

Supplemental Table 1. Intrinsic cardiac risks of commonly performed procedures.

Intrinsic Cardiac Risk Category	CPT Code	Description	Odds Ratio (95% CI)*	Estimated Cardiac Risk for Hypothetical Patient (%)†	Reliability‡
Low Intrinsic Cardiac Risk	19120	Excision of cyst, fibroadenoma, or other benign or malignant tumor, aberrant breast tissue, duct lesion, nipple or areolar lesion (except 19300), open, male or female, 1 or more lesions	0.11 (0.05, 0.25)	0.03	1.00
	19125	Excision of breast lesion identified by preoperative placement of radiological marker, open; single lesion	0.17 (0.10, 0.31)	0.04	1.00
	19357	Breast reconstruction, immediate or delayed, with tissue expander, including subsequent expansion	0.19 (0.07, 0.53)	0.04	1.00
	36475	Endovenous ablation therapy of incompetent vein, extremity, inclusive of all imaging guidance and monitoring, percutaneous, radiofrequency; first vein treated	0.19 (0.08, 0.48)	0.04	1.00
	19318	Reduction mammoplasty	0.20 (0.08, 0.50)	0.04	1.00
	19301	Mastectomy, partial (eg, lumpectomy, tylectomy, quadrantectomy, segmentectomy);	0.22 (0.15, 0.31)	0.05	1.00
	29888	Arthroscopically aided anterior cruciate ligament repair/augmentation or reconstruction	0.25 (0.08, 0.76)	0.06	1.00
	43770	Laparoscopy, surgical, gastric restrictive procedure; placement of adjustable gastric restrictive device (eg, gastric band and subcutaneous port components)	0.27 (0.14, 0.52)	0.06	1.00
	19340	Immediate insertion of breast prosthesis following mastopexy, mastectomy or in reconstruction	0.29 (0.09, 0.92)	0.06	1.00
	43774	Laparoscopy, surgical, gastric restrictive procedure; removal of adjustable gastric restrictive device and subcutaneous port components	0.30 (0.11, 0.80)	0.07	0.99
	57288	Sling operation for stress incontinence (eg, fascia or synthetic)	0.31 (0.17, 0.56)	0.07	1.00

42826	Tonsillectomy, primary or secondary; age 12 or over	0.31 (0.14, 0.70)	0.07	1.00
49505	Repair initial inguinal hernia, age 5 years or older; reducible	0.32 (0.25, 0.40)	0.07	1.00
29827	Arthroscopy, shoulder, surgical; with rotator cuff repair	0.32 (0.19, 0.54)	0.07	1.00
58570	Laparoscopy, surgical, with total hysterectomy, for uterus 250 g or less;	0.32 (0.12, 0.88)	0.07	1.00
29881	Arthroscopy, knee, surgical; with meniscectomy (medial or lateral, including any meniscal shaving)	0.32 (0.20, 0.52)	0.07	1.00
49520	Repair recurrent inguinal hernia, any age; reducible	0.32 (0.18, 0.59)	0.07	0.99
58262	Vaginal hysterectomy, for uterus 250 g or less; with removal of tube(s), and/or ovary(s)	0.33 (0.14, 0.82)	0.07	1.00
37765	Stab phlebectomy of varicose veins, 1 extremity; 10-20 stab incisions	0.35 (0.13, 0.96)	0.08	0.99
60220	Total thyroid lobectomy, unilateral; with or without isthmusectomy	0.35 (0.22, 0.57)	0.08	1.00
19303	Mastectomy, simple, complete	0.37 (0.26, 0.50)	0.08	1.00
49585	Repair umbilical hernia, age 5 years or older; reducible	0.37 (0.27, 0.50)	0.08	1.00
58550	Laparoscopy, surgical, with vaginal hysterectomy, for uterus 250 g or less;	0.37 (0.13, 1.02)	0.08	1.00
29880	Arthroscopy, knee, surgical; with meniscectomy (medial and lateral, including any meniscal shaving)	0.37 (0.20, 0.68)	0.08	1.00
49650	Laparoscopy, surgical; repair initial inguinal hernia	0.39 (0.28, 0.55)	0.09	1.00
19302	Mastectomy, partial (eg, lumpectomy, tylectomy, quadrantectomy, segmentectomy); with axillary lymphadenectomy	0.40 (0.19, 0.81)	0.09	0.99
19380	Revision of reconstructed breast	0.40 (0.16, 1.00)	0.09	1.00
19342	Delayed insertion of breast prosthesis following mastopexy, mastectomy or in reconstruction	0.40 (0.14, 1.14)	0.09	0.99
58571	Laparoscopy, surgical, with total hysterectomy, for uterus 250 g or less; with removal of tube(s) and/or ovary(s)	0.40 (0.27, 0.60)	0.09	1.00
58552	Laparoscopy, surgical, with vaginal hysterectomy, for uterus 250 g or less; with removal of tube(s) and/or	0.42 (0.23, 0.77)	0.09	1.00

