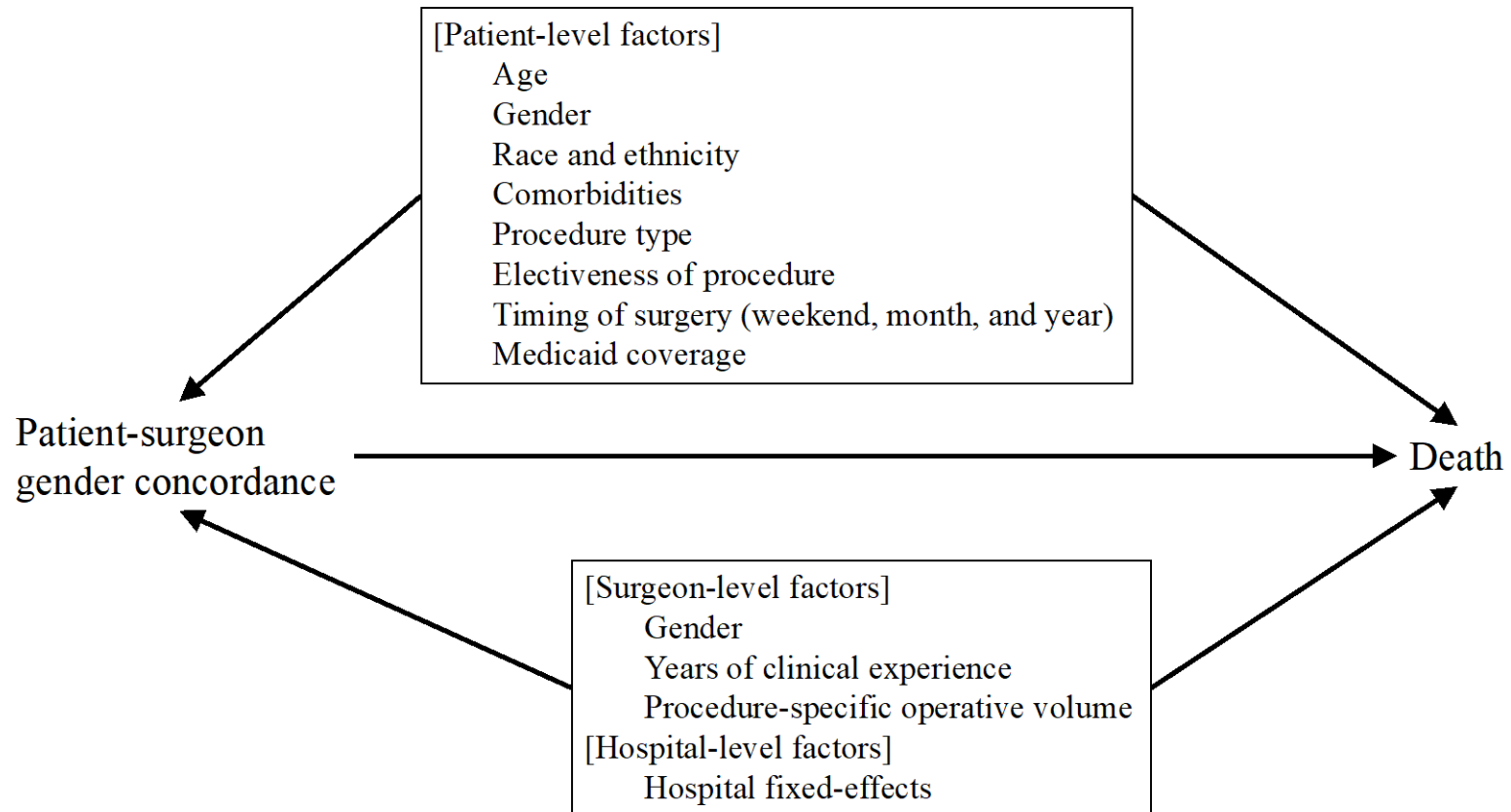


Online Supplement

Association between patient-surgeon gender concordance and post-operative mortality  
in the United States: observational study

eFigure 1. A direct acyclic graph for the association between patient-surgeon gender concordance and post-operative mortality



**eTable 1. Association between patient-surgeon gender concordance and patient adjusted 30-day mortality rates (elective and non-elective procedures combined)**

		No. of patients (No. of surgeons)	Adjusted mortality rate, % (95%CI)	Adjusted risk difference, pp (95%CI)	P-value
14 procedures (combined)	Female patient-female surgeon (concordant)	86,133 (8,556)	1.3 (1.2 to 1.5)	-0.2 (-0.3 to -0.03)	0.016
	Female patient-male surgeon (discordant)	1,561,967 (44,295)	1.5 (1.5 to 1.5)	Reference	
	Male patient-male surgeon (concordant)	1,201,712 (43,723)	2.0 (2.0 to 2.0)	+0.3 (+0.1 to +0.4)	0.0010
	Male patient-female surgeon (discordant)	52,944 (5,371)	1.7 (1.6 to 1.9)	Reference	
Knee replacement	Female patient-female surgeon (concordant)	8,775 (375)	0.2 (0.1 to 0.3)	+0.03 (-0.1 to +0.1)	0.66
	Female patient-male surgeon (discordant)	541,786 (10,639)	0.2 (0.1 to 0.2)	Reference	
	Male patient-male surgeon (concordant)	313,120 (10,202)	0.3 (0.2 to 0.3)	+0.1 (-0.03 to +0.3)	0.12
	Male patient-female surgeon (discordant)	4,487 (334)	0.1 (-0.04 to 0.3)	Reference	
Hip replacement	Female patient-female surgeon (concordant)	10,421 (792)	1.8 (1.4 to 2.2)	+0.2 (-0.2 to +0.6)	0.33

