified sites
213	Benign neoplasm of bone and articular cartilage	D16	Benign neoplasm of bone and articular cartilage
215	Other benign neoplasm of connective and other soft tissue	D21	Other benign neoplasms of connective and other soft tissue
225	Benign neoplasm of brain and other parts of nervous system	D32 D33	Benign neoplasm of meninges Benign neoplasm of brain and other parts of central nervous system
237	Neoplasm of uncertain behavior of endocrine glands and nervous system	D42 D43 D44	Neoplasm of uncertain or unknown behaviour of meninges Neoplasm of uncertain or unknown behaviour of brain and central nervous system Neoplasm of uncertain or unknown behaviour of endocrine glands
238	Neoplasm of uncertain behaviour of other and unspecified sites and tissues	D45 D47	Polycythaemia vera Other neoplasms of uncertain or unknown behaviour of lymphoid, haematopoietic and related tissue

ICD-9 Code ^{1,2}	ICD-9 Diagnosis	ICD-10- CA Code ^{1,2}	ICD-10-CA Diagnosis
		D48	Neoplasm of uncertain or unknown behaviour of other and unspecified sites
239	Neoplasms of unspecified nature	D48	Neoplasm of uncertain or unknown behaviour of other and unspecified sites
344	Other paralytic syndromes	G83	Other paralytic syndromes
353	Nerve root and plexus disorders	G54	Nerve root and plexus disorders
720	Ankylosing spondylitis and other inflammatory spondylopathies	M45	Ankylosing spondylitis
		M46	Other inflammatory spondylopathies
721	Spondylosis and allied disorders	M47	Spondylosis
		M48	Other spondylopathies
722 ³	Intervertebral disc disorders	M50	Cervical disc disorders
		M51	Other intervertebral disc disorders
		M96	Postprocedural musculoskeletal disorders, not elsewhere classified
724 ³	Other and unspecified disorders of back	M43	Other deforming dorsopathies
		M46	Other inflammatory spondylopathies
		M48	Other spondylopathies
		M53	Other dorsopathies, not elsewhere classified
		M54	Dorsalgia
733	Other disorders of bone and cartilage	M80	Osteoporosis with pathological fracture
		M81	Osteoporosis without pathological fracture
		M84	Disorders of continuity of bone
		M85	Other disorders of bone density and structure
		M87	Osteonecrosis
		M89	Other disorders of bone
		M94	Other disorders of cartilage

ICD-9 Code ^{1,2}	ICD-9 Diagnosis	ICD-10- CA Code ^{1,2}	ICD-10-CA Diagnosis
738	Other acquired deformity	M95	Other acquired deformities of musculoskeletal system and connective tissue
805	Fracture of vertebral column without mention of spinal cord injury	S12	Fracture of neck
		S22	Fracture of rib(s), sternum and thoracic spine
		S32	Fracture of lumbar spine and pelvis
806	Fracture of vertebral column with spinal cord injury	S12	Fracture of neck
		S14	Injury of nerves and spinal cord at neck level
		S22	Fracture of rib(s), sternum and thoracic spine
		S24	Injury of nerves and spinal cord at thorax level
		S32	Fracture of lumbar spine and pelvis
		S34	Injury of nerves and spinal cord at abdomen, lower back, and pelvis level
839	Other, multiple, and ill-defined dislocations	S13	Dislocation, sprain and strain of joints and ligaments at neck level
		S23	Dislocation, sprain and strain of joints and ligaments of thorax
		S33	Dislocation, sprain and strain of joints and ligaments of lumbar spine and pelvis
		S43	Dislocation, sprain and strain of joints and ligaments of shoulder girdle
846 ³	Sprains and strains of sacroiliac region	S33	Dislocation, sprain and strain of joints and ligaments of lumbar spine and pelvis
847 ³	Sprains and strains of other and unspecified parts of back	S13	Dislocation, sprain and strain of joints and ligaments at neck level
		S16	Injury of muscle and tendon at neck level
		S23	Dislocation, sprain and strain of joints and ligaments of thorax
		S39	Other and unspecified injuries of abdomen, lower back and pelvis

ICD-9		ICD-10-CA	
Code ^{1,2}	ICD-9 Diagnosis	Code ^{1,2}	ICD-10-CA Diagnosis
876	Open wound of back	S21	Open wound of thorax
		S31	Open wound of abdomen, lower back and pelvis
877	Open wound of buttock	S31	Open wound of abdomen, lower back and pelvis
926	Crushing injury of trunk	S38	Crushing injury and traumatic amputation of part of abdomen, lower back and pelvis
		S28	Crushing injury of thorax and traumatic amputation of part of thorax
		T21	Burn and corrosion of trunk
952	Spinal cord injury without evidence of spinal bone injury	S14	Injury of nerves and spinal cord at neck level
		S24	Injury of nerves and spinal cord at thorax level
		S34	Injury of nerves and spinal cord at abdomen, lower back, pelvis level
953	Injury to nerve roots and spinal plexus	S14	Injury of nerves and spinal cord at neck level
		S24	Injury of nerves and spinal cord at thorax level
		S34	Injury of nerves and spinal cord at abdomen, lower back, and pelvis level

Abbreviations: ICD-9=International Classification of Diseases, 9th Revision; ICD-10-CA=International Classification of Diseases, 10th Revision, Canada; LBP=low back pain

¹Codes are used to identify and exclude claimants with low back pain-related hospitalizations or serious low back pain-related outpatient healthcare visits within five days of injury date in the Medical Services Plan (MSP) and Discharge Abstract Database (DAD). ICD-9 codes in MSP data are only considered valid to 3 digits. To maintain consistency with the codes used in the MSP file, only 3-digit ICD-10-CA codes are also used.

²Both ICD-9 and ICD-10-CA codes are available in the DAD. Corresponding ICD-10-CA codes have been mapped to the appropriate ICD-9 codes. The Canadian Institute for Health Information provided backward conversions for ICD-10-CA to ICD-9 codes from 2001/2002 to 2007/2008 and these conversions were used to help guide the mapping.

³Only applies to hospitalizations.