	ovary(s)			
19325	Mammoplasty, augmentation; with prosthetic implant	0.43 (0.12, 1.50)	0.09	1.00
60252	Thyroidectomy, total or subtotal for malignancy; with limited neck dissection	0.43 (0.21, 0.89)	0.10	0.99
29877	Arthroscopy, knee, surgical; debridement/shaving of articular cartilage (chondroplasty)	0.44 (0.17, 1.11)	0.10	0.99
27446	Arthroplasty, knee, condyle and plateau; medial or lateral compartment	0.44 (0.22, 0.86)	0.10	0.99
29826	Arthroscopy, shoulder, surgical; decompression of subacromial space with partial acromioplasty, with or without coracoacromial release	0.44 (0.20, 0.95)	0.10	0.99
52234	Cystourethroscopy, with fulguration (including cryosurgery or laser surgery) and/or resection of; small bladder tumor(s) (0.5 up to 2.0 cm)	0.45 (0.32, 0.64)	0.10	0.99
44970	Laparoscopy, surgical, appendectomy	0.45 (0.33, 0.62)	0.10	1.00
49587	Repair umbilical hernia, age 5 years or older; incarcerated or strangulated	0.46 (0.31, 0.69)	0.10	1.00
58542	Laparoscopy, surgical, supracervical hysterectomy, for uterus 250 g or less; with removal of tube(s) and/or ovary(s)	0.46 (0.18, 1.19)	0.10	0.99
52235	Cystourethroscopy, with fulguration (including cryosurgery or laser surgery) and/or resection of; medium bladder tumor(s) (2.0 to 5.0 cm)	0.47 (0.32, 0.68)	0.10	0.98
46040	Incision and drainage of ischiorectal and/or perirectal abscess (separate procedure)	0.49 (0.27, 0.88)	0.11	0.98
15830	Excision, excessive skin and subcutaneous tissue (includes lipectomy); abdomen, infraumbilical panniculectomy	0.49 (0.22, 1.07)	0.11	0.99
63030	Laminotomy (hemilaminectomy), with decompression of nerve root(s), including partial facetectomy, foraminotomy and/or excision of herniated intervertebral disc, including open and endoscopically-assisted approaches; 1 interspace, lumbar	0.49 (0.36, 0.67)	0.11	1.00

60240	Thyroidectomy, total or complete	0.56 (0.42, 0.76)	0.12	1.00
43775	Laparoscopy, surgical, gastric restrictive procedure; longitudinal gastrectomy (ie, sleeve gastrectomy)	0.57 (0.45, 0.73)	0.13	1.00
52648	Laser vaporization of prostate, including control of postoperative bleeding, complete (vasectomy, meatotomy, cystourethroscopy, urethral calibration and/or dilation, internal urethrotomy and transurethral resection of prostate are included if performed)	0.58 (0.42, 0.80)	0.13	0.98
19307	Mastectomy, modified radical, including axillary lymph nodes, with or without pectoralis minor muscle, but excluding pectoralis major muscle	0.58 (0.41, 0.82)	0.13	1.00
60500	Parathyroidectomy or exploration of parathyroid(s);	0.58 (0.44, 0.77)	0.13	1.00
49324	Laparoscopy, surgical; with insertion of tunneled intraperitoneal catheter	0.60 (0.45, 0.80)	0.13	0.92
52601	Transurethral electrosurgical resection of prostate, including control of postoperative bleeding, complete (vasectomy, meatotomy, cystourethroscopy, urethral calibration and/or dilation, and internal urethrotomy are included)	0.61 (0.48, 0.77)	0.13	0.99
58260	Vaginal hysterectomy, for uterus 250 g or less;	0.62 (0.36, 1.04)	0.14	1.00
47562	Laparoscopy, surgical; cholecystectomy	0.62 (0.53, 0.72)	0.14	1.00
58573	Laparoscopy, surgical, with total hysterectomy, for uterus greater than 250 g; with removal of tube(s) and/or ovary(s)	0.62 (0.30, 1.31)	0.14	0.99
23472	Arthroplasty, glenohumeral joint; total shoulder (glenoid and proximal humeral replacement (eg, total shoulder))	0.64 (0.44, 0.92)	0.14	0.98
47563	Laparoscopy, surgical; cholecystectomy with cholangiography	0.64 (0.51, 0.81)	0.14	1.00
49651	Laparoscopy, surgical; repair recurrent inguinal hernia	0.65 (0.35, 1.22)	0.14	0.98
43644	Laparoscopy, surgical, gastric restrictive procedure; with gastric bypass and roux-en-y gastroenterostomy (roux limb 150 cm or less)	0.67 (0.54, 0.83)	0.15	1.00
60210	Partial thyroid lobectomy, unilateral; with or without	0.71 (0.35, 1.44)	0.16	0.98