	Female patient-male surgeon (discordant)	457,472 (14,164)	1.6 (1.6 to 1.7)	Reference	
	Male patient-male surgeon (concordant)	255,394 (12,932)	2.3 (2.2 to 2.4)	+0.3 (-0.4 to +0.9)	0.39
	Male patient-female surgeon (discordant)	5,048 (661)	2.0 (1.4 to 2.6)	Reference	
Laminectomy or Spinal Fusion	Female patient-female surgeon (concordant)	5,417 (354)	0.4 (0.2 to 0.7)	-0.1 (-0.3 to +0.2)	0.59
	Female patient-male surgeon (discordant)	215,993 (6,486)	0.5 (0.5 to 0.5)	Reference	
	Male patient-male surgeon (concordant)	184,234 (6,602)	1.0 (1.0 to 1.1)	-0.19 (-0.63 to +0.24)	0.38
	Male patient-female surgeon (discordant)	4,633 (377)	1.2 (0.8 to 1.7)	Reference	
Colectomy	Female patient-female surgeon (concordant)	20,956 (3,400)	5.1 (4.8 to 5.5)	-0.6 (-0.9 to -0.2)	0.0058
	Female patient-male surgeon (discordant)	117,629 (13,956)	5.7 (5.5 to 5.8)	Reference	
	Male patient-male surgeon (concordant)	83,210 (12,908)	6.6 (6.4 to 6.7)	+0.5 (-0.1 to +1.0)	0.11

	Male patient-female surgeon (discordant)	11,695 (2,525)	6.1 (5.6 to 6.6)	Reference	
Cholecystectomy	Female patient-female surgeon (concordant)	11,213 (2,721)	2.2 (1.9 to 2.5)	-0.2 (-0.6 to +0.1)	0.19
	Female patient-male surgeon (discordant)	73,588 (12,189)	2.5 (2.3 to 2.6)	Reference	
	Male patient-male surgeon (concordant)	76,041 (12,029)	2.6 (2.5 to 2.7)	+0.6 (+0.2 to +0.9)	0.0011
	Male patient-female surgeon (discordant)	11,159 (2,557)	2.1 (1.8 to 2.4)	Reference	
Coronary artery bypass surgery	Female patient-female surgeon (concordant)	1,341 (145)	4.0 (2.6 to 5.4)	-0.86 (-2.34 to +0.63)	0.26
	Female patient-male surgeon (discordant)	39,956 (2,426)	4.9 (4.6 to 5.1)	Reference	
	Male patient-male surgeon (concordant)	114,158 (2,790)	2.7 (2.6 to 2.8)	+0.1 (-0.6 to +0.7)	0.82
	Male patient-female surgeon (discordant)	3,954 (183)	2.6 (2.0 to 3.3)	Reference	
Lung resection	Female patient-female surgeon (concordant)	3,783 (246)	1.3 (0.9 to 1.8)	-0.2 (-0.7 to +0.3)	0.42

	Female patient-male surgeon (discordant)	41,188 (2,551)	1.6 (1.4 to 1.7)	Reference	
	Male patient-male surgeon (concordant)	36,870 (2,715)	2.7 (2.6 to 2.9)	-0.1 (-0.8 to +0.6)	0.78
	Male patient-female surgeon (discordant)	3,020 (243)	2.8 (2.1 to 3.5)	Reference	
Abdominal aortic aneurysm repair	Female patient-female surgeon (concordant)	950 (356)	7.2 (5.1 to 9.4)	-0.2 (-2.5 to +2.1)	0.85
	Female patient-male surgeon (discordant)	15,025 (3,251)	7.5 (7.0 to 7.9)	Reference	
	Male patient-male surgeon (concordant)	45,897 (4,009)	4.4 (4.2 to 4.6)	-0.2 (-1.2 to +0.9)	0.76
	Male patient-female surgeon (discordant)	2,970 (455)	4.5 (3.6 to 5.5)	Reference	
Appendectomy	Female patient-female surgeon (concordant)	5,126 (2,209)	2.2 (1.8 to 2.6)	+0.3 (-0.2 to +0.8)	0.24
	Female patient-male surgeon (discordant)	24,216 (9,195)	1.9 (1.7 to 2.1)	Reference	
	Male patient-male surgeon (concordant)	19,384 (8,466)	2.8 (2.6 to 3.1)	+0.1 (-0.7 to +0.9)	0.84

	Male patient-female surgeon (discordant)	3,161 (1,633)	2.8 (2.1 to 3.5)	Reference	
Cystectomy	Female patient-female surgeon (concordant)	306 (133)	1.0 (-0.6 to 2.6)	-1.8 (-3.6 to +0.1)	0.058
	Female patient-male surgeon (discordant)	2,994 (1,133)	2.8 (2.2 to 3.3)	Reference	
	Male patient-male surgeon (concordant)	10,324 (1,945)	3.1 (2.7 to 3.4)	+0.3 (-1.3 to +1.9)	0.71
	Male patient-female surgeon (discordant)	612 (127)	2.8 (1.3 to 4.3)	Reference	
Thyroidectomy	Female patient-female surgeon (concordant)	410 (250)	0.3 (-0.5 to 1.1)	-0.3 (-1.3 to +0.6)	0.47
	Female patient-male surgeon (discordant)	2,198 (1,258)	0.6 (0.3 to 0.9)	Reference	
	Male patient-male surgeon (concordant)	1,398 (886)	1.5 (0.8 to 2.2)	+0.03 (-2.4 to +2.4)	0.98
	Male patient-female surgeon (discordant)	246 (150)	1.5 (-0.7 to 3.7)	Reference	
Liver resection	Female patient-female surgeon (concordant)	80 (58)	5.9 (-1.2 to 13.0)	+1.5 (-6.1 to +9.1)	0.69