Supplementary Table 3. ICD-9 and ICD-10-CA diagnoses used to identify comorbid health conditions in the two years before injury date

Comorbidity	Reference(s)	ICD-9 ^{1,2}	ICD-9 Code Description	ICD-10-CA ^{1,2}	ICD-10 Code Description	
Arthritis / Rheumatism and Other Joint Disorders (Excluding Neck and Back)	1	274	Gout	M00	Pyogenic arthritis	
		446	Polyarteritis nodosa and allied conditions	M01	Direct infections of joint in infectious and parasitic diseases classified elsewhere	
		710	Diffuse diseases of connective tissue	M02	Reactive arthropathies	
		711	Arthropathy associated with infections	M03	Postinfective and reactive arthropathies in diseases classified elsewhere	
		712	Crystal arthropathies	M05	Seropositive rheumatoid arthritis	
		713	Arthropathy associated with other disorders	M06	Other rheumatoid arthritis	
		714	Rheumatoid arthritis and other inflammatory polyarthropathies	M07	Psoriatic and enteropathic arthropathies	
		715	Osteoarthritis and allied disorders	M10	Gout	
		716	Other and unspecified arthropathies	M11	Other crystal arthropathies	
		717	Internal derangement of knee	M12	Other specific arthropathies	
		718	Other derangement of joint	M13	Other arthritis	
		719	Other and unspecified disorders of joint	M14	Arthropathies in other diseases classified elsewhere	
		725	Polymyalgia rheumatic	M15	Polyarthrosis	
		726	Peripheral enthesopathies and allied syndromes	M16	Coxarthrosis	
		727	Other disorders of synovium, tendon, and bursa	M17	Gonarthrosis	
		728	Disorders of muscle, ligament, and fascia	M18	Arthrosis of first carpometacarpal joint	
		729	Other disorders of soft tissues	M19	Other arthrosis	
					M22	Disorders of patella
					M23	Internal derangement of knee
					M24	Other specific joint derangements
			M25	Other joint disorders, not elsewhere classified		

Comorbidity	Reference(s)	ICD-9 ^{1,2}	ICD-9 Code Description	ICD-10-CA ^{1,2}	ICD-10 Code Description
				M30	Polyarteritis nodosa and related conditions
				M31	Other necrotizing vasculopathies
				M32	Systemic lupus erythematosus
				M33	Dermatopolymyositis
				M34	Systemic sclerosis
				M35	Other systemic involvement of connective tissue
				M36	Systemic disorders of connective tissue in diseases classified elsewhere
				M60	Myositis
				M61	Calcification and ossification of muscle
				M62	Other disorders of muscle
				M63	Disorders of muscle in diseases classified elsewhere
				M65	Synovitis and tenosynovitis
				M66	Spontaneous rupture of synovium and tendon
				M67	Other disorders of synovium and tendon
				M68	Disorders of synovium and tendon in diseases classified elsewhere
				M70	Soft tissue disorders related to use, overuse and pressure
				M71	Other bursopathies
				M72	Fibroblastic disorders
				M73	Soft tissue disorders in diseases classified elsewhere
				M75	Shoulder lesions
				M76	Enthesopathies of lower limb, excluding foot
				M77	Other enthesopathies
				M79	Other soft tissue disorders, not elsewhere classified

Comorbidity	Reference(s)	ICD-9 ^{1,2}	ICD-9 Code Description	ICD-10-CA ^{1,2}	ICD-10 Code Description
Back and Neck Pain	2-4	720	Ankylosing spondylitis and other inflammatory spondylopathies	M40	Kyphosis and lordosis
		721	Spondylosis and allied disorders	M41	Scoliosis
		722	Intervertebral disc disorders	M43	Other deforming dorsopathies
		723	Other disorders of cervical region	M45	Ankylosing spondylitis
		724	Other and unspecified disorders of back	M46	Other inflammatory spondylopathies
		737	Curvature of spine	M47	Spondylosis
		738.2	Acquired deformity of neck	M48	Other spondylopathies
		738.4	Acquired spondylolisthesis		
		738.5	Other acquired deformity of back or spine		
		739.1	Cervical region	M49	Spondylopathies in diseases classified elsewhere
		739.2	Thoracic region		
		739.3	Lumbar region		
		739.4	Sacral region		
		805	Fracture of vertebral column without mention of spinal cord	M50	Cervical disc disorders
		839.0	Cervical vertebra, closed dislocation	M51	Other intervertebral disc disorders
		839.1	Cervical vertebra, open dislocation		
		839.2	Thoracic and lumbar vertebra, closed dislocation		
		839.3	Thoracic and lumbar vertebra, open dislocation		
		839.4	Other vertebra, closed dislocation		
		839.5	Other vertebra, open dislocation		
		846	Sprains and strains of sacroiliac region	M53	Other dorsopathies, not elsewhere classified
		847	Sprains and strains of other and unspecified parts of back	M54	Dorsalgia
			M95.3	Acquired deformity of neck	

Comorbidity	Reference(s)	ICD-9 ^{1,2}	ICD-9 Code Description	ICD-10-CA ^{1,2}	ICD-10 Code Description
		905.1	Late effect of fracture of spine and trunk without mention of spinal cord lesion	M96	Postprocedural musculoskeletal disorders, not elsewhere classified
				M99	Biomechanical lesions, not elsewhere classified
				S12	Fracture of neck
				S13	Dislocation, sprain and strain of joints and ligaments at neck level
				S16	Injury of muscle and tendon at neck level
				S22.0	Fracture of thoracic vertebra
				S22.1	Multiple fractures of thoracic spine
				S23	Dislocation, sprain and strain of joints and ligaments of lumbar spine and pelvis
				S32.0	Fracture of lumbar vertebra
				S32.1	Fracture of sacrum
				S32.3	Fracture of coccyx
				S33	Dislocation, sprain and strain of joints and ligaments of lumbar spine and pelvis
				S39	Other and unspecified injuries of abdomen, lower back, and pelvis
				T91.1	Sequelae of fracture of spine
Neuropathic Pain	³	053.1	Herpes zoster with other nervous system complications	B02.2	Zoster with other nervous system complications
		250.6	Diabetes with neurological manifestations	E10.4	Type 1 diabetes mellitus with neurological complications
		337.2	Reflex sympathetic dystrophy	E11.4	Type 2 diabetes mellitus with neurological complications
		350	Trigeminal nerve disorders	E12.4	Malnutrition-related diabetes mellitus with neurological complications
		352.1	Glossopharyngeal neuralgia	E13.4	Other specified diabetes mellitus with neurological complications