		isthmusectomy			
	42415	Excision of parotid tumor or parotid gland; lateral lobe, with dissection and preservation of facial nerve	0.74 (0.40, 1.35)	0.16	0.97
	63042	Laminotomy (hemilaminectomy), with decompression of nerve root(s), including partial facetectomy, foraminotomy and/or excision of herniated intervertebral disc, reexploration, single interspace; lumbar	0.74 (0.42, 1.32)	0.16	0.98
	58150	Total abdominal hysterectomy (corpus and cervix), with or without removal of tube(s), with or without removal of ovary(s);	0.75 (0.56, 1.02)	0.17	1.00
	43280	Laparoscopy, surgical, esophagogastric fundoplasty (eg, nissen, toupet procedures)	0.76 (0.50, 1.16)	0.17	0.99
	32666	Thoracoscopy, surgical; with therapeutic wedge resection (eg, mass, nodule), initial unilateral	0.76 (0.49, 1.18)	0.17	0.96
	27447	Arthroplasty, knee, condyle and plateau; medial and lateral compartments with or without patella resurfacing (total knee arthroplasty)	0.80 (0.71, 0.90)	0.18	1.00
	60650	Laparoscopy, surgical, with adrenalectomy, partial or complete, or exploration of adrenal gland with or without biopsy, transabdominal, lumbar or dorsal	0.81 (0.46, 1.41)	0.18	0.96
	49507	Repair initial inguinal hernia, age 5 years or older; incarcerated or strangulated	0.84 (0.59, 1.20)	0.18	0.98
Intermediate Intrinsic Cardiac Risk	52240	Cystourethroscopy, with fulguration (including cryosurgery or laser surgery) and/or resection of; large bladder tumor(s)	0.85 (0.61, 1.20)	0.19	0.94
	27814	Open treatment of bimalleolar ankle fracture (eg, lateral and medial malleoli, or lateral and posterior malleoli, or medial and posterior malleoli), includes internal fixation, when performed	0.86 (0.47, 1.57)	0.19	0.97
	43279	Laparoscopy, surgical, esophagomyotomy (Heller type), with fundoplasty, when performed	0.86 (0.42, 1.76)	0.19	0.96
	55866	Laparoscopy, surgical prostatectomy, retropubic radical, including nerve sparing, includes robotic assistance,	0.88 (0.69, 1.12)	0.19	1.00

