

Supplementary Table 4. One hundred surgeries that had the highest incidence of perioperative stroke, with procedure frequency ≥ 10

Procedure name	ICD-9 code	Incidence of stroke (%)	Procedure frequency
Implantation or insertion of biventricular external heart assist system	3760	20	15
Endovascular removal of obstruction from head and neck vessel(s)	3974	18.47	926
Incision of vessel; intracranial vessels	3801	18.18	11
Other excision of vessel; intracranial vessels	3861	17.5	40
Percutaneous insertion of intracranial vascular stent(s)	0065	16.67	12
Extracranial-intracranial vascular bypass	3928	13.82	434
Lobotomy and tractotomy	132	11.43	35
Clipping of aneurysm	3951	10.29	2,856
Partial excision of pituitary gland, transfrontal approach	0761	10.16	246
Other removal or destruction of corneal lesion	1149	9.9	11
Extracorporeal membrane oxygenation	3965	8.74	389
Percutaneous angioplasty of intracranial vessel(s)	0062	8.64	359
Incision of vessel; abdominal veins	3807	8	25
Endovascular embolization or occlusion of vessel(s) of head or neck using bare coils	3975	7.8	1,166
Partial excision of pituitary gland, unspecified approach	0763	7.55	53
Resection of vessel with anastomosis; intracranial vessels	3831	7.14	28
Other operations on pancreas	5299	6.67	15
Excision of uvula	2772	6.67	15
Insertion of temporary non-implantable extracorporeal circulatory assist device	3762	6.6	33
Resection of vessel with replacement; thoracic vessels	3845	6.54	1,499
Endovascular (total) embolization or occlusion of head and neck vessels	3972	6.4	4,174
Adjunct vascular system; procedure on single vessel	0040	6.25	32
Insertion of percutaneous external heart assist device	3764	6.25	16
Incision of vessel; aorta	3804	6.15	65
Endovascular embolization or occlusion of vessel(s) of head or neck using bioactive coils	3976	5.9	305
Insertion of implantable heart assist system	3766	5.7	474
Ventricular shunt to extracranial site NEC	0239	5.65	407
Transapical replacement of aortic valve	3506	5.56	18
Craniotomy and craniectomy; reopening of craniotomy site	0123	5.49	328
Excision, destruction, or exclusion of left atrial appendage	3736	5.41	37
Other incision of brain	0139	5.25	2,628
Incision of vessel; other thoracic vessels	3805	4.9	102
Total excision of pituitary gland, transfrontal approach	0764	4.76	21
Other craniectomy	0125	4.56	1,008
Sphenoidectomy	2264	4.37	183
Other excision of vessel; other thoracic vessels	3865	4.35	23
Incision of multiple nasal sinuses	2253	4.35	23
Excision of lesion or tissue of cerebral meninges	0151	4.24	4,549
Open heart valvuloplasty of aortic valve without replacement	3511	4.22	735
Other extracapsular extraction of lens	1359	4.17	24
Aorta-subclavian-carotid bypass	3922	4.12	437
Lobectomy of brain	0153	3.93	585
Division of thyroid isthmus	0691	3.77	53
Cardiotomy	3711	3.74	107

Supplementary Table 4. Continued

Procedure name	ICD-9 code	Incidence of stroke (%)	Procedure frequency
Endovascular implantation of graft in thoracic aorta	3973	3.7	1,216
Placement of intracerebral catheter(s) via burr hole(s)	0128	3.63	248
Heart transplantation	3751	3.51	882
Other intra-abdominal vascular shunt or bypass	3926	3.49	172
Intraoperative cardiac pacemaker	3964	3.45	29
Other craniotomy	0124	3.43	3,030
Open and other replacement of mitral valve with tissue graft	3523	3.41	2,783
Sphenoidotomy	2252	3.31	121
Combined heart-lung transplantation	336	3.3	33
Incision of vessel; upper limb vessels	3803	3.29	942
Operations on carotid body, carotid sinus and other vascular bodies	398	3.28	122
Incision of cerebral meninges	0131	3.27	10,929
Other excision or destruction of lesion or tissue of brain	0159	3.23	14,476
Partial excision of pineal gland	0753	3.13	64
Excision of accessory spleen	4193	3.13	32
Endovascular replacement of aortic valve	3505	2.94	68
Total correction of transposition of great vessels, not elsewhere classified	3584	2.94	34
Incision of vessel; abdominal arteries	3806	2.93	273
Percutaneous insertion of carotid artery stent(s)	0063	2.91	103
Incision of vessel; other vessels of head and neck	3802	2.91	103
Other surgical occlusion of vessels; other vessels of head and neck	3882	2.85	281
Reopening of recent thoracotomy site	3403	2.78	144
Transluminal coronary atherectomy	1755	2.78	36
Ligation of thoracic duct	4064	2.78	36
Other repair of retinal detachment	1459	2.78	36
Other surgical occlusion of vessels; intracranial vessels	3881	2.73	110
Control of epistaxis by ligation of ethmoidal arteries	2104	2.7	37
Repair of endocardial cushion defect with tissue graft	3563	2.63	114
Total ostectomy of other facial bone with synchronous reconstruction	7644	2.63	38
Open ablation of renal lesion or tissue	5532	2.63	38
Open and other replacement of aortic valve with tissue graft	3521	2.61	15,928
Ventricular shunt to circulatory system	232	2.6	77
Percutaneous angioplasty of extracranial vessel(s)	0061	2.55	4,312
Trocar cholecystostomy	5102	2.53	79
Soave submucosal resection of rectum	4841	2.5	40
Other operations on heart and pericardium	3799	2.44	41
Open and other replacement of mitral valve	3524	2.43	2,639
Open and other replacement of pulmonary valve with tissue graft	3527	2.41	166
Suture of peritoneum	5464	2.38	84
Other dental restoration	2349	2.38	42
Percutaneous mitral valve repair with implant	3597	2.38	42
Open and other replacement of aortic valve	3522	2.37	8,633
Creation of conduit between right ventricle and pulmonary artery	3592	2.34	128
Other and unspecified repair of atrial septal defect	3571	2.32	518

Supplementary Table 4. Continued

Procedure name	ICD-9 code	Incidence of stroke (%)	Procedure frequency
Aorta-renal bypass	3924	2.27	44
Systemic to pulmonary artery shunt	390	2.26	177
Isolation of segment of small intestine	4551	2.25	89
Closed (aspiration, percutaneous) biopsy of spleen	4132	2.22	45
Incision of vessel; lower limb arteries	3808	2.19	1,783
Implant of pulsation balloon	3761	2.18	6,913
Annuloplasty	3533	2.18	1,465
Other excision of vessel; other vessels of head and neck	3862	2.17	46
Percutaneous balloon valvuloplasty	3596	2.1	1,095
Incision of pituitary gland	0772	2.08	48
Fat graft of skin and subcutaneous tissue	8687	2.06	97
Other division of bone; scapula, clavicle, and thorax (ribs and sternum)	7731	2.04	49

ICD-9, International Classification of Diseases, 9th revision; NEC, not otherwise specified.