Comorbidity	Reference(s)	ICD-9 ^{1,2}	ICD-9 Code Description	ICD-10-CA ^{1,2}	ICD-10 Code Description
		353	Nerve root and plexus disorders	E14.4	Unspecified diabetes mellitus with neurological complications
		354	Mononeuritis of upper limb and mononeuritis multiplex	G50	Disorders of trigeminal nerve
		355	Mononeuritis of lower limb	G52.1	Disorders of glossopharyngeal nerve
		357	Inflammatory and toxic neuropathy	G53.0	Postzoster neuralgia
		733.7	Algoneurodystrophy	G54	Nerve root and plexus disorders
				G55	Nerve root and plexus compressions classified elsewhere
				G56	Mononeuropathies of upper limb
				G57	Mononeuropathies of lower limb
				G58	Other mononeuropathies
				G59	Mononeuropathy in diseases classified elsewhere
				G61	Inflammatory polyneuropathy
				G62	Other polyneuropathies
				G63	Polyneuropathy in diseases classified elsewhere
				G90	Disorders of autonomic nervous system
				G99	Other disorders of nervous system in diseases classified elsewhere
				M89.0	Algoneurodystrophy
Migraine and Headache Disorders	5, 6	307.8	Tension headache	G43	Migraine
		339	Other headache syndromes (*introduced in 2008)	G44	Other headache syndromes
		346	Migraine	R51	Headache
		784.0	Headache		
Mood and Anxiety Disorders	7-9	296	Episodic mood disorders	F30	Manic episode
		300	Anxiety, dissociative, and somatoform disorders	F31	Bipolar affective disorder
		308	Acute reaction to stress	F32	Depressive disorder

Comorbidity	Reference(s)	ICD-9 ^{1,2}	ICD-9 Code Description	ICD-10-CA ^{1,2}	ICD-10 Code Description
		309	Adjustment reaction	F33	Recurrent depressive disorder
		311	Depressive disorder, not elsewhere classified	F34	Persistent mood (affective) disorders
		50B	Depression/anxiety (*only for MSP)	F38 F39 F40 F41 F42 F43 F99	Other mood (affective) disorders Unspecified mood (affective) disorder Phobic anxiety disorders Other anxiety disorders Obsessive-compulsive disorder Reaction to severe stress, and adjustment disorders Mental disorder, not otherwise specified
Intentional Self-Harm or Suicide Attempt	9-12	E950	Suicide and self-inflicted poisoning by solid or liquid substances	X60	Intentional self-poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics
		E951	Suicide and self-inflicted poisoning by gases in domestic use	X61	Intentional self-poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified
		E952	Suicide and self-inflicted poisoning by other gases and vapors	X62	Intentional self-poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified
		E953	Suicide and self-inflicted poisoning by hanging, strangulation, and suffocation	X63	Intentional self-poisoning by and exposure to other drugs acting on the autonomic nervous system
		E954	Suicide and self-inflicted poisoning by submersion [drowning]	X64	Intentional self-poisoning by and exposure to other and unspecified drugs, medicaments and biological substances
		E955	Suicide and self-inflicted poisoning by firearms, air guns and explosives	X65	Intentional self-poisoning by and exposure to alcohol
		E956	Suicide and self-inflicted poisoning by cutting and piercing instrument	X66	Intentional self-poisoning by and exposure to organic solvents and halogenated hydrocarbons and their vapours

Comorbidity	Reference(s)	ICD-9 ^{1,2}	ICD-9 Code Description	ICD-10-CA ^{1,2}	ICD-10 Code Description
		E957	Suicide and self-inflicted poisoning by jumping from high place	X67	Intentional self-poisoning by and exposure to other gases and vapours
		E958	Suicide and self-inflicted poisoning by other and unspecified means	X68	Intentional self-poisoning by and exposure to pesticides
		E959	Late effects of self-inflicted injury	X69	Intentional self-poisoning by and exposure to other and unspecified chemicals and noxious substances
		E980	Poisoning by solid or liquid substances, undetermined whether accidentally or purposely inflicted	X70	Intentional self-harm by hanging, strangulation and suffocation
		E981	Poisoning by gases in domestic use, undetermined whether accidentally or purposely inflicted	X71	Intentional self-harm by drowning and submersion
		E982	Poisoning by other gases, undetermined whether accidentally or purposely inflicted	X72	Intentional self-harm by handgun discharge
		E983	Hanging, strangulation, or suffocation, undetermined whether accidentally or purposely inflicted	X73	Intentional self-harm by rifle, shotgun and larger firearm discharge
		E984	Submersion [drowning], undetermined whether accidentally or purposely inflicted	X74	Intentional self-harm by other and unspecified firearm discharge
		E985	Injury by firearms, air guns and explosives, undetermined whether accidentally or purposely inflicted	X75	Intentional self-harm by explosive material
		E986	Injury by cutting and piercing instruments, undetermined whether accidentally or purposely inflicted	X76	Intentional self-harm by smoke, fire and flames
		E987	Falling from high place, undetermined whether accidentally or purposely inflicted	X77	Intentional self-harm by steam, hot vapours and hot objects

Comorbidity	Reference(s)	ICD-9 ^{1,2}	ICD-9 Code Description	ICD-10-CA ^{1,2}	ICD-10 Code Description
		E988	Injury by other and unspecified means, undetermined whether accidentally or purposely inflicted	X78	Intentional self-harm by sharp object
		E989	Late effects of injury, undetermined whether accidentally or purposely inflicted	X79	Intentional self-harm by blunt object
				X80	Intentional self-harm by jumping from a high place
				X81	Intentional self-harm by jumping or lying before moving object
				X82	Intentional self-harm by crashing of motor vehicle
				X83	Intentional self-harm by other specified means
				X84	Intentional self-harm by unspecified means
				Y87	Sequelae of intentional self-harm, assault and events of undetermined intent
				Y10	Poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics, undetermined intent
				Y11	Poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, undetermined intent
				Y12	Poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified, undetermined intent
				Y13	Poisoning by and exposure to other drugs acting on the autonomic nervous system, undetermined intent
				Y14	Poisoning by and exposure to other and unspecified drugs, medicaments and