	when performed			
27487	Revision of total knee arthroplasty, with or without allograft; femoral and entire tibial component	0.90 (0.63, 1.29)	0.20	0.97
60271	Thyroidectomy, including substernal thyroid; cervical approach	0.91 (0.48, 1.72)	0.20	0.94
11042	Debridement, subcutaneous tissue (includes epidermis and dermis, if performed); first 20 sq cm or less	0.91 (0.71, 1.17)	0.20	0.95
49653	Laparoscopy, surgical, repair, ventral, umbilical, spigelian or epigastric hernia (includes mesh insertion, when performed); incarcerated or strangulated	0.92 (0.61, 1.38)	0.20	0.99
49422	Removal of permanent intraperitoneal catheter or cannula	0.92 (0.67, 1.26)	0.20	0.76
44180	Laparoscopy, surgical, enterolysis (freeing of intestinal adhesion) (separate procedure)	0.92 (0.62, 1.38)	0.20	0.98
49560	Repair initial incisional or ventral hernia; reducible	0.92 (0.77, 1.10)	0.20	1.00
63005	Laminectomy with exploration and/or decompression of spinal cord and/or cauda equina, without facetectomy, foraminotomy or discectomy (eg, spinal stenosis), 1 or 2 vertebral segments; lumbar, except for spondylolisthesis	0.93 (0.50, 1.71)	0.20	0.93
49652	Laparoscopy, surgical, repair, ventral, umbilical, spigelian or epigastric hernia (includes mesh insertion, when performed); reducible	0.94 (0.69, 1.27)	0.21	0.99
63047	Laminectomy, facetectomy and foraminotomy (unilateral or bilateral with decompression of spinal cord, cauda equina and/or nerve root[s], [eg, spinal or lateral recess stenosis]), single vertebral segment; lumbar	0.94 (0.77, 1.16)	0.21	0.99
44950	Appendectomy;	0.95 (0.51, 1.75)	0.21	0.96
27130	Arthroplasty, acetabular and proximal femoral prosthetic replacement (total hip arthroplasty), with or without autograft or allograft	0.95 (0.83, 1.08)	0.21	1.00
22551	Arthrodesis, anterior interbody, including disc space preparation, discectomy, osteophyctomy and decompression of spinal cord and/or nerve roots; cervical	0.95 (0.73, 1.22)	0.21	0.99

	below C2			
27486	Revision of total knee arthroplasty, with or without allograft; 1 component	0.96 (0.60, 1.52)	0.21	0.94
49321	Laparoscopy, surgical; with biopsy (single or multiple)	1.00 (0.64, 1.58)	0.22	0.95
49654	Laparoscopy, surgical, repair, incisional hernia (includes mesh insertion, when performed); reducible	1.00 (0.74, 1.36)	0.22	0.99
22633	Arthrodesis, combined posterior or posterolateral technique with posterior interbody technique including laminectomy and/or discectomy sufficient to prepare interspace (other than for decompression), single interspace and segment; lumbar	1.03 (0.67, 1.59)	0.23	0.97
58720	Salpingo-oophorectomy, complete or partial, unilateral or bilateral (separate procedure)	1.05 (0.50, 2.17)	0.23	0.97
58548	Laparoscopy, surgical, with radical hysterectomy, with bilateral total pelvic lymphadenectomy and para-aortic lymph node sampling (biopsy), with removal of tube(s) and ovary(s), if performed	1.05 (0.57, 1.94)	0.23	0.96
44188	Laparoscopy, surgical, colostomy or skin level cecostomy	1.05 (0.69, 1.59)	0.23	0.88
50546	Laparoscopy, surgical; nephrectomy, including partial ureterectomy	1.06 (0.71, 1.59)	0.23	0.94
58180	Supracervical abdominal hysterectomy (subtotal hysterectomy), with or without removal of tube(s), with or without removal of ovary(s)	1.07 (0.56, 2.04)	0.23	0.99
37799	Unlisted procedure, vascular surgery	1.08 (0.66, 1.78)	0.24	0.85
45130	Excision of rectal procidentia, with anastomosis; perineal approach	1.10 (0.71, 1.70)	0.24	0.87
44227	Laparoscopy, surgical, closure of enterostomy, large or small intestine, with resection and anastomosis	1.14 (0.61, 2.12)	0.25	0.92
63020	Laminotomy (hemilaminectomy), with decompression of nerve root(s), including partial facetectomy, foraminotomy and/or excision of herniated intervertebral disc, including open and endoscopically-assisted	1.15 (0.55, 2.41)	0.25	0.93

