

Appendix 1: Supplemental tables

Supplemental Table S1: Canadian Classification of Health Interventions Codes to identify surgeries.

Intrathoracic	
Lung lobectomy, thoracoscopy approach	1.GR.87.XX, 1.GR.89.XX, 1.GR.91.XX
VATS lobectomy	1.GT.87.XX, 1.GR.89.XX
Vascular	
Carotid endarterectomy	1.JE.57.LA
Open Abdominal aortic aneurysm repair	1.KA.76.MZ, 1.KA.80.LA
Bypass, arteries of leg NEC	1.KG.76.MI
Bypass, artery with vein	1.KY.76.LA
Intraperitoneal	
Excision partial, stomach	1.NF.87.DG, 1.NF.87.DH, 1.NF.87.DJ, 1.NF.87.DL, 1.NF.87.DQ, 1.NF.87.LA, 1.NF.87.RG, 1.NF.87.RH, 1.NF.87.RJ, 1.NF.87.RK, 1.NF.87.RP 1.NF.87.SH, 1.NF.87.DZ
Reattachment, stomach	1.NF.82.RJ
Excision total, stomach	1.NF.89.GW, 1.NF.89.SG, 1.NF.89.TH
Excision radical, stomach	1.NF.91.RG, 1.NF.91.RJ, 1.NF.91.RP, 1.NF.91.SG
Excision partial, small intestine	1.NK.87.DA, 1.NK.87.DN, 1.NK.87.DP, 1.NK.87.DX, 1.NK.87.DY, 1.NK.87.LA, 1.NK.87.RE, 1.NK.87.RF, 1.NK.87.TF, 1.NK.87.TG
Excision partial, large intestine	1.NM.87.XX
Excision total, large intestine	1.NM.89.XX
Excision radical, large intestine	1.NM.91.XX
Release, small and large intestine	1.NP.72.XX
Excision total, appendix	1.NV.89.XX
Excision partial, spleen	1.OB.87.XX
Excision total, spleen	1.OB.89.XX
Excision partial, pancreas	1.OJ.87.XX
Excision total, pancreas	1.OK89.XX
Excision partial, kidney	1.PC.87.XX
Excision total, kidney	1.PC.89.XX
Excision radical, kidney	1.PC.91.XX
Excision partial, bladder	1.PM.87.XX
Excision total, bladder	1.PM.89.XX
Excision radical, bladder	1.PM.91.XX
Excision radical, prostate	1.QT.91.XX

Supplemental Table S2: Physician Claim Procedure Codes to identify preoperative cardiovascular tests.

Echocardiography	
X306A	Complex Complete Echocardiogram
X306B	Non-Complex Complete Echocardiogram
X307	Ultrasound, heart, Echocardiogram, limited
02.82A	Comprehensive diagnostic trans-esophageal echocardiography
03.44A	Physician personal and continuous monitoring during the provision of dobutamine infusion for the purposes of pharmacologic stress imaging
Myocardial Perfusion Imaging	
X170	Thallium myocardial perfusion imaging (rest study)
X171	Thallium myocardial perfusion imaging (rest and exercise)
X172	Gated cardiac imaging (rest study)
X173	Gated cardiac imaging (rest and exercise)
03.41D	Intravenous dipyridamole administration for thallium imaging, professional component only
03.44A	Physician personal and continuous monitoring during the provision of dobutamine infusion for the purposes of pharmacologic stress imaging
Exercise Treadmill Testing	
03.41A	Maximal stress electrocardiogram, with or without pulse oximetry, technical only
03.41B	Interpretation
03.41C	Continuous personal physician monitoring, with or without pulse oximetry
Electrocardiogram	
03.52A	Electrocardiogram, technical
03.52B	Electrocardiogram, interpretation

Supplemental Table S3: Patient factors associated with non-invasive cardiac testing.