Comorbidity	Reference(s)	ICD-9 ^{1,2}	ICD-9 Code Description	ICD-10-CA ^{1,2}	ICD-10 Code Description
					biological substances, undetermined intent
				Y15	Poisoning by and exposure to alcohol, undetermined intent
				Y16	Poisoning by and exposure to organic solvents and halogenated hydrocarbons and their vapours, undetermined intent
				Y17	Poisoning by and exposure to other gases and vapours, undetermined intent
				Y18	Poisoning by and exposure to pesticides, undetermined intent
				Y19	Poisoning by and exposure to other and unspecified chemicals and noxious substances, undetermined intent
				Y20	Hanging strangulation and suffocation, undetermined intent
				Y21	Drowning and submersion, undetermined intent
				Y22	Handgun discharge, undetermined intent
				Y23	Rifle, shotgun and larger firearm discharge, undetermined intent
				Y24	Other and unspecified firearm discharge, undetermined intent
				Y25	Contact with explosive material, undetermined intent
				Y26	Exposure to smoke, fire and flames, undetermined intent
				Y27	Contact with steam, hot vapours and hot objects, undetermined intent
				Y28	Contact with sharp object, undetermined intent

Comorbidity	Reference(s)	ICD-9 ^{1,2}	ICD-9 Code Description	ICD-10-CA ^{1,2}	ICD-10 Code Description
				Y29	Contact with blunt object, undetermined intent
				Y30	Falling, jumping or pushed from a high place, undetermined intent
				Y31	Falling, lying or running before or into moving object, undetermined intent
				Y32	Crashing of motor vehicle, undetermined intent
				Y33	Other specified means, undetermined intent
				Y34	Unspecified event, undetermined intent
				Y87	Sequelae of intentional self-harm, assault and events of undetermined intent
Substance Use Disorders	8, 13	291	Alcohol-induced mental disorders	F10	Mental and behavioural disorders due to use of alcohol
		292	Drug-induced mental disorders	F11	Mental and behavioural disorders due to use of opioids
		303	Alcohol dependence syndrome	F12	Mental and behavioural disorders due to use of cannabinoids
		304	Drug dependence	F13	Mental and behavioural disorders due to use of sedatives or hypnotics
		305	Nondependent abuse of drugs	F14	Mental and behavioural disorders due to use of cocaine
				F15	Mental and behavioural disorders due to use of other stimulants, including caffeine
				F16	Mental and behavioural disorders due to use of hallucinogens
				F17	Mental and behavioural disorders due to use of tobacco
				F18	Mental and behavioural disorders due to use of volatile solvents

Comorbidity	Reference(s)	ICD-9 ^{1,2}	ICD-9 Code Description	ICD-10-CA ^{1,2}	ICD-10 Code Description
				F19	Mental and behavioural disorders due to use of other psychoactive substances
				F55	Abuse of non-dependence-producing substances
Diabetes	1, 14-17	250	Diabetes mellitus	E10	Type 1 diabetes mellitus
				E11	Type 2 diabetes mellitus
				E12	Malnutrition-related diabetes mellitus
				E13	Other specified diabetes mellitus
				E14	Unspecified diabetes mellitus
Hypertension	18, 19	401	Essential hypertension	I10	Essential (primary) hypertension
		402	Hypertensive heart disease	I11	Hypertensive heart disease
		403	Hypertensive chronic kidney disease	I12	Hypertensive renal disease
		404	Hypertensive heart and chronic kidney disease	I13	Hypertensive heart and renal disease
		405	Secondary hypertension	I15	Secondary hypertension
Heart and Cerebrovascular Disease	1, 20-26	393	Chronic rheumatic pericarditis	G45	Transient cerebral ischaemic attacks and related syndromes
		394	Disease of mitral valve	G46	Vascular syndromes of brain in cerebrovascular diseases
		395	Diseases of aortic valve	I05	Rheumatic mitral valve diseases
		396	Disease of mitral and aortic valves	I06	Rheumatic aortic valve diseases
		397	Disease of other endocardial structures	I07	Rheumatic tricuspid valve diseases
		398	Other rheumatic heart disease	I08	Multiple valve diseases
		410	Acute myocardial infarction	I09	Other rheumatic heart disease
		411	Other acute and subacute forms of ischemic heart disease	I20	Angina pectoris
		412	Old myocardial infarction	I21	Acute myocardial infarction
		413	Angina pectoris	I22	Subsequent myocardial infarction

Comorbidity	Reference(s)	ICD-9 ^{1,2}	ICD-9 Code Description	ICD-10-CA ^{1,2}	ICD-10 Code Description
		414	Other forms of chronic ischemic heart disease	I23	Certain current complications following acute myocardial infarction
		416	Chronic pulmonary heart disease	I24	Other acute ischaemic heart disease
		424	Other disease of endocardium	I25	Chronic ischaemic heart disease
		425	Cardiomyopathy	I27	Other pulmonary heart diseases
		426	Conduction disorders	I34	Nonrheumatic mitral valve disorders
		427	Cardiac dysrhythmias	I35	Nonrheumatic aortic valve disorders
		428	Heart failure	I36	Nonrheumatic tricuspid valve disorders
		430	Subarachnoid hemorrhage	I37	Pulmonary valve disorders
		431	Intracerebral hemorrhage	I39	Endocarditis and heart valve disorders in diseases classified elsewhere
		432	Other and unspecified intracranial hemorrhage	I42	Cardiomyopathy
		433	Occlusion and stenosis of precerebral arteries	I43	Cardiomyopathy in diseases classified elsewhere
		434	Occlusion of cerebral arteries	I44	Atrioventricular and left bundle-branch block
		435	Transient cerebral ischemia	I45	Other conduction disorders
		436	Acute, but ill-defined, cerebrovascular disease	I46	Cardiac arrest
		437	Other and ill-defined cerebrovascular disease	I47	Paroxysmal tachycardia
		438	Late effects of cerebrovascular disease	I48	Atrial fibrillation and flutter
				I49	Other cardiac arrhythmias
				I50	Heart failure
				I60	Subarachnoid haemorrhage
				I61	Intracerebral haemorrhage
				I62	Other nontraumatic intracranial haemorrhage
				I63	Cerebral infarction
				I64	Stroke, not specified as haemorrhage or infarction

