

Supplementary Table 1. ICD-10 codes for defining comorbidity in administrative data and weights for calculating Charlson comorbidity index (CCI) score

Comorbidities	ICD-10 code	Definition
Myocardial infarction (CCI weights: 1)	I21.x	Acute myocardial infarction
	I22.x	Subsequent myocardial infarction
	I25.2	Old myocardial infarction
Congestive heart failure (CCI weights: 1)	I09.9	Rheumatic heart disease, unspecified
	I11.0	Hypertensive heart disease with (congestive) heart failure
	I13.0	Hypertensive heart and renal disease with (congestive) heart failure
	I13.2	Hypertensive heart and renal disease with both (congestive) heart failure and renal failure
	I25.5	Ischemic cardiomyopathy
	I42.0, I42.5–I42.9	Cardiomyopathy (except obstructive hypertrophic cardiomyopathy, other hypertrophic cardiomyopathy, endomyocardial (eosinophilic) disease, endocardial fibroelastosis)
	I43.x	Cardiomyopathy in diseases classified elsewhere
Peripheral vascular disease (CCI weights: 1)	I50.x	Heart failure
	P29.0	Neonatal cardiac failure
	I70.x	Atherosclerosis
	I71.x	Aortic aneurysm and dissection
	I73.1, I73.8, I73.9	Other peripheral vascular diseases
	I77.1	Stricture of artery
	I79.0, I79.2	Aneurysm of aorta in diseases classified elsewhere, peripheral angiopathy in diseases classified elsewhere
Cerebrovascular disease (CCI weights: 1)	K55.1, K55.8, K55.9	Chronic vascular disorders of intestine, other vascular disorders of intestine
	Z95.8, Z95.9	Presence of cardiac and vascular implants and grafts
	G45.x	Transient cerebral ischemic attacks and related syndromes
	G46.x	Vascular syndromes of brain in cerebro-vascular diseases
	H34.0	Transient retinal artery occlusion
	I60.x	Subarachnoid hemorrhage
	I61.x	Intracerebral hemorrhage
	I62.x	Other nontraumatic intracranial hemorrhage
	I63.x	Cerebral infarction
	I64.x	Stroke, not specified as hemorrhage or infarction
	I65.x, I66.x	Occlusion and stenosis of precerebral or cerebral arteries, not resulting in cerebral infarction
	I67.x	Other cerebrovascular diseases
	I68.x	Cerebrovascular disorders in diseases classified elsewhere
Chronic pulmonary disease (CCI weights: 1)	I69.x	Sequelae of cerebrovascular disease
	I27.8, I27.9	Pulmonary heart disease
	J40.x–J47.x	Chronic lower respiratory diseases (including bronchitis, emphysema, chronic obstructive pulmonary disease, asthma, status asthmaticus, bronchiectasis)
	J60.x	Coal worker's pneumoconiosis
	J61.x–J63.x	Pneumoconiosis due to asbestos and other mineral fibres/dust containing silica/other inorganic dust
	J64.x, J65.x	Unspecified pneumoconiosis, pneumoconiosis associated with tuberculosis
	J66.x	Airway disease due to specific organic dust
	J67.x	Hypersensitivity pneumonitis due to organic dust
	J68.4	Chronic respiratory conditions due to chemicals, gases, fumes, and vapors
	J70.1	Chronic and other pulmonary manifestations due to radiation
J70.3	Chronic drug-induced interstitial lung disorders	