	Female patient-male surgeon (discordant)	897 (464)	4.4 (3.1 to 5.7)	Reference	
	Male patient-male surgeon (concordant)	1,156 (522)	5.9 (4.7 to 7.2)	+4.1 (-0.6 to +8.8)	0.089
	Male patient-female surgeon (discordant)	121 (62)	1.9 (-2.4 to 6.1)	Reference	
Prostatectomy	Female patient-female surgeon (concordant)	N/A	N/A	N/A	N/A
	Female patient-male surgeon (discordant)	N/A	N/A	Reference	
	Male patient-male surgeon (concordant)	60,526 (5,479)	0.9 (0.8 to 1.0)	+0.2 (-0.4 to +0.9)	0.45
	Male patient-female surgeon (discordant)	1,838 (365)	0.7 (0.1 to 1.3)	Reference	
Hysterectomy	Female patient-female surgeon (concordant)	17,355 (3,533)	0.9 (0.7 to 1.1)	-0.1 (-0.4 to +0.1)	0.25
	Female patient-male surgeon (discordant)	29,025 (5,372)	1.0 (0.9 to 1.2)	Reference	
	Male patient-male surgeon (concordant)	N/A	N/A	N/A	N/A

	Male patient- female surgeon (discordant)	N/A	N/A	Reference
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Adjusted for patient characteristics (age, race and ethnicity, 27 chronic conditions, procedure type [for the analysis pooling the 14 procedure types], procedure electiveness, weekend versus weekday, month and year of surgery, and Medicaid coverage), surgeon characteristics (years of experience and operative volume), and hospital fixed effects (indicator variables for each hospital, effectively comparing patients treated at the same hospital).

Abbreviation: pp = percentage point.



**eTable 2. Association between patient-surgeon gender concordance and adjusted 30-day readmission rates (elective and non-elective procedures combined)**

		No. of patients (No. of surgeons)	Adjusted readmission rate, % (95%CI)	Adjusted risk difference, pp (95%CI)	P-value
14 procedures (combined)	Female patient- female surgeon (concordant)	85,951 (8,550)	5.8 (5.6 to 6.0)	-0.4 (-0.6 to -0.2)	0.0007
	Female patient- male surgeon (discordant)	1,559,937 (44,258)	6.2 (6.1 to 6.2)	Reference	
	Male patient- male surgeon (concordant)	1,199,732 (43,689)	7.4 (7.3 to 7.4)	-0.1 (-0.4 to +0.2)	0.49
	Male patient- female surgeon (discordant)	52,797 (5,364)	7.5 (7.2 to 7.7)	Reference	
Knee replacement	Female patient- female surgeon (concordant)	8,775 (375)	3.4 (2.9 to 3.9)	-0.1 (-0.6 to +0.4)	0.70
	Female patient- male surgeon (discordant)	541,655 (10,636)	3.5 (3.5 to 3.6)	Reference	
	Male patient- male surgeon (concordant)	313,027 (10,200)	4.5 (4.5 to 4.6)	+0.02 (-0.8 to +0.8)	0.97
	Male patient- female surgeon (discordant)	4,487 (334)	4.5 (3.8 to 5.3)	Reference	
Hip replacement	Female patient- female surgeon (concordant)	10,404 (791)	5.8 (5.3 to 6.4)	-0.5 (-1.0 to +0.1)	0.13

	Female patient-male surgeon (discordant)	456,823 (14,155)	6.3 (6.2 to 6.3)	Reference	
	Male patient-male surgeon (concordant)	255,103 (12,925)	6.7 (6.6 to 6.8)	-0.5 (-1.4 to +0.5)	0.31
	Male patient-female surgeon (discordant)	5,038 (661)	7.2 (6.3 to 8.1)	Reference	
Laminectomy or Spinal Fusion	Female patient-female surgeon (concordant)	5,396 (353)	6.5 (5.8 to 7.3)	-0.1 (-0.9 to +0.7)	0.78
	Female patient-male surgeon (discordant)	215,670 (6,484)	6.6 (6.5 to 6.8)	Reference	
	Male patient-male surgeon (concordant)	183,895 (6,595)	7.1 (7.0 to 7.3)	-0.6 (-1.5 to +0.3)	0.18
	Male patient-female surgeon (discordant)	4,619 (375)	7.8 (6.9 to 8.7)	Reference	
Colectomy	Female patient-female surgeon (concordant)	20,893 (3,393)	10.1 (9.6 to 10.6)	+0.1 (-0.4 to +0.7)	0.66
	Female patient-male surgeon (discordant)	117,260 (13,923)	10.0 (9.8 to 10.2)	Reference	
	Male patient-male surgeon (concordant)	82,924 (12,874)	11.0 (10.8 to 11.2)	+0.3 (-0.5 to +1.0)	0.45

	Male patient-female surgeon (discordant)	11,644 (2,516)	10.7 (10.1 to 11.4)	Reference	
Cholecystectomy	Female patient-female surgeon (concordant)	11,185 (2,721)	9.6 (9.0 to 10.2)	+0.4 (-0.3 to +1.1)	0.25
	Female patient-male surgeon (discordant)	73,443 (12,185)	9.2 (9.0 to 9.4)	Reference	
	Male patient-male surgeon (concordant)	75,837 (12,011)	9.9 (9.6 to 10.1)	+0.3 (-0.4 to +1.0)	0.35
	Male patient-female surgeon (discordant)	11,129 (2,557)	9.5 (8.9 to 10.2)	Reference	
Coronary artery bypass surgery	Female patient-female surgeon (concordant)	1,327 (144)	9.6 (7.5 to 11.6)	-1.3 (-3.4 to +0.8)	0.23
	Female patient-male surgeon (discordant)	39,753 (2,423)	10.9 (10.6 to 11.2)	Reference	
	Male patient-male surgeon (concordant)	113,709 (2,783)	9.0 (8.8 to 9.2)	+1.2 (+0.1 to +2.3)	0.036
	Male patient-female surgeon (discordant)	3,940 (183)	7.8 (6.7 to 8.9)	Reference	
Lung resection	Female patient-female surgeon (concordant)	3,776 (246)	6.2 (5.0 to 7.3)	-1.2 (-2.4 to +0.01)	0.053