Comorbidity	Reference(s)	ICD-9 ^{1,2}	ICD-9 Code Description	ICD-10-CA ^{1,2}	ICD-10 Code Description
				I65	Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction
				I66	Occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction
				I67	Other cerebrovascular diseases
				I68	Cerebrovascular disorders in diseases classified elsewhere
				I69	Sequelae of cerebrovascular disease
Chronic Respiratory Disorders	1, 17, 27-29	491	Chronic bronchitis	J41	Simple and mucopurulent chronic bronchitis
		492	Emphysema	J42	Unspecified chronic bronchitis
		493	Asthma	J43	Emphysema
		496	Chronic airway obstruction, not elsewhere classified	J44	Other chronic obstructive pulmonary disease
		518.8	Other diseases of lung	J45	Asthma
					J46
			J96	Respiratory failure, not elsewhere classified	
Thyroid Disorders	30	242	Thyrotoxicosis with or without goiter	E02	Subclinical iodine-deficiency hypothyroidism
		244	Acquired hypothyroidism	E03	Other hypothyroidism
		245	Thyroiditis	E05	Thyrotoxicosis (hyperthyroidism)
				E06	Thyroiditis
Chronic Kidney Disease	31	403	Hypertensive chronic kidney disease	I12	Hypertensive renal disease
		404	Hypertensive heart and chronic kidney disease	I13	Hypertensive heart and renal disease
		581	Nephrotic syndrome	N03	Chronic nephritic syndrome
		582	Chronic glomerulonephritis	N05	Unspecified nephritic syndrome

Comorbidity	Reference(s)	ICD-9 ^{1,2}	ICD-9 Code Description	ICD-10-CA ^{1,2}	ICD-10 Code Description
		583	Nephritis and nephropathy, not specified as acute or chronic	N08	Glomerular disorders in diseases classified elsewhere
		585	Chronic kidney disease (CKD)	N18	Chronic kidney disease
		586	Renal failure, unspecified	N19	Unspecified kidney failure
		587	Renal sclerosis, unspecified	N26	Unspecified contracted kidney
		588	Disorders resulting from impaired renal function	N25	Disorders resulting from impaired renal tubular function
Chronic Liver Disease	32-35	070	Viral hepatitis	B18	Chronic viral hepatitis
		571	Chronic liver disease and cirrhosis	K70	Alcoholic liver disease
		572	Liver abscess and sequelae of chronic liver disease	K71	Toxic liver disease
		573	Other disorders of liver	K72	Hepatic failure, not elsewhere classified
				K73	Chronic hepatitis, not elsewhere classified
				K74	Fibrosis and cirrhosis of liver
				K75	Other inflammatory liver diseases
				K76	Other diseases of liver
				K77	Liver disorders in diseases classified elsewhere
Upper Gastrointestinal Disorders	36-40	530	Diseases of esophagus	K20	Oesphagitis
		531	Gastric ulcer	K21	Gastro-oesophageal reflux disease
		532	Duodenal ulcer	K22	Other diseases of oesophagus
		533	Peptic ulcer, site unspecified	K25	Gastric ulcer
		534	Gastrojejunal ulcer	K26	Duodenal ulcer
		535	Gastritis and duodenitis	K27	Peptic ulcer, site unspecified
		578	Gastrointestinal hemorrhage	K28	Gastrojejunal ulcer
				K29	Gastritis and duodenitis
				K92	Other diseases of digestive system
Inflammatory Bowel Disorders	41, 42	555	Regional enteritis	K50	Crohn disease (regional enteritis)
		556	Ulcerative colitis	K51	Ulcerative colitis

Comorbidity	Reference(s)	ICD-9 ^{1,2}	ICD-9 Code Description	ICD-10-CA ^{1,2}	ICD-10 Code Description
Traumatic Brain Injury	43-45	310.2	Postconcussional syndrome	F07.2	Postconcussional syndrome
		800	Fracture of vault of skull	S02	Fracture of skull and facial bones
		801	Fracture of base of skull	S06	Intracranial injury
		802	Fracture of face bones	S07	Crushing injury of head
		803	Other and unqualified skull fractures	T02.0	Fracture involving head with neck
		804	Multiple fractures involving skull or face with other bones	T04.0	Crushing injury involving head with neck
		850	Concussion	T06.0	Injuries of brain and cranial nerves with injuries of nerves and spinal cord at neck level
		851	Cerebral laceration and contusion	T90	Sequelae of injuries of head
		852	Subarachnoid, subdural, and extradural haemorrhage, following injury		
		853	Other and unspecified intracranial haemorrhage following injury		
		854	Intracranial injury of other and unspecified nature		
		905.0	Late effect of fracture of skull and face bones		
		907.0	Late effect of intracranial injury without mention of skull fracture		
		907.1	Late effect of injury to cranial nerve		
		925.1	Crushing injury of face and scalp		
959.0	Injury, other and unspecified, head, face and neck				
Seizure Disorders	46-48	345	Epilepsy and recurrent seizures	G40	Epilepsy
		780.3	Convulsions	G41	Status epilepticus
				R56.8	Other and unspecified convulsions

Comorbidity	Reference(s)	ICD-9 ^{1,2}	ICD-9 Code Description	ICD-10-CA ^{1,2}	ICD-10 Code Description
Sleep Apnea and Insomnia	49-51	307.4	Specific disorders of sleep of nonorganic origin	G47.0	Disorders of initiating and maintaining sleep [insomnias]
		327.0	Organic disorders of initiating and maintaining sleep [organic	G47.3	Sleep apnoea
		327.2	insomnia]		
		780.5	Organic sleep apnea	F51.0	Nonorganic insomnia
		786.0	Sleep disturbances	R06.8	Other and unspecified abnormalities of breathing
			Dyspnea and respiratory abnormalities		

¹Codes are used to identify comorbid health conditions in the Medical Services Plan (MSP) and Discharge Abstract Database (DAD). ICD-9 codes in MSP data are only considered valid to 3 digits. To maintain consistency with the codes used in the MSP file, only 3-digit ICD-10-CA codes are also used. In some cases, four digits are used if the three digit term is overly broad and likely to result in severe misclassification.

²Both ICD-9 and ICD-10-CA codes are available in the DAD. Corresponding ICD-10-CA codes have been mapped to the appropriate ICD-9 codes. CIHI provided backward conversions for ICD-10-CA to ICD-9 codes from 2001/2002 to 2007/2008 and these conversions were used to help guide the mapping.