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Comorbidities	ICD-10 code	Definition
Rheumatic disease (CCI weights: 1)	M05.x	Seropositive rheumatoid arthritis
	M06.x	Other rheumatoid arthritis
	M31.5	Giant cell arteritis with polymyalgia rheumatica
	M32.x	Systemic lupus erythematosus
	M33.x	Dermatopolymyositis
	M34.x	Systemic sclerosis
	M35.1, M35.3	Other overlap syndromes, polymyalgia rheumatica
	M36.0	Dermato(poly)myositis in neoplastic disease
Peptic ulcer (CCI weights: 1)	K25.x, K27.x	Gastric ulcer
	K26.x	Duodenal ulcer
	K28.x	Gastrojejunal ulcer
Liver disease (CCI weights: 1)	B18.x	Chronic viral hepatitis
	K70.0, K70.3, K70.9	Alcoholic liver disease (alcoholic fatty liver, alcoholic cirrhosis of liver)
	K71.3–K71.5, K71.7	Toxic liver disease (with chronic persistent hepatitis/chronic active hepatitis/fibrosis and cirrhosis of liver)
	K73.x	Chronic hepatitis
	K74.x	Fibrosis and cirrhosis of liver
	K76.0, K76.2–K76.4, K76.8, K76.9	Fatty (change of) liver, central hemorrhagic necrosis of liver, infarction of liver, peliosis hepatis, other specified diseases of liver
	Z94.4	Liver transplant status
Diabetes mellitus (CCI weights: 1)	E10.0, E10.1, E10.6, E10.8, E10.9	Type 1 diabetes mellitus without complication
	E11.0, E11.1, E11.6, E11.8, E11.9	Type 2 diabetes mellitus without complication
	E12.0, E12.1, E12.6, E12.8, E12.9	Malnutrition-related diabetes mellitus without complication
	E13.0, E13.1, E13.6, E13.8, E13.9	Other specified diabetes mellitus without complication
	E14.0, E14.1, E14.6, E14.8, E14.9	Unspecified diabetes mellitus without complication
Diabetes with chronic complication (CCI weights: 2)	E10.2–E10.5, E10.7	Type 1 diabetes mellitus with renal/ophthalmic/neurological/circulatory/multiple complications
	E11.2–E11.5, E11.7	Type 2 diabetes mellitus with renal/ophthalmic/neurological/circulatory/multiple complications
	E12.2–E12.5, E12.7	Malnutrition-related diabetes mellitus with renal/ophthalmic/neurological/circulatory/multiple complications
	E13.2–E13.5, E13.7	Other specified diabetes mellitus with renal/ophthalmic/neurological/circulatory/multiple complications
	E14.2–E14.5, E14.7	Unspecified diabetes mellitus with renal/ophthalmic/neurological/circulatory/multiple complications
Paraplegia (CCI weights: 2)	G04.1	Tropical spastic paraplegia
	G11.4	Hereditary spastic paraplegia
	G81.x	Hemiplegia
	G82.x	Paraplegia and tetraplegia
	G83.0–G83.4, G83.9	Diplegia of upper limbs, monoplegia of lower limb, monoplegia of upper limb, monoplegia unspecified, cauda equina syndrome, paralytic syndrome unspecified

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Supplementary Table 1. Continued

Comorbidities	ICD-10 code	Definition
Renal disease (CCI weights: 2)	I12.0	Hypertensive renal disease with renal failure
	I13.1	Hypertensive heart and renal disease with renal failure
	N03.2–N03.7	Chronic nephritic syndrome (except chronic nephritic syndrome with minor glomerular abnormality/focal and segmental glomerular lesions)
	N05.2–N05.7	Unspecified nephritic syndrome (except nephritic syndrome with minor glomerular abnormality/focal and segmental glomerular lesions)
	N18.x	Chronic kidney disease
	N19.x	Unspecified kidney failure
	N25.0	Renal osteodystrophy
	Z49.x	Care involving dialysis
	Z94.0	Kidney transplant status
	Z99.2	Dependence on renal dialysis
Cancer (CCI weights: 2)	C00.x–C14.x	Malignant neoplasms of lip, oral cavity and pharynx
	C15.x–C26.x	Malignant neoplasms of digestive organs
	C30.x–C39.x	Malignant neoplasms of respiratory and intrathoracic organs
	C40.x–C41.x	Malignant neoplasms of bone and articular cartilage
	C43.x	Malignant melanoma of skin
	C45.x–C49.x	Malignant neoplasms of mesothelial and soft tissue
	C50.x	Malignant neoplasm of breast
	C51.x–C58.x	Malignant neoplasms of female genital organs
	C60.x–C63.x	Malignant neoplasms of male genital organs
	C64.x–C68.x	Malignant neoplasms of urinary tract
	C69.x–C72.x	Malignant neoplasms of eye, brain, and other parts of central nervous system
	C73.x–C75.x	Malignant neoplasm of thyroid and other endocrine glands
	C76.x	Malignant neoplasm of other and ill-defined sites
	C81.x–C85.x, C88.x	Malignant neoplasms of lymphoid and related tissue (Hodgkin lymphoma, follicular lymphoma, non-follicular lymphoma, mature T/NK-cell lymphomas, malignant immunoproliferative diseases)
C90.x–C97.x	Malignant neoplasms of hematopoietic and related tissue	
Metastatic tumor (CCI weights: 6)	C77.x	Secondary and unspecified malignant neoplasm of lymph nodes
	C78.x	Secondary malignant neoplasm of respiratory and digestive organs
	C79.x	Secondary malignant neoplasm of other and unspecified sites
	C80.x	Malignant neoplasm without specification of site
Severe liver disease (CCI weights: 3)	I85.0, I85.9	Oesophageal varices
	I86.4	Gastric varices
	I98.2	Oesophageal varices without bleeding in diseases classified elsewhere
	K70.4	Alcoholic hepatic failure
	K71.1	Toxic liver disease with hepatic necrosis
	K72.1, K72.9	Chronic hepatic failure, unspecified hepatic failure
	K76.5–K76.7	Hepatic veno-occlusive disease, portal hypertension, hepatorenal syndrome