	Female patient-male surgeon (discordant)	41,125 (2,548)	7.3 (7.1 to 7.6)	Reference	
	Male patient-male surgeon (concordant)	36,779 (2,712)	8.9 (8.6 to 9.2)	+1.1 (-0.4 to +2.6)	0.14
	Male patient-female surgeon (discordant)	3,014 (243)	7.8 (6.4 to 9.2)	Reference	
Abdominal aortic aneurysm repair	Female patient-female surgeon (concordant)	947 (355)	9.3 (7.0 to 11.6)	-1.5 (-3.9 to +0.8)	0.20
	Female patient-male surgeon (discordant)	14,993 (3,248)	10.8 (10.3 to 11.3)	Reference	
	Male patient-male surgeon (concordant)	45,834 (4,005)	8.3 (8.0 to 8.5)	-0.7 (-1.9 to +0.6)	0.29
	Male patient-female surgeon (discordant)	2,962 (452)	9.0 (7.8 to 10.2)	Reference	
Appendectomy	Female patient-female surgeon (concordant)	5,111 (2,203)	8.1 (7.2 to 9.1)	-0.6 (-1.6 to +0.5)	0.30
	Female patient-male surgeon (discordant)	24,149 (9,179)	8.7 (8.3 to 9.1)	Reference	
	Male patient-male surgeon (concordant)	19,320 (8,456)	9.0 (8.6 to 9.4)	-0.2 (-1.6 to +1.1)	0.75

	Male patient-female surgeon (discordant)	3,151 (1,630)	9.2 (8.0 to 10.4)	Reference	
Cystectomy	Female patient-female surgeon (concordant)	306 (133)	17.8 (11.4 to 24.1)	-6.6 (-13.5 to +0.2)	0.058
	Female patient-male surgeon (discordant)	2,982 (1,130)	24.4 (22.8 to 26.0)	Reference	
	Male patient-male surgeon (concordant)	10,288 (1,943)	23.4 (22.6 to 24.2)	+0.5 (-4.2 to +5.2)	0.84
	Male patient-female surgeon (discordant)	611 (126)	22.9 (18.5 to 27.4)	Reference	
Thyroidectomy	Female patient-female surgeon (concordant)	410 (250)	5.3 (1.8 to 8.8)	-1.0 (-5.1 to +3.1)	0.63
	Female patient-male surgeon (discordant)	2,197 (1,257)	6.3 (5.2 to 7.4)	Reference	
	Male patient-male surgeon (concordant)	1,393 (882)	9.4 (7.6 to 11.2)	-3.1 (-10.4 to +4.1)	0.40
	Male patient-female surgeon (discordant)	246 (150)	12.5 (6.1 to 18.9)	Reference	
Liver resection	Female patient-female surgeon (concordant)	80 (58)	21.8 (9.0 to 34.6)	+9.3 (-4.3 to +22.9)	0.18

	Female patient-male surgeon (discordant)	894 (462)	12.5 (10.1 to 14.9)	Reference	
	Male patient-male surgeon (concordant)	1,150 (518)	14.2 (12.0 to 16.3)	-15.8 (-26.2 to -5.4)	0.0029
	Male patient-female surgeon (discordant)	121 (62)	29.9 (20.2 to 39.7)	Reference	
Prostatectomy	Female patient-female surgeon (concordant)	N/A	N/A	N/A	N/A
	Female patient-male surgeon (discordant)	N/A	N/A	Reference	
	Male patient-male surgeon (concordant)	60,473 (5,478)	8.4 (8.2 to 8.7)	-2.4 (-4.3 to -0.4)	0.016
	Male patient-female surgeon (discordant)	1,835 (363)	10.8 (8.9 to 12.7)	Reference	
Hysterectomy	Female patient-female surgeon (concordant)	17,341 (3,528)	6.4 (6.0 to 6.9)	-1.8 (-2.4 to -1.1)	<0.0001
	Female patient-male surgeon (discordant)	28,993 (5,368)	8.2 (7.8 to 8.5)	Reference	
	Male patient-male surgeon (concordant)	N/A	N/A	N/A	N/A

	Male patient- female surgeon (discordant)	N/A	N/A	Reference
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Adjusted for patient characteristics (age, race and ethnicity, 27 chronic conditions, procedure type [for the analysis pooling the 14 procedure types], procedure electiveness, weekend versus weekday, month and year of surgery, and Medicaid coverage), surgeon characteristics (years of experience and operative volume), and hospital fixed effects (indicator variables for each hospital, effectively comparing patients treated at the same hospital).

Abbreviation: pp = percentage point.

**eTable 3. Association between patient-surgeon gender concordance and adjusted length-of-stay (LOS) (elective and non-elective procedures combined)**

		No. of patients (No. of surgeons)	Adjusted LOS, d (95%CI)	Adjusted risk difference, (95%CI)	P-value
14 procedures (combined)	Female patient- female surgeon (concordant)	87,620 (8,633)	3.9 (3.9 to 4.0)	-0.2 (-0.2 to -0.1)	<0.0001
	Female patient- male surgeon (discordant)	1,585,297 (44,455)	4.1 (4.1 to 4.1)	Reference	
	Male patient- male surgeon (concordant)	1,221,972 (43,890)	4.5 (4.5 to 4.5)	+0.1 (+0.01 to +0.1)	0.029
	Male patient- female surgeon (discordant)	53,900 (5,408)	4.5 (4.4 to 4.5)	Reference	
Knee replacement	Female patient- female surgeon (concordant)	8,894 (379)	2.6 (2.6 to 2.7)	-0.01 (-0.1 to +0.04)	0.64
	Female patient- male surgeon (discordant)	548,165 (10,676)	2.6 (2.6 to 2.6)	Reference	
	Male patient- male surgeon (concordant)	317,905 (10,245)	2.4 (2.4 to 2.4)	-0.01 (-0.1 to +0.1)	0.74
	Male patient- female surgeon (discordant)	4,549 (334)	2.5 (2.4 to 2.5)	Reference	
Hip replacement	Female patient- female surgeon (concordant)	10,665 (801)	3.7 (3.7 to 3.8)	+0.1 (-0.02 to +0.1)	0.16