Abbreviations: ICD-9=International Classification of Diseases, 9th Revision; ICD-10-CA=International Classification of Diseases, 10th Revision, Canada

Comorbidity References

1. Lix LM, Yogendran MS, Shaw SY, Burchill C, Metge C, Bond R. Population-based data sources for chronic disease surveillance. *Chronic Dis Can.* 2008;29(1):31-8.
2. Noonan VK, Thorogood NP, Fingas M, Batke J, Belanger L, Kwon BK, et al. The validity of administrative data to classify patients with spinal column and cord injuries. *J Neurotrauma.* 2013;30(3):173-80.
3. Lacasse A, Ware MA, Dorais M, Lanctot H, Choiniere M. Is the Quebec provincial administrative database a valid source for research on chronic non-cancer pain? *Pharmacoepidemiol Drug Saf.* 2015;24(9):980-90.
4. Sinnott PL, Siroka AM, Shane AC, Trafton JA, Wagner TH. Identifying neck and back pain in administrative data: defining the right cohort. *Spine (Phila Pa 1976).* 2012;37(10):860-74.
5. Kolodner K, Lipton RB, Lafata JE, Leotta C, Liberman JN, Chee E, et al. Pharmacy and medical claims data identified migraine sufferers with high specificity but modest sensitivity. *J Clin Epidemiol.* 2004;57(9):962-72.
6. Carlson KF, Taylor BC, Hagel EM, Cutting A, Kerns R, Sayer NA. Headache diagnoses among Iraq and Afghanistan war veterans enrolled in VA: a gender comparison. *Headache.* 2013;53(10):1573-82.
7. Canadian Institute for Health Information. *Hospital Mental Health Services in Canada, 2005-2006.* Ottawa, ON: CIHI; 2008.
8. Frayne SM, Miller DR, Sharkansky EJ, Jackson VW, Wang F, Halanych JH, et al. Using administrative data to identify mental illness: what approach is best? *Am J Med Qual.* 2010;25(1):42-50.
9. Kisely S, Lin E, Gilbert C, Smith M, Campbell LA, Vasiliadis HM. Use of administrative data for the surveillance of mood and anxiety disorders. *Aust N Z J Psychiatry.* 2009;43(12):1118-25.
10. Fransoo R, Martens P, Team TNTK, Prior H, Burchill C, Koseva I, et al. *The 2013 RHA Indicators Atlas.* Winnipeg, MB: Manitoba Centre for Health Policy; 2013.
11. Schneeweiss S, Patrick AR, Solomon DH, Mehta J, Dormuth C, Miller M, et al. Variation in the risk of suicide attempts and completed suicides by antidepressant agent in adults: a propensity score-adjusted analysis of 9 years' data. *Arch Gen Psychiatry.* 2010;67(5):497-506.
12. Iribarren C, Sidney S, Jacobs DR, Jr., Weisner C. Hospitalization for suicide attempt and completed suicide: epidemiological features in a managed care population. *Soc Psychiatry Psychiatr Epidemiol.* 2000;35(7):288-96.
13. Kim HM, Smith EG, Stano CM, Ganoczy D, Zivin K, Walters H, et al. Validation of key behaviourally based mental health diagnoses in administrative data: suicide attempt, alcohol abuse, illicit drug abuse and tobacco use. *BMC Health Serv Res.* 2012;12:18.
14. Southern DA, Roberts B, Edwards A, Dean S, Norton P, Svenson LW, et al. Validity of administrative data claim-based methods for identifying individuals with diabetes at a population level. *Can J Public Health.* 2010;101(1):61-4.
15. Hux JE, Ivis F, Flintoft V, Bica A. Diabetes in Ontario: determination of prevalence and incidence using a validated administrative data algorithm. *Diabetes Care.* 2002;25(3):512-6.
16. Chen G, Khan N, Walker R, Quan H. Validating ICD coding algorithms for diabetes mellitus from administrative data. *Diabetes Res Clin Pract.* 2010;89(2):189-95.
17. Borzecki AM, Wong AT, Hickey EC, Ash AS, Berlowitz DR. Identifying hypertension-related comorbidities from administrative data: what's the optimal approach? *Am J Med Qual.* 2004;19(5):201-6.

18. Tu K, Campbell NR, Chen ZL, Cauch-Dudek KJ, McAlister FA. Accuracy of administrative databases in identifying patients with hypertension. *Open Med.* 2007;1(1):e18-26.
19. Quan H, Khan N, Hemmelgarn BR, Tu K, Chen G, Campbell N, et al. Validation of a case definition to define hypertension using administrative data. *Hypertension.* 2009;54(6):1423-8.
20. Tamariz L, Harkins T, Nair V. A systematic review of validated methods for identifying ventricular arrhythmias using administrative and claims data. *Pharmacoepidemiol Drug Saf.* 2012;21 Suppl 1:148-53.
21. Schultz SE, Rothwell DM, Chen Z, Tu K. Identifying cases of congestive heart failure from administrative data: a validation study using primary care patient records. *Chronic Dis Inj Can.* 2013;33(3):160-6.
22. Joshy G, Korda RJ, Abhayaratna WP, Soga K, Banks E. Categorising major cardiovascular disease hospitalisations from routinely collected data. *Public Health Res Pract.* 2015;25(3):e2531532.
23. 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.
24. Quan H, Sundararajan V, Halfon P, Fong A, Burnand B, Luthi JC, et al. Coding algorithms for defining comorbidities in ICD-9-CM and ICD-10 administrative data. *Med Care.* 2005;43(11):1130-9.
25. McCormick N, Bhole V, Lacaille D, Avina-Zubieta JA. Validity of Diagnostic Codes for Acute Stroke in Administrative Databases: A Systematic Review. *PLoS One.* 2015;10(8):e0135834.
26. Tu K, Mitiku T, Lee DS, Guo H, Tu JV. Validation of physician billing and hospitalization data to identify patients with ischemic heart disease using data from the Electronic Medical Record Administrative data Linked Database (EMRALD). *Can J Cardiol.* 2010;26(7):e225-8.
27. Lacasse Y, Montori VM, Lanthier C, Maltis F. The validity of diagnosing chronic obstructive pulmonary disease from a large administrative database. *Can Respir J.* 2005;12(5):251-6.
28. Gershon AS, Wang C, Guan J, Vasilevska-Ristovska J, Cicutto L, To T. Identifying patients with physician-diagnosed asthma in health administrative databases. *Can Respir J.* 2009;16(6):183-8.
29. Gershon AS, Wang C, Guan J, Vasilevska-Ristovska J, Cicutto L, To T. Identifying individuals with physician diagnosed COPD in health administrative databases. *COPD.* 2009;6(5):388-94.
30. Marrie RA, Yu BN, Leung S, Elliott L, Warren S, Wolfson C, et al. The incidence and prevalence of thyroid disease do not differ in the multiple sclerosis and general populations: a validation study using administrative data. *Neuroepidemiology.* 2012;39(2):135-42.
31. Vlasschaert ME, Bejaimal SA, Hackam DG, Quinn R, Cuerden MS, Oliver MJ, et al. Validity of administrative database coding for kidney disease: a systematic review. *Am J Kidney Dis.* 2011;57(1):29-43.
32. Desai S, Peltekian KM. Canadian mortality rates for liver disease: taking a closer look at ICD coding. *Can J Public Health.* 2004;95(3):198-200.
33. Goldberg D, Lewis J, Halpern S, Weiner M, Lo Re V, 3rd. Validation of three coding algorithms to identify patients with end-stage liver disease in an administrative database. *Pharmacoepidemiol Drug Saf.* 2012;21(7):765-9.
34. Niu B, Forde KA, Goldberg DS. Coding algorithms for identifying patients with cirrhosis and hepatitis B or C virus using administrative data. *Pharmacoepidemiol Drug Saf.* 2015;24(1):107-11.