		approaches; 1 interspace, cervical			
High Intrinsic Cardiac Risk	34804	Endovascular repair of infrarenal abdominal aortic aneurysm or dissection; using unibody bifurcated prosthesis	1.16 (0.79, 1.71)	0.26	0.78
	49655	Laparoscopy, surgical, repair, incisional hernia (includes mesh insertion, when performed); incarcerated or strangulated	1.17 (0.77, 1.77)	0.26	0.97
	23470	Arthroplasty, glenohumeral joint; hemiarthroplasty	1.18 (0.63, 2.19)	0.26	0.87
	28805	Amputation, foot; transmetatarsal	1.19 (0.88, 1.61)	0.26	0.69
	47379	Unlisted laparoscopic procedure, liver	1.20 (0.68, 2.11)	0.26	0.90
	47605	Cholecystectomy; with cholangiography	1.20 (0.75, 1.92)	0.26	0.87
	11044	Debridement, muscle and/or fascia (includes epidermis, dermis, and subcutaneous tissue, if performed); and bone	1.21 (0.91, 1.61)	0.26	0.82
	49561	Repair initial incisional or ventral hernia; incarcerated or strangulated	1.22 (0.96, 1.53)	0.27	0.99
	43281	Laparoscopy, surgical, repair of paraesophageal hernia, includes fundoplasty, when performed; without implantation of mesh	1.23 (0.88, 1.72)	0.27	0.98
	50545	Laparoscopy, surgical; radical nephrectomy (includes removal of gerota's fascia and surrounding fatty tissue, removal of regional lymph nodes, and adrenalectomy)	1.25 (0.91, 1.71)	0.27	0.94
	43659	Unlisted laparoscopy procedure, stomach	1.25 (0.79, 1.97)	0.27	0.94
	34802	Endovascular repair of infrarenal abdominal aortic aneurysm or dissection; using modular bifurcated prosthesis (1 docking limb)	1.25 (1.05, 1.49)	0.27	0.95
	57425	Laparoscopy, surgical, colpopexy (suspension of vaginal apex)	1.29 (0.61, 2.72)	0.28	0.94
	55845	Prostatectomy, retropubic radical, with or without nerve sparing; with bilateral pelvic lymphadenectomy, including external iliac, hypogastric, and obturator nodes	1.30 (0.77, 2.21)	0.29	0.95
	61510	Craniectomy, trephination, bone flap craniotomy; for excision of brain tumor, supratentorial, except meningioma	1.30 (1.01, 1.67)	0.29	0.98

37226	Revascularization, endovascular, open or percutaneous, femoral, popliteal artery(s), unilateral; with transluminal stent placement(s), includes angioplasty within the same vessel, when performed	1.30 (1.05, 1.62)	0.29	0.90
39400	Mediastinoscopy, with or without biopsy	1.31 (0.90, 1.91)	0.29	0.90
11043	Debridement, muscle and/or fascia (includes epidermis, dermis, and subcutaneous tissue, if performed); first 20 sq cm or less	1.32 (1.05, 1.66)	0.29	0.88
37224	Revascularization, endovascular, open or percutaneous, femoral, popliteal artery(s), unilateral; with transluminal angioplasty	1.34 (1.06, 1.70)	0.29	0.86
63045	Laminectomy, facetectomy and foraminotomy (unilateral or bilateral with decompression of spinal cord, cauda equina and/or nerve root[s], [eg, spinal or lateral recess stenosis]), single vertebral segment; cervical	1.35 (0.84, 2.19)	0.30	0.91
37228	Revascularization, endovascular, open or percutaneous, tibial, peroneal artery, unilateral, initial vessel; with transluminal angioplasty	1.38 (1.05, 1.81)	0.30	0.73
44620	Closure of enterostomy, large or small intestine;	1.39 (1.00, 1.93)	0.31	0.97
38724	Cervical lymphadenectomy (modified radical neck dissection)	1.39 (0.95, 2.03)	0.31	0.95
22612	Arthrodesis, posterior or posterolateral technique, single level; lumbar (with or without lateral transverse technique)	1.40 (1.12, 1.75)	0.31	0.98
63075	Discectomy, anterior, with decompression of spinal cord and/or nerve root(s), including osteophytectomy; cervical, single interspace	1.41 (0.83, 2.40)	0.31	0.95
34803	Endovascular repair of infrarenal abdominal aortic aneurysm or dissection; using modular bifurcated prosthesis (2 docking limbs)	1.43 (1.15, 1.77)	0.31	0.90
22630	Arthrodesis, posterior interbody technique, including laminectomy and/or discectomy to prepare interspace (other than for decompression), single interspace; lumbar	1.43 (0.98, 2.07)	0.31	0.96

