

Supplementary Material 1

KNAG4	Anterior spinal fusion with internal fixation
KNAG40	Anterior spinal fusion with internal fixation in the cervical spine
KNAG41	Anterior spinal fusion with internal fixation in the cervicothoracic spine
KNAG42	Anterior spinal fusion with internal fixation in the thoracic spine
KNAG43	Anterior spinal fusion with internal fixation in the thoracolumbar spine
KNAG44	Anterior spinal fusion with internal fixation in the lumbar spine
KNAG45	Anterior spinal fusion with internal fixation in the cervicothoracolumbar spine
KNAG46	Anterior spinal fusion with internal fixation in the lumbosacral spine
KNAG5	Anterior spinal fusion with external fixation
KNAG50	Anterior spinal fusion with external fixation in the cervical spine
KNAG51	Anterior spinal fusion with external fixation in the cervicothoracic spine
KNAG52	Anterior spinal fusion with external fixation in the thoracic spine
KNAG53	Anterior spinal fusion with external fixation in the thoracolumbar spine
KNAG54	Anterior spinal fusion with external fixation in the lumbar spine
KNAG55	Anterior spinal fusion with external fixation in the cervicothoracolumbar spine
KNAG56	Anterior spinal fusion with external fixation in the lumbosacral spine
KNAG7	Posterior spinal fusion with internal fixation
KNAG70	Posterior spinal fusion with internal fixation in the cervical spine
KNAG71	Posterior spinal fusion with internal fixation in the cervicothoracic spine
KNAG72	Posterior spinal fusion with internal fixation in the thoracic spine
KNAG73	Posterior spinal fusion with internal fixation in the thoracolumbar spine
KNAG74	Posterior spinal fusion with internal fixation in the lumbar spine
KNAG75	Posterior spinal fusion with internal fixation in the cervicothoracolumbar spine
KNAG76	Posterior spinal fusion with internal fixation in the lumbosacral spine
KNAG8	Hemispondylodesis
KNAG80	Hemispondylodesis in the cervical spine
KNAG81	Hemispondylodesis in the cervicothoracic spine
KNAG82	Hemispondylodesis in the thoracic spine
KNAG83	Hemispondylodesis in the thoracolumbar spine
KNAG84	Hemispondylodesis in the lumbar spine
KNAG85	Hemispondylodesis in the cervicothoracolumbar spine
KNAG86	Hemispondylodesis in the lumbosacral spine
KNAT	Different surgeries in the spine and neck
KNAT1	Anterior traction and correction with internal fixation in the the columnna
KNAT10	Anterior traction and correction with internal fixation in the columnna cervicalis
KNAT11	Anterior traction and correction with internal fixation in the cervicothoracic spine
KNAT12	Anterior traction and correction with internal fixation in the thoracic spine
KNAT13	Anterior traction and correction with internal fixation in the thoracolumbar spine
KNAT14	Anterior traction and correction with internal fixation in the lumbar spine
KNAT15	Anterior traction and correction with internal fixation in the cervicothoracolumbar spine
KNAT16	Anterior traction and correction with internal fixation in the lumbosacral spine
KNAT2	Posterior traction and correction with internal fixation in the columnna

KNAT20	Posterior traction and correction with internal fixation in the columna cervicalis
KNAT21	Posterior traction and correction with internal fixation in the cervicothoracic spine
KNAT22	Posterior traction and correction with internal fixation in the thoracic spine
KNAT23	Posterior traction and correction with internal fixation in the thoracolumbar spine
KNAT24	Posterior traction and correction with internal fixation in the lumbar spine
KNAT25	Posterior traction and correction with internal fixation in the cervicothoracolumbar spine
KNAT26	Posterior traction and correction with internal fixation in the lumbosacral spine

Supplementary Material 2

Disease category	ICD-8	ICD-10
Myocardial infarction	410	I21-I23
Congestive heart failure	427.09; 427.10; 427.11; 427.19; 428.99; 782.49	I50; I11.0; I13.0; I13.2
Peripheral vascular disease	440; 441; 442; 443; 444; 445	I70- I74; I77
Cerebrovascular disease	430-438	I60-I69; G45; G46
Dementia	290.09-290.19; 293.09	F00-F03; F05.1; G30
Chronic pulmonary disease	490-493; 515-518	J40-J47; J60-J67; J68.4; J70.1; J70.3; J84.1; J92.0; J96.1; J98.2-J98.3
Connective tissue disease	712; 716; 734; 446; 135.99	M05; M06; M08; M09; M30-M36; D86
Ulcer disease	530.91; 530.98; 531-534	K22.1; K25-K28
Mild liver disease	571; 573.01; 573.04	B18; K70.0-K70.3; K70.9; K71; K73; K74; K76.0
Diabetes	249.00; 249.06; 249.07; 249.09; 250.00; 250.06; 250.07; 250.09	E10.0; E10.1; E10.9; E11.0; E11.1; E11.9
Hemiplegia	344	G81; G82
Moderate to severe renal disease	403; 404; 580-584; 590.09; 593.19; 753.10-753.19; 792	I12; I13; N00-N05; N07; N11; N14; N17-N19; Q61
Diabetes with end organ damage	249.01-249.05; 249.08; 250.01-250.05; 250.08	E10.2-E10.8; E11.2-E11.8
Any tumor	140-194	C00-C75
Leukemia	204-207	C91-C95
Lymphoma	200-203; 275.59	C81-C85; C88; C90; C96
Moderate to severe liver disease	070.00; 070.02; 070.04; 070.06; 070.08; 573.00; 456.00-456.09	B15.0; B16.0; B16.2; B19.0; K70.4; K72; K76.6; I85
Metastatic solid tumor	195-199	C76-C80
AIDS	079.83	B21-B24

ICD-8, International Classification of Diseases, eighth edition; ICD-10, ICD, tenth edition; AIDS, acquired immune deficiency syndrome.