35. Kramer JR, Davila JA, Miller ED, Richardson P, Giordano TP, El-Serag HB. The validity of viral hepatitis and chronic liver disease diagnoses in Veterans Affairs administrative databases. *Aliment Pharmacol Ther.* 2008;27(3):274-82.
36. Lopushinsky SR, Covarrubia KA, Rabeneck L, Austin PC, Urbach DR. Accuracy of administrative health data for the diagnosis of upper gastrointestinal diseases. *Surg Endosc.* 2007;21(10):1733-7.
37. Curtis JR, Chen SY, Werther W, John A, Johnson DA. Validation of ICD-9-CM codes to identify gastrointestinal perforation events in administrative claims data among hospitalized rheumatoid arthritis patients. *Pharmacoepidemiol Drug Saf.* 2011;20(11):1150-8.
38. Pisa F, Castellsague J, Drigo D, Riera-Guardia N, Giangreco M, Rosolen V, et al. Accuracy of International Classification of Diseases, 9th Revision, Clinical Modification codes for upper gastrointestinal complications varied by position and age: a validation study in a cohort of nonsteroidal anti-inflammatory drugs users in Friuli Venezia Giulia, Italy. *Pharmacoepidemiol Drug Saf.* 2013;22(11):1195-204.
39. Raiford DS, Perez Gutthann S, Garcia Rodriguez LA. Positive predictive value of ICD-9 codes in the identification of cases of complicated peptic ulcer disease in the Saskatchewan hospital automated database. *Epidemiology.* 1996;7(1):101-4.
40. Castellsague J, Holick CN, Hoffman CC, Gimeno V, Stang MR, Perez-Gutthann S. Risk of upper gastrointestinal complications associated with cyclooxygenase-2 selective and nonselective nonsteroidal antiinflammatory drugs. *Pharmacotherapy.* 2009;29(12):1397-407.
41. Benchimol EI, Guttmann A, Mack DR, Nguyen GC, Marshall JK, Gregor JC, et al. Validation of international algorithms to identify adults with inflammatory bowel disease in health administrative data from Ontario, Canada. *J Clin Epidemiol.* 2014;67(8):887-96.
42. Rezaie A, Quan H, Fedorak RN, Panaccione R, Hilsden RJ. Development and validation of an administrative case definition for inflammatory bowel diseases. *Can J Gastroenterol.* 2012;26(10):711-7.
43. Ng R, Maxwell CJ, Yates EA, Nysten K, Antflick J, Jetté N, et al. Brain Disorders in Ontario: Prevalence, Incidence and Costs from Health Administrative Data. Toronto, ON: Institute for Clinical Evaluative Sciences; 2015.
44. Carroll CP, Cochran JA, Guse CE, Wang MC. Are we underestimating the burden of traumatic brain injury? Surveillance of severe traumatic brain injury using centers for disease control International classification of disease, ninth revision, clinical modification, traumatic brain injury codes. *Neurosurgery.* 2012;71(6):1064-70; discussion 70.
45. Bazarian JJ, Veazie P, Mookerjee S, Lerner EB. Accuracy of mild traumatic brain injury case ascertainment using ICD-9 codes. *Acad Emerg Med.* 2006;13(1):31-8.
46. 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.
47. Reid AY, St Germaine-Smith C, Liu M, Sadiq S, Quan H, Wiebe S, et al. Development and validation of a case definition for epilepsy for use with administrative health data. *Epilepsy Res.* 2012;102(3):173-9.
48. Jette N, Reid AY, Quan H, Hill MD, Wiebe S. How accurate is ICD coding for epilepsy? *Epilepsia.* 2010;51(1):62-9.
49. Hermes E, Rosenheck R. Prevalence, pharmacotherapy and clinical correlates of diagnosed insomnia among Veterans Health Administration service users nationally. *Sleep Med.* 2014;15(5):508-14.
50. Anderson LH, Whitebird RR, Schultz J, McEvoy CE, Kreitzer MJ, Gross CR. Healthcare utilization and costs in persons with insomnia in a managed care population. *Am J Manag Care.* 2014;20(5):e157-65.

51. Mclsaac DI, Gershon A, Wijeysondera D, Bryson GL, Badner N, van Walraven C. Identifying Obstructive Sleep Apnea in Administrative Data: A Study of Diagnostic Accuracy. *Anesthesiology*. 2015;123(2):253-63.

Supplementary Table 4. CCI and CCP codes used to identify spinal x-rays and spinal surgeries in the DAD file and fee item codes used to identify spinal x-rays in the MSP file

CCP Code ¹	Description	CCI Code ¹	Description	Fee Item	Description
02.11	X-ray of cervical spine	3.AW.10	Xray, spinal cord	8540	X-ray – cervical spine
02.12	X-ray of thoracic spine	3.SC.10	Xray, spinal vertebrae	8541	X-ray – thoracic spine
02.13	X-ray of lumbosacral spine	3.SE.10	Xray, intervertebral disc	8542	X-ray – lumbar spine
02.19		3.SF.10	Xray, sacrum and coccyx	8543	X-ray – sacrum and coccyx
16.83	Other x-ray of spine			8545	X-ray – sacro-iliac joints
	Contrast myelogram			8546	Scoliosis film
				8548	Myelogram and/or posterior fossa positive contrast
				8549	X-ray – spine additional views (e.g., flexion, bending)
				19138	WCB chiro spinal series
				19139	WCB chiro spinal series recheck
16.02	Reopening of laminectomy site				
16.09	Other exploration and decompression of spinal canal	1.SA.80 1.SC.80 1.SF.80	Repair, atlas and axis Repair, spinal vertebrae Repair, sacrum and coccyx		
16.1	Division of intraspinal nerve root	1.AW.59	Destruction, spinal cord		
16.2	Chordotomy				
16.3	Excision or destruction of lesion of spinal cord and spinal meninges	1.AW.87 1.AX.87	Excision partial, spinal cord Excision partial, spinal canal and meninges		