	Female patient-male surgeon (discordant)	465,807 (14,219)	3.7 (3.7 to 3.7)	Reference	
	Male patient-male surgeon (concordant)	260,632 (12,989)	3.4 (3.4 to 3.4)	-0.1 (-0.2 to +0.1)	0.45
	Male patient-female surgeon (discordant)	5,160 (666)	3.4 (3.3 to 3.6)	Reference	
Laminectomy or Spinal Fusion	Female patient-female surgeon (concordant)	5,520 (358)	4.6 (4.4 to 4.7)	+0.1 (-0.1 to +0.3)	0.18
	Female patient-male surgeon (discordant)	219,410 (6,509)	4.5 (4.5 to 4.5)	Reference	
	Male patient-male surgeon (concordant)	187,517 (6,631)	4.6 (4.5 to 4.6)	-0.3 (-0.5 to -0.1)	0.017
	Male patient-female surgeon (discordant)	4,731 (383)	4.8 (4.6 to 5.0)	Reference	
Colectomy	Female patient-female surgeon (concordant)	21,284 (3,427)	7.2 (7.1 to 7.3)	-0.3 (-0.4 to -0.1)	0.0001
	Female patient-male surgeon (discordant)	119,267 (14,016)	7.4 (7.4 to 7.5)	Reference	
	Male patient-male surgeon (concordant)	84,476 (12,963)	7.9 (7.9 to 8.0)	+0.2 (-0.003 to +0.4)	0.054

	Male patient-female surgeon (discordant)	11,891 (2,549)	7.7 (7.6 to 7.9)	Reference	
Cholecystectomy	Female patient-female surgeon (concordant)	11,420 (2,754)	5.1 (5.0 to 5.2)	-0.1 (-0.2 to +0.03)	0.15
	Female patient-male surgeon (discordant)	74,898 (12,265)	5.2 (5.1 to 5.2)	Reference	
	Male patient-male surgeon (concordant)	77,351 (12,085)	5.6 (5.6 to 5.7)	+0.1 (-0.1 to +0.2)	0.25
	Male patient-female surgeon (discordant)	11,370 (2,572)	5.5 (5.4 to 5.7)	Reference	
Coronary artery bypass surgery	Female patient-female surgeon (concordant)	1,363 (146)	9.8 (9.3 to 10.2)	-0.2 (-0.7 to +0.3)	0.36
	Female patient-male surgeon (discordant)	40,494 (2,436)	10.0 (9.9 to 10.1)	Reference	
	Male patient-male surgeon (concordant)	115,980 (2,796)	8.9 (8.8 to 8.9)	+0.1 (-0.2 to +0.3)	0.68
	Male patient-female surgeon (discordant)	4,024 (184)	8.8 (8.6 to 9.1)	Reference	
Lung resection	Female patient-female surgeon (concordant)	3,850 (247)	4.9 (4.7 to 5.1)	-0.3 (-0.5 to -0.1)	0.0064

	Female patient-male surgeon (discordant)	41,820 (2,561)	5.2 (5.1 to 5.2)	Reference	
	Male patient-male surgeon (concordant)	37,449 (2,738)	6.0 (6.0 to 6.1)	+0.1 (-0.3 to +0.4)	0.76
	Male patient-female surgeon (discordant)	3,072 (246)	6.0 (5.6 to 6.3)	Reference	
Abdominal aortic aneurysm repair	Female patient-female surgeon (concordant)	970 (364)	5.0 (4.3 to 5.7)	-0.4 (-1.1 to +0.3)	0.26
	Female patient-male surgeon (discordant)	15,247 (3,258)	5.4 (5.3 to 5.5)	Reference	
	Male patient-male surgeon (concordant)	46,719 (4,026)	3.9 (3.8 to 3.9)	+0.3 (-0.02 to +0.6)	0.069
	Male patient-female surgeon (discordant)	3,036 (461)	3.6 (3.3 to 3.9)	Reference	
Appendectomy	Female patient-female surgeon (concordant)	5,222 (2,237)	5.4 (5.3 to 5.6)	+0.02 (-0.2 to +0.2)	0.83
	Female patient-male surgeon (discordant)	24,600 (9,277)	5.4 (5.3 to 5.5)	Reference	
	Male patient-male surgeon (concordant)	19,685 (8,530)	6.0 (5.9 to 6.1)	+0.03 (-0.3 to +0.3)	0.85

	Male patient-female surgeon (discordant)	3,222 (1,657)	6.0 (5.7 to 6.2)	Reference	
Cystectomy	Female patient-female surgeon (concordant)	312 (136)	9.0 (7.9 to 10.1)	-0.4 (-1.6 to +0.9)	0.55
	Female patient-male surgeon (discordant)	3,015 (1,135)	9.4 (9.1 to 9.7)	Reference	
	Male patient-male surgeon (concordant)	10,455 (1,958)	8.8 (8.6 to 8.9)	-0.1 (-0.8 to +0.6)	0.76
	Male patient-female surgeon (discordant)	612 (127)	8.9 (8.2 to 9.6)	Reference	
Thyroidectomy	Female patient-female surgeon (concordant)	419 (252)	2.4 (1.7 to 3.1)	-0.6 (-1.5 to +0.2)	0.13
	Female patient-male surgeon (discordant)	2,240 (1,272)	3.1 (2.8 to 3.3)	Reference	
	Male patient-male surgeon (concordant)	1,417 (899)	4.4 (4.0 to 4.8)	+1.2 (-0.1 to +2.5)	0.080
	Male patient-female surgeon (discordant)	248 (149)	3.2 (2.1 to 4.4)	Reference	
Liver resection	Female patient-female surgeon (concordant)	80 (58)	7.9 (5.7 to 10.2)	-0.8 (-3.2 to +1.6)	0.50