27134	Revision of total hip arthroplasty; both components, with or without autograft or allograft	1.44 (1.07, 1.95)	0.32	0.95
32663	Thoracoscopy, surgical; with lobectomy, total or segmental	1.45 (1.10, 1.91)	0.32	0.94
49565	Repair recurrent incisional or ventral hernia; reducible	1.45 (1.13, 1.86)	0.32	0.98
61512	Craniectomy, trephination, bone flap craniotomy; for excision of meningioma, supratentorial	1.45 (0.96, 2.18)	0.32	0.93
58210	Radical abdominal hysterectomy, with bilateral total pelvic lymphadenectomy and para-aortic lymph node sampling (biopsy), with or without removal of tube(s), with or without removal of ovary(s)	1.45 (0.82, 2.58)	0.32	0.93
63081	Vertebral corpectomy (vertebral body resection), partial or complete, anterior approach with decompression of spinal cord and/or nerve root(s); cervical, single segment	1.47 (0.91, 2.39)	0.32	0.92
44320	Colostomy or skin level cecostomy;	1.50 (1.09, 2.05)	0.33	0.81
44210	Laparoscopy, surgical; colectomy, total, abdominal, without proctectomy, with ileostomy or ileoproctostomy	1.50 (0.92, 2.44)	0.33	0.95
44625	Closure of enterostomy, large or small intestine; with resection and anastomosis other than colorectal	1.51 (1.14, 1.99)	0.33	0.98
50543	Laparoscopy, surgical; partial nephrectomy	1.51 (1.13, 2.03)	0.33	0.97
19364	Breast reconstruction with free flap	1.52 (0.81, 2.86)	0.33	0.97
47600	Cholecystectomy;	1.55 (1.25, 1.92)	0.34	0.95
35301	Thromboendarterectomy, including patch graft, if performed; carotid, vertebral, subclavian, by neck incision	1.56 (1.41, 1.72)	0.34	0.99
38120	Laparoscopy, surgical, splenectomy	1.56 (0.99, 2.48)	0.34	0.88
15734	Muscle, myocutaneous, or fasciocutaneous flap; trunk	1.57 (1.08, 2.26)	0.34	0.92
44205	Laparoscopy, surgical; colectomy, partial, with removal of terminal ileum with ileocolostomy	1.57 (1.31, 1.87)	0.34	0.98
22554	Arthrodesis, anterior interbody technique, including minimal discectomy to prepare interspace (other than for decompression); cervical below c2	1.58 (0.96, 2.61)	0.35	0.94
44202	Laparoscopy, surgical; enterectomy, resection of small	1.60 (0.98, 2.60)	0.35	0.89

49203	intestine, single resection and anastomosis Excision or destruction, open, intra-abdominal tumors, cysts or endometriomas, 1 or more peritoneal, mesenteric, or retroperitoneal primary or secondary tumors; largest tumor 5 cm diameter or less	1.60 (0.88, 2.94)	0.35	0.88
61518	Craniectomy for excision of brain tumor, infratentorial or posterior fossa; except meningioma, cerebellopontine angle tumor, or midline tumor at base of skull	1.64 (0.99, 2.72)	0.36	0.82
27590	Amputation, thigh, through femur, any level;	1.66 (1.43, 1.92)	0.36	0.78
44211	Laparoscopy, surgical; colectomy, total, abdominal, with proctectomy, with ileoanal anastomosis, creation of ileal reservoir (s or j), with loop ileostomy, includes rectal mucosectomy, when performed	1.68 (0.78, 3.61)	0.37	0.92
49000	Exploratory laparotomy, exploratory celiotomy with or without biopsy(s) (separate procedure)	1.71 (1.33, 2.18)	0.37	0.91
44204	Laparoscopy, surgical; colectomy, partial, with anastomosis	1.72 (1.51, 1.96)	0.38	0.99
37221	Revascularization, endovascular, open or percutaneous, iliac artery, unilateral, initial vessel; with transluminal stent placement(s), includes angioplasty within the same vessel, when performed	1.73 (1.37, 2.17)	0.38	0.88
27132	Conversion of previous hip surgery to total hip arthroplasty, with or without autograft or allograft	1.73 (1.16, 2.60)	0.38	0.86
43282	Laparoscopy, surgical, repair of paraesophageal hernia, includes fundoplasty, when performed; with implantation of mesh	1.74 (1.24, 2.44)	0.38	0.94
27236	Open treatment of femoral fracture, proximal end, neck, internal fixation or prosthetic replacement	1.76 (1.52, 2.05)	0.39	0.91
49566	Repair recurrent incisional or ventral hernia; incarcerated or strangulated	1.78 (1.29, 2.44)	0.39	0.95
22558	Arthrodesis, anterior interbody technique, including minimal discectomy to prepare interspace (other than for decompression); lumbar	1.78 (1.26, 2.52)	0.39	0.97