CCP Code ¹	Description	CCI Code ¹	Description	Fee Item	Description
16.43 16.5	Repair of vertebral fracture Freeing of adhesions of spinal cord and nerve roots	1.AW.72 1.SF.73	Release, spinal cord Reduction, sacrum and coccyx		
89.78	Other partial ostectomy, other specified site (pelvic bones, phalanges of foot or hand, vertebrae)	1.SC.87 1.SF.87	Excision partial, spinal vertebrae Excision partial, sacrum and coccyx		
89.88	Total ostectomy, other specified site (pelvic bones, phalanges of foot or hand, vertebrae)	1.SA.89 1.SC.89 1.SF.89 1.SF.91	Excision total, atlas and axis Excision total, spinal vertebrae Excision total, sacrum and coccyx Excision radical, sacrum and coccyx		
90.58	Internal fixation of bone (without fracture reduction), other specified site (pelvic bones, phalanges of foot or hand, vertebrae)	1.SA.74 1.SC.74 1.SE.53 1.SF.74	Fixation, atlas and axis Fixation, spinal vertebrae Implantation of internal device, intervertebral disc Fixation, sacrum and coccyx		
90.68	Removal of internal fixation device, other specified site (pelvic bones, phalanges of foot or hand, vertebrae)	1.SA.55 1.SC.55 1.SE.55 1.SF.55	Removal of device, atlas and axis Removal of device or appliance, spinal vertebrae Removal of device, intervertebral disc Removal of device, sacrum and coccyx		

CCP Code ¹	Description	CCI Code ¹	Description	Fee Item	Description
92.31	Excision (or destruction) of intervertebral disc	1.SE.59 1.SE.87 1.SE.89	Destruction, intervertebral disc Excision partial, intervertebral disc Excision total, intervertebral disc		
93.01	Atlas-axis spinal fusion	1.SA.75	Fusion, atlas and axis		
93.02	Other cervical spinal fusion	1.SC.75	Fusion, spinal vertebrae		
93.03	Dorsal spinal fusion	1.SF.75	Fusion, sacrum and coccyx		
93.04	Dorsolumbar spinal fusion with Harrington rod				
93.05	Other dorsolumbar spinal fusion				
93.06	Lumbar spinal fusion				
93.07	Lumbosacral spinal fusion				
93.08	Refusion of spine				
93.09	Other spinal fusion, unspecified site				

¹Both CCI and CCP codes are available in the DAD. Corresponding CCI codes have been mapped to the appropriate CCP codes. CIHI provided backward conversions for CCI to CCP codes from 2001/2002 to 2007/2008 and these conversions were used to help guide the mapping.

Abbreviations: CCI=Canadian Classification of Health Interventions; CCP=Canadian Classification of Diagnostic, Therapeutic, and Surgical Procedures; CIHI=Canadian Institute for Health Information; DAD=Discharge Abstract Database; MSP=Medical Services Plan

Supplementary Table 5. Additional baseline characteristics of the cohort of workers' compensation claimants with short-term disability claims for injuries to the low back from 1998-2009 and with at least one prescription opioid, NSAID, or SMR dispense in the first eight weeks after injury (n=55,571)

Variable	n (%)
Comorbidities in the two years before injury	
Back and/or neck pain	18,303 (32.9)
Arthritis/rheumatism and other joint pain	10,554 (19.0)
Neuropathic pain	770 (1.4)
Headache disorders	4,898 (8.8)
Mood and anxiety disorders	9,490 (17.1)
Suicide attempt/self-harm history	114 (0.2)
Substance use disorder	838 (1.5)
Diabetes	1,998 (3.6)
Hypertension	3,718 (6.7)
Heart and cerebrovascular disease	1,437 (2.6)
Chronic respiratory disorders	1,840 (3.3)
Chronic liver disease	443 (0.8)
Chronic kidney disease	93 (0.2)
Thyroid disease	1,282 (1.3)
Upper gastrointestinal disorders	1,995 (3.6)
Inflammatory bowel disease	395 (0.4)
Insomnia and sleep apnea	331 (0.6)
Seizure disorders	179 (0.3)
Traumatic brain injury	312 (0.6)
Number of hospitalizations in the year before injury	
0	51,046 (91.9)
1	3,863 (7.0)
≥2	662 (1.2)
Hospitalization in the first eight weeks after injury	
No	54,392 (97.9)
Yes	1,179 (2.1)
Number of general practitioner visits in the year before injury	
0	5,963 (10.7)
1-2	12,396 (22.3)
3-4	10,541 (19.0)
5-7	11,195 (20.2)
≥8	15,476 (27.9)
Number of pain-related physician specialist visits in the year before injury	
0	45,636 (82.2)
1	5,505 (9.9)
2	2,188 (3.9)
≥3	2,242 (4.0)

Variable	n (%)
Number of other physician specialist visits in the year before injury	
0	42,778 (77.0)
1	6,960 (12.5)
2	2,769 (5.0)
≥3	3,064 (5.5)
Pain-related physician specialist visit in the first eight weeks after injury	
No	50,554 (91.0)
Yes	5,017 (9.0)
Spine surgery in the two years before injury	
No	55,423 (99.7)
Yes	148 (0.3)
Spine surgery in the first eight weeks after injury	
No	55,490 (99.9)
Yes	81 (0.2)
At least one spine x-ray in the year before injury	
No	51,257 (92.2)
Yes	4,314 (7.8)
At least one spine x-ray in the first eight weeks after injury	
No	41,239 (74.2)
Yes	14,332 (25.8)
At least one antidepressant dispense in the year before injury	
No	52,269 (94.1)
Yes	3,302 (5.9)
At least one antidepressant dispense in the eight weeks after injury	
No	53,575 (96.4)
Yes	1,996 (3.6)
At least one anticonvulsant dispense in the year before injury	
No	53,820 (96.9)
Yes	1,751 (3.2)
At least one anticonvulsant dispense in the eight weeks after injury	
No	54,234 (97.6)
Yes	1,337 (2.4)

Variable	n (%)
At least one sedative hypnotic/anxiolytic dispense in the year before injury	
No	49,817 (89.7)
Yes	5,754 (10.4)
At least one sedative hypnotic/anxiolytic dispense in the eight weeks after injury	
No	51,266 (92.3)
Yes	4,305 (7.8)