	Female patient-male surgeon (discordant)	905 (468)	8.8 (8.2 to 9.3)	Reference	
	Male patient-male surgeon (concordant)	1,176 (529)	9.6 (9.1 to 10.2)	+1.8 (-0.7 to +4.3)	0.15
	Male patient-female surgeon (discordant)	123 (63)	7.8 (5.6 to 10.0)	Reference	
Prostatectomy	Female patient-female surgeon (concordant)	N/A	N/A	N/A	N/A
	Female patient-male surgeon (discordant)	N/A	N/A	Reference	
	Male patient-male surgeon (concordant)	61,210 (5,507)	3.2 (3.2 to 3.2)	-0.5 (-0.8 to -0.2)	0.0003
	Male patient-female surgeon (discordant)	1,862 (368)	3.7 (3.4 to 4.0)	Reference	
Hysterectomy	Female patient-female surgeon (concordant)	17,621 (3,572)	3.3 (3.3 to 3.4)	-0.8 (-0.9 to -0.7)	<0.0001
	Female patient-male surgeon (discordant)	29,429 (5,402)	4.2 (4.1 to 4.2)	Reference	
	Male patient-male surgeon (concordant)	N/A	N/A	N/A	N/A

	Male patient- female surgeon (discordant)	N/A	N/A	Reference
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Adjusted for patient characteristics (age, race and ethnicity, 27 chronic conditions, procedure type [for the analysis pooling the 14 procedure types], procedure electiveness, weekend versus weekday, month and year of surgery, and Medicaid coverage), surgeon characteristics (years of experience and operative volume), and hospital fixed effects (indicator variables for each hospital, effectively comparing patients treated at the same hospital).

Abbreviation: pp = percentage point.

**eTable 4 Association between patient-surgeon gender concordance and adjusted 30-day complication rates (elective and non-elective procedures combined)**

		No. of patients (No. of surgeons)	Adjusted complication rate, % (95%CI)	Adjusted risk difference, pp (95%CI)	P-value
14 procedures (combined)	Female patient- female surgeon (concordant)	85,951 (8,550)	7.4 (7.1 to 7.6)	-0.5 (-0.7 to -0.2)	0.0001
	Female patient- male surgeon (discordant)	1,559,937 (44,258)	7.8 (7.8 to 7.9)	Reference	
	Male patient- male surgeon (concordant)	1,199,732 (43,689)	11.1 (11.0 to 11.1)	+0.2 (-0.1 to +0.5)	0.22
	Male patient- female surgeon (discordant)	52,797 (5,364)	10.9 (10.6 to 11.2)	Reference	
Knee replacement	Female patient- female surgeon (concordant)	8,775 (375)	4.0 (3.5 to 4.5)	-0.1 (-0.7 to +0.4)	0.63
	Female patient- male surgeon (discordant)	541,655 (10,636)	4.2 (4.1 to 4.2)	Reference	
	Male patient- male surgeon (concordant)	313,027 (10,200)	5.7 (5.6 to 5.8)	+0.3 (-0.6 to +1.1)	0.54
	Male patient- female surgeon (discordant)	4,487 (334)	5.4 (4.6 to 6.2)	Reference	
Hip replacement	Female patient- female surgeon (concordant)	10,404 (791)	5.6 (5.0 to 6.1)	-0.1 (-0.7 to +0.4)	0.64

	Female patient-male surgeon (discordant)	456,823 (14,155)	5.7 (5.6 to 5.8)		
	Male patient-male surgeon (concordant)	255,103 (12,925)	7.5 (7.4 to 7.6)	+0.1 (-0.9 to +1.1)	0.84
	Male patient-female surgeon (discordant)	5,038 (661)	7.4 (6.4 to 8.3)	Reference	
Laminectomy or Spinal Fusion	Female patient-female surgeon (concordant)	5,396 (353)	7.7 (6.8 to 8.5)	+0.05 (-0.8 to +0.9)	0.91
	Female patient-male surgeon (discordant)	215,670 (6,484)	7.6 (7.5 to 7.7)	Reference	
	Male patient-male surgeon (concordant)	183,895 (6,595)	9.4 (9.3 to 9.5)	-0.7 (-1.7 to +0.4)	0.21
	Male patient-female surgeon (discordant)	4,619 (375)	10.1 (9.1 to 11.1)	Reference	
Colectomy	Female patient-female surgeon (concordant)	20,893 (3,393)	17.7 (17.1 to 18.3)	-0.5 (-1.2 to +0.2)	0.16
	Female patient-male surgeon (discordant)	117,260 (13,923)	18.2 (18.0 to 18.4)	Reference	
	Male patient-male surgeon (concordant)	82,924 (12,874)	21.8 (21.5 to 22.1)	+0.7 (-0.2 to +1.7)	0.14



	Male patient-female surgeon (discordant)	11,644 (2,516)	21.1 (20.2 to 22.0)	Reference	
Cholecystectomy	Female patient-female surgeon (concordant)	11,185 (2,721)	10.7 (10.1 to 11.4)	+0.1 (-0.6 to +0.8)	0.83
	Female patient-male surgeon (discordant)	73,443 (12,185)	10.7 (10.4 to 10.9)	Reference	
	Male patient-male surgeon (concordant)	75,837 (12,011)	13.2 (13.0 to 13.4)	+0.2 (-0.5 to +1.0)	0.54
	Male patient-female surgeon (discordant)	11,129 (2,557)	13.0 (12.3 to 13.7)	Reference	
Coronary artery bypass surgery	Female patient-female surgeon (concordant)	1,327 (144)	17.4 (14.7 to 20.1)	-2.9 (-5.6 to -0.1)	0.042
	Female patient-male surgeon (discordant)	39,753 (2,423)	20.3 (19.9 to 20.6)	Reference	
	Male patient-male surgeon (concordant)	113,709 (2,783)	18.2 (17.9 to 18.4)	+1.6 (+0.04 to +3.1)	0.044
	Male patient-female surgeon (discordant)	3,940 (183)	16.6 (15.1 to 18.1)	Reference	
Lung resection	Female patient-female surgeon (concordant)	3,776 (246)	9.4 (8.2 to 10.7)	-1.2 (-2.5 to +0.2)	0.089