44207	Laparoscopy, surgical; colectomy, partial, with anastomosis, with coloproctostomy (low pelvic anastomosis)	1.79 (1.49, 2.14)	0.39	0.99
27880	Amputation, leg, through tibia and fibula;	1.81 (1.57, 2.08)	0.40	0.83
43846	Gastric restrictive procedure, with gastric bypass for morbid obesity; with short limb (150 cm or less) roux-en-y gastroenterostomy	1.83 (1.02, 3.28)	0.40	0.86
27244	Treatment of intertrochanteric, peritrochanteric, or subtrochanteric femoral fracture; with plate/screw type implant, with or without cerclage	1.83 (1.49, 2.25)	0.40	0.84
35661	Bypass graft, with other than vein; femoral-femoral	1.88 (1.45, 2.45)	0.41	0.79
44005	Enterolysis (freeing of intestinal adhesion) (separate procedure)	1.96 (1.57, 2.45)	0.43	0.91
27245	Treatment of intertrochanteric, peritrochanteric, or subtrochanteric femoral fracture; with intramedullary implant, with or without interlocking screws and/or cerclage	2.01 (1.76, 2.30)	0.44	0.92
27125	Hemiarthroplasty, hip, partial (eg, femoral stem prosthesis, bipolar arthroplasty)	2.03 (1.71, 2.40)	0.44	0.85
22600	Arthrodesis, posterior or posterolateral technique, single level; cervical below C2 segment	2.07 (1.42, 3.02)	0.45	0.86
35371	Thromboendarterectomy, including patch graft, if performed; common femoral	2.08 (1.70, 2.55)	0.46	0.82
44208	Laparoscopy, surgical; colectomy, partial, with anastomosis, with coloproctostomy (low pelvic anastomosis) with colostomy	2.16 (1.36, 3.45)	0.47	0.81
49205	Excision or destruction, open, intra-abdominal tumors, cysts or endometriomas, 1 or more peritoneal, mesenteric, or retroperitoneal primary or secondary tumors; largest tumor greater than 10.0 cm diameter	2.22 (1.44, 3.43)	0.49	0.84
44144	Colectomy, partial; with resection, with colostomy or ileostomy and creation of mucofistula	2.23 (1.62, 3.08)	0.49	0.71
50548	Laparoscopy, surgical; nephrectomy with total	2.27 (1.56, 3.29)	0.50	0.74

	ureterectomy			
35556	Bypass graft, with vein; femoral-popliteal	2.28 (1.94, 2.69)	0.50	0.88
44626	Closure of enterostomy, large or small intestine; with resection and colorectal anastomosis (eg, closure of hartmann type procedure)	2.29 (1.76, 2.98)	0.50	0.95
58953	Bilateral salpingo-oophorectomy with omentectomy, total abdominal hysterectomy and radical dissection for debulking;	2.40 (1.52, 3.81)	0.53	0.82
44143	Colectomy, partial; with end colostomy and closure of distal segment (Hartmann type procedure)	2.42 (1.99, 2.93)	0.53	0.87
47120	Hepatectomy, resection of liver; partial lobectomy	2.42 (2.01, 2.93)	0.53	0.96
32480	Removal of lung, other than total pneumonectomy; single lobe (lobectomy)	2.45 (1.97, 3.03)	0.54	0.88
35656	Bypass graft, with other than vein; femoral-popliteal	2.48 (2.13, 2.89)	0.54	0.86
44140	Colectomy, partial; with anastomosis	2.50 (2.22, 2.83)	0.55	0.97
43632	Gastrectomy, partial, distal; with gastrojejunostomy	2.53 (1.77, 3.62)	0.55	0.72
44160	Colectomy, partial, with removal of terminal ileum with ileocolostomy	2.56 (2.21, 2.96)	0.56	0.95
47125	Hepatectomy, resection of liver; total left lobectomy	2.61 (1.72, 3.96)	0.57	0.77
45395	Laparoscopy, surgical; proctectomy, complete, combined abdominoperineal, with colostomy	2.61 (1.80, 3.80)	0.57	0.83
35571	Bypass graft, with vein; popliteal-tibial, -peroneal artery or other distal vessels	2.63 (2.05, 3.38)	0.58	0.55
48140	Pancreatectomy, distal subtotal, with or without splenectomy; without pancreaticojejunostomy	2.66 (2.18, 3.25)	0.58	0.94
44120	Enterectomy, resection of small intestine; single resection and anastomosis	2.72 (2.34, 3.16)	0.59	0.93
35585	In-situ vein bypass; femoral-anterior tibial, posterior tibial, or peroneal artery	2.75 (2.10, 3.61)	0.60	0.51
44141	Colectomy, partial; with skin level cecostomy or colostomy	2.77 (2.15, 3.57)	0.61	0.73
44145	Colectomy, partial; with coloproctostomy (low pelvic anastomosis)	2.78 (2.36, 3.27)	0.61	0.96