	Echocardiogram		Myocardial Perfusion Imaging		Exercise Stress Testing		Electrocardiogram	
	Number of Tests	Test per 100 Surgeries	Number of Tests	Test per 100 Surgeries	Number of Tests	Test per 100 Surgeries	Number of Tests	Test per 100 Surgeries
Age								
<40	2767	0.76 (0.73-0.79)	46	0.01 (0.01-0.02)	421	0.12 (0.10-0.13)	19274	5.29 (5.22-5.37)
40-64	8870	1.85 (1.81-1.89)	1052	0.22 (0.21-0.23)	2860	0.60 (0.58-0.62)	99354	20.76 (20.63-20.88)
≥65	7342	3.69 (3.60-3.78)	748	0.38 (0.35-0.40)	1423	0.72 (0.68-0.75)	63500	31.92 (31.68-32.17)
Sex								
Male	7439	1.58 (1.54-1.61)	800	0.17 (0.16-0.18)	2292	0.49 (0.47-0.51)	79250	16.79 (16.68-16.91)
Female	11540	2.02 (1.99-2.06)	1046	0.18 (0.17-0.19)	2412	0.42 (0.41-0.44)	102878	18.05 (17.94-18.16)
Income Quintile								
1 st [lowest]	4168	1.86 (1.80- 1.92)	470	0.21 (0.19-0.23)	947	0.42 (0.40-0.45)	36438	16.26 (16.09-16.42)
2 nd	4016	1.83 (1.78-1.89)	388	0.18 (0.16-0.20)	972	0.44 (0.42-0.47)	38664	17.61 (17.44-17.79)
3 rd	3632	1.81 (1.75-1.89)	319	0.16 (0.14-0.18)	868	0.43 (0.40-0.46)	34239	17.07 (16.93-17.30)
4 th	3404	1.78 (1.72-1.85)	322	0.17 (0.15-0.19)	847	0.44 (0.42-0.47)	33607	17.61 (17.43-17.80)
5 th [highest]	3541	1.84 (1.78-1.91)	328	0.17 (0.15-0.19)	1015	0.53 (0.50-0.56)	37455	19.50 (19.30-19.70)
Rurality								
Urban	16493	1.88 (1.85-1.91)	1713	0.20 (0.19-0.20)	4373	0.50 (0.48-0.51)	169248	19.29 (19.20-19.39)
Rural	2433	1.50 (1.45-1.57)	127	0.08 (0.07-0.09)	314	0.19 (0.02-0.22)	12443	7.69 (7.56-7.83)
Zone								
1 (urban)	4890	1.71 (1.66-1.76)	208	0.07 (0.06-0.08)	1308	0.46 (0.43-0.48)	81950	28.63 (28.44-28.83)
2 (urban)	7961	2.23 (2.18-2.28)	1440	0.40 (0.38-0.42)	2971	0.83 (0.80-0.86)	67659	18.95 (18.80-19.09)
3 (rural)	2257	1.55 (1.49-1.62)	66	0.05 (0.04-0.06)	161	0.11 (0.09-0.13)	14047	9.66 (9.51-9.83)
4 (rural)	1950	1.25 (1.19-1.31)	73	0.05 (0.04-0.06)	238	0.15 (0.13-0.17)	11239	7.20 (7.07-7.33)
5 (rural)	1911	1.98 (1.89-2.07)	57	0.06 (0.04-0.08)	22	0.02 (0.01-0.03)	7167	7.42 (7.26-7.59)

Appendix 1, as supplied by the authors. Appendix to: Zare-Zadeh S, Manns BJ, Chew DS. Low-value preoperative cardiac testing before low-risk surgical procedures: a population-based cohort study. *CMAJ Open* 2023. DOI:10.9778/cmajo.20220049. Copyright © 2023 The Author(s) or their employer(s). To receive this resource in an accessible format, please contact us at cmajgroup.cmaj.ca.

Supplemental Table S4: Association of preoperative cardiac testing with characteristics at the patient and temporal level.

	Preoperative test; adjusted RR* (95% CI)		
	Overall	ECG	Advanced Test
Sex			
Female	1.07 (1.06-1.08)	1.05 (1.04-1.06)	1.17 (1.13-1.20)
Age			
<40 (reference)	1.00	1.00	1.00
40-64	4.02 (3.95-4.09)	4.17 (4.09-4.24)	3.15 (3.02-3.29)
≥65	6.47 (6.35-6.59)	6.58 (6.45-6.70)	5.90 (5.64-6.17)
Zone			
1 (reference)	1.00	1.00	1.00
2	0.73 (0.72-0.74)	0.66 (0.66 -0.67)	1.57 (1.51-1.62)
3	0.38 (0.38-0.39)	0.35 (0.34-0.36)	0.80 (0.76-0.84)
4	0.33 (0.33-0.34)	0.30 (0.29-0.31)	0.78 (0.74-0.82)
5	0.33 (0.32-0.34)	0.28(0.27-0.28)	0.98 (0.93-1.04) *
Year			
2012 (reference)	1.00	1.00	1.00
2013	0.97 (0.95-1.00)	0.96 (0.95-0.99)	1.05 (0.99-1.12) *
2014	0.97 (0.95-0.99)	0.94 (0.93-0.97)	1.20 (1.14-1.28)
2015	0.98 (0.97-1.00) *	0.96 (0.94-0.98)	1.24 (1.17-1.31)
2016	1.00 (0.98-1.02) *	0.97 (0.95-1.00)	1.23 (1.16-1.30)
2017	0.95 (0.94-0.98)	0.92 (0.90-0.94)	1.29 (1.22-1.37)
2018	0.82 (0.80-0.84)	0.78 (0.76-0.80)	1.18 (1.11-1.25)
2019	0.79 (0.78-0.81)	0.73 (0.72-0.76)	1.31 (1.24-1.39)