	Female patient-male surgeon (discordant)	41,125 (2,548)	10.6 (10.3 to 10.9)	Reference	
	Male patient-male surgeon (concordant)	36,779 (2,712)	15.4 (15.0 to 15.8)	+2.8 (+1.0 to +4.5)	0.0017
	Male patient-female surgeon (discordant)	3,014 (243)	12.6 (11.0 to 14.3)	Reference	
Abdominal aortic aneurysm repair	Female patient-female surgeon (concordant)	947 (355)	19.8 (16.5 to 23.0)	-2.1 (-5.5 to +1.3)	0.23
	Female patient-male surgeon (discordant)	14,993 (3,248)	21.9 (21.2 to 22.5)	Reference	
	Male patient-male surgeon (concordant)	45,834 (4,005)	15.7 (15.4 to 16.0)	+0.1 (-1.6 to +1.8)	0.92
	Male patient-female surgeon (discordant)	2,962 (452)	15.6 (14.0 to 17.3)	Reference	
Appendectomy	Female patient-female surgeon (concordant)	5,111 (2,203)	16.4 (15.2 to 17.6)	+0.5 (-0.8 to +1.9)	0.45
	Female patient-male surgeon (discordant)	24,149 (9,179)	15.9 (15.4 to 16.3)	Reference	
	Male patient-male surgeon (concordant)	19,320 (8,456)	20.6 (20.0 to 21.2)	-0.3 (-2.2 to +1.6)	0.77

	Male patient-female surgeon (discordant)	3,151 (1,630)	20.9 (19.2 to 22.6)	Reference	
Cystectomy	Female patient-female surgeon (concordant)	306 (133)	25.4 (18.1 to 32.7)	-5.7 (-13.5 to +2.2)	0.16
	Female patient-male surgeon (discordant)	2,982 (1,130)	31.0 (29.3 to 32.7)	Reference	
	Male patient-male surgeon (concordant)	10,288 (1,943)	34.3 (33.4 to 35.2)	-1.9 (-7.2 to +3.4)	0.48
	Male patient-female surgeon (discordant)	611 (126)	36.2 (31.1 to 41.2)	Reference	
Thyroidectomy	Female patient-female surgeon (concordant)	410 (250)	10.6 (5.6 to 15.6)	-1.5 (-7.3 to +4.4)	0.62
	Female patient-male surgeon (discordant)	2,197 (1,257)	12.1 (10.6 to 13.6)	Reference	
	Male patient-male surgeon (concordant)	1,393 (882)	15.8 (13.7 to 18.0)	-2.3 (-10.6 to +6.0)	0.59
	Male patient-female surgeon (discordant)	246 (150)	18.1 (10.9 to 25.4)	Reference	
Liver resection	Female patient-female surgeon (concordant)	80 (58)	25.5 (12.2 to 38.8)	+3.5 (-10.7 to +17.8)	0.63

	Female patient-male surgeon (discordant)	894 (462)	22.0 (19.2 to 24.8)		
	Male patient-male surgeon (concordant)	1,150 (518)	29.7 (26.8 to 32.5)	-5.1 (-18.8 to +8.7)	0.47
	Male patient-female surgeon (discordant)	121 (62)	34.7 (22.0 to 47.4)	Reference	
Prostatectomy	Female patient-female surgeon (concordant)	N/A	N/A	N/A	N/A
	Female patient-male surgeon (discordant)	N/A	N/A	Reference	
	Male patient-male surgeon (concordant)	60,473 (5,478)	11.6 (11.3 to 11.8)	-3.3 (-5.6 to -1.1)	0.0033
	Male patient-female surgeon (discordant)	1,835 (363)	14.9 (12.7 to 17.1)		
Hysterectomy	Female patient-female surgeon (concordant)	17,341 (3,528)	10.2 (9.6 to 10.7)	-2.4 (-3.2 to -1.6)	<0.0001
	Female patient-male surgeon (discordant)	28,993 (5,368)	12.6 (12.1 to 13.0)	Reference	
	Male patient-male surgeon (concordant)	N/A	N/A	N/A	N/A

	Male patient- female surgeon (discordant)	N/A	N/A	Reference
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Adjusted for patient characteristics (age, race and ethnicity, 27 chronic conditions, procedure type [for the analysis pooling the 14 procedure types], procedure electiveness, weekend versus weekday, month and year of surgery, and Medicaid coverage), surgeon characteristics (years of experience and operative volume), and hospital fixed effects (indicator variables for each hospital, effectively comparing patients treated at the same hospital).

Abbreviation: pp = percentage point.