45110	Proctectomy; complete, combined abdominoperineal, with colostomy	2.82 (2.21, 3.61)	0.62	0.89
50220	Nephrectomy, including partial ureterectomy, any open approach including rib resection;	2.85 (2.08, 3.90)	0.62	0.76
50240	Nephrectomy, partial	2.88 (2.16, 3.83)	0.63	0.89
44150	Colectomy, total, abdominal, without proctectomy; with ileostomy or ileoproctostomy	2.98 (2.30, 3.85)	0.65	0.79
35666	Bypass graft, with other than vein; femoral-anterior tibial, posterior tibial, or peroneal artery	3.01 (2.40, 3.78)	0.66	0.54
43633	Gastrectomy, partial, distal; with roux-en-y reconstruction	3.14 (2.20, 4.48)	0.69	0.70
35566	Bypass graft, with vein; femoral-anterior tibial, posterior tibial, peroneal artery or other distal vessels	3.44 (2.97, 3.98)	0.75	0.76
44146	Colectomy, partial; with coloproctostomy (low pelvic anastomosis), with colostomy	3.50 (2.61, 4.68)	0.76	0.76
45111	Proctectomy; partial resection of rectum, transabdominal approach	3.66 (2.46, 5.46)	0.80	0.70
51595	Cystectomy, complete, with ureteroileal conduit or sigmoid bladder, including intestine anastomosis; with bilateral pelvic lymphadenectomy, including external iliac, hypogastric, and obturator nodes	3.76 (3.02, 4.68)	0.82	0.76
47130	Hepatectomy, resection of liver; total right lobectomy	4.18 (3.23, 5.42)	0.91	0.80
48150	Pancreatectomy, proximal subtotal with total duodenectomy, partial gastrectomy, choledochoenterostomy and gastrojejunostomy (Whipple-type procedure); with pancreatojejunostomy	4.25 (3.70, 4.89)	0.93	0.91
50230	Nephrectomy, including partial ureterectomy, any open approach including rib resection; radical, with regional lymphadenectomy and/or vena caval thrombectomy	4.42 (3.47, 5.63)	0.96	0.74
43117	Partial esophagectomy, distal two-thirds, with thoracotomy and separate abdominal incision, with or without proximal gastrectomy; with thoracic esophagogastrostomy, with or without pyloroplasty (Ivor	4.62 (3.56, 5.99)	1.01	0.67

48153	Lewis) Pancreatectomy, proximal subtotal with near-total duodenectomy, choledochenterostomy and duodenojejunostomy (pylorus-sparing, Whipple-type procedure); with pancreatojejunostomy	4.70 (4.00, 5.53)	1.02	0.86
35081	Direct repair of aneurysm, pseudoaneurysm, or excision (partial or total) and graft insertion, with or without patch graft; for aneurysm, pseudoaneurysm, and associated occlusive disease, abdominal aorta	4.79 (3.95, 5.82)	1.04	0.58
35646	Bypass graft, with other than vein; aortobifemoral	6.61 (5.54, 7.90)	1.43	0.63

CPT: Common Procedure Terminology®

* Odds ratios are relative to the statistically estimated average procedure. Values greater than 1.0 represent higher than average risk for perioperative adverse cardiac events, whereas values less than 1.0 represent lower than average risk for perioperative adverse cardiac events.

† The hypothetical patient used to estimate numerical risk values across all operations for comparison was a 67 year old Caucasian female with hypertension, diabetes requiring oral therapy, and a body mass index of 32 (class I obesity), who is functionally independent, does not smoke, and is of ASA physical class 2.

‡ Statistical reliability represents the confidence in the rank of the CPT code. Conceptually, it is the signal-to-noise ratio. Reliability is a continuous number ranging from 0 to 1, where 0 implies that all the variability is attributable to error, and 1 implies that all variability is attributable to real differences between the intrinsic cardiac risks of CPT codes. Values closer to 1 mean CPT codes are appropriately ranked and the OR can be considered reliable.