**eTable 5. Association between patient-surgeon gender concordance and adjusted failure-to-rescue (FTR) rates (elective and non-elective procedures combined)**

		No. of patients (No. of surgeons)	Adjusted FTR rate, % (95%CI)	Adjusted risk difference, pp (95%CI)	P-value
14 procedures (combined)	Female patient- female surgeon (concordant)	5,645 (2,764)	14.9 (13.9 to 16.0)	-0.1 (-1.3 to +1.0)	0.80
	Female patient- male surgeon (discordant)	56,678 (22,653)	15.1 (14.8 to 15.4)	Reference	
	Male patient- male surgeon (concordant)	67,500 (22,977)	16.0 (15.8 to 16.3)	+0.03 (-1.2 to +1.2)	0.97
	Male patient- female surgeon (discordant)	4,838 (2,392)	16.0 (14.9 to 17.2)	Reference	
Knee replacement	Female patient- female surgeon (concordant)	82 (60)	3.0 (-7.5 to 13.6)	-2.1 (-12.8 to +8.7)	0.71
	Female patient- male surgeon (discordant)	4,837 (3,103)	5.1 (4.5 to 5.7)	Reference	
	Male patient- male surgeon (concordant)	2,958 (2,203)	7.3 (6.4 to 8.1)	+3.1 (-3.3 to +9.6)	0.34
	Male patient- female surgeon (discordant)	45 (38)	4.1 (-2.2 to 10.5)	Reference	
Hip replacement	Female patient- female surgeon (concordant)	418 (261)	9.8 (6.0 to 13.7)	+0.4 (-3.6 to +4.4)	0.84

	Female patient-male surgeon (discordant)	11,589 (6,262)	9.4 (8.9 to 10.0)	Reference	
	Male patient-male surgeon (concordant)	8,532 (5,238)	12.5 (11.8 to 13.2)	-0.4 (-5.3 to +4.4)	0.86
	Male patient-female surgeon (discordant)	298 (216)	13.0 (8.2 to 17.7)	Reference	
Laminectomy or Spinal Fusion	Female patient-female surgeon (concordant)	161 (103)	7.1 (1.1 to 13.0)	+0.7 (-5.4 to +6.7)	0.83
	Female patient-male surgeon (discordant)	5,559 (2,794)	6.4 (5.8 to 7.0)	Reference	
	Male patient-male surgeon (concordant)	6,370 (3,127)	11.8 (11.0 to 12.5)	+0.7 (-4.9 to +6.3)	0.81
	Male patient-female surgeon (discordant)	211 (141)	11.1 (5.6 to 16.5)	Reference	
Colectomy	Female patient-female surgeon (concordant)	2,608 (1,569)	19.7 (17.9 to 21.5)	-1.4 (-3.4 to +0.6)	0.17
	Female patient-male surgeon (discordant)	14,450 (7,526)	21.1 (20.4 to 21.8)	Reference	
	Male patient-male surgeon (concordant)	12,802 (7,085)	21.5 (20.7 to 22.2)	-1.3 (-3.8 to +1.2)	0.31

	Male patient-female surgeon (discordant)	1,913 (1,221)	22.7 (20.5 to 25.0)	Reference	
Cholecystectomy	Female patient-female surgeon (concordant)	705 (567)	12.7 (9.0 to 16.3)	-1.8 (-5.9 to +2.2)	0.37
	Female patient-male surgeon (discordant)	4,927 (3,511)	14.5 (13.5 to 15.5)	Reference	
	Male patient-male surgeon (concordant)	6,374 (4,111)	13.7 (12.8 to 14.6)	+2.1 (-1.2 to +5.5)	0.22
	Male patient-female surgeon (discordant)	774 (606)	11.6 (8.5 to 14.7)	Reference	
Coronary artery bypass surgery	Female patient-female surgeon (concordant)	229 (105)	18.8 (12.1 to 25.4)	-1.3 (-8.1 to +5.5)	0.71
	Female patient-male surgeon (discordant)	7,437 (1,937)	20.1 (19.2 to 20.9)	Reference	
	Male patient-male surgeon (concordant)	17,881 (2,320)	13.2 (12.7 to 13.6)	+1.7 (-2.0 to +5.4)	0.37
	Male patient-female surgeon (discordant)	548 (146)	11.5 (7.8 to 15.1)	Reference	
Lung resection	Female patient-female surgeon (concordant)	175 (85)	16.5 (8.8 to 24.1)	+2.4 (-5.6 to +10.1)	0.56



	Female patient-male surgeon (discordant)	2,371 (1,145)	14.1 (12.7 to 15.5)	Reference	
	Male patient-male surgeon (concordant)	3,380 (1,465)	17.9 (16.6 to 19.2)	+2.4 (-5.4 to +10.2)	0.54
	Male patient-female surgeon (discordant)	224 (120)	15.5 (8.1 to 22.9)	Reference	
Abdominal aortic aneurysm repair	Female patient-female surgeon (concordant)	182 (138)	42.1 (31.8 to 52.3)	+5.1 (-5.8 to +16.1)	0.36
	Female patient-male surgeon (discordant)	2,039 (1,362)	37.0 (34.8 to 39.1)	Reference	
	Male patient-male surgeon (concordant)	4,134 (2,085)	33.4 (32.0 to 34.9)	-4.1 (-10.9 to +2.6)	0.23
	Male patient-female surgeon (discordant)	343 (213)	37.6 (31.2 to 44.0)	Reference	
Appendectomy	Female patient-female surgeon (concordant)	344 (309)	15.2 (9.3 to 21.1)	+3.4 (-3.7 to +10.4)	0.35
	Female patient-male surgeon (discordant)	1,604 (1,388)	11.8 (10.0 to 13.7)	Reference	
	Male patient-male surgeon (concordant)	1,798 (1,570)	14.9 (12.8 to 17.0)	-0.7 (-12.2 to +10.7)	0.90

	Male patient-female surgeon (discordant)	270 (239)	15.6 (5.5 to 25.8)	Reference	
Cystectomy	Female patient-female surgeon (concordant)	27 (25)	13.1 (-20.6 to 46.7)	-1.0 (-37.0 to +35.0)	0.96
	Female patient-male surgeon (discordant)	366 (305)	14.1 (9.8 to 18.3)	Reference	
	Male patient-male surgeon (concordant)	1,141 (676)	15.7 (13.5 to 18.0)	+2.9 (-11.0 to +16.8)	0.68
	Male patient-female surgeon (discordant)	81 (46)	12.9 (-0.2 to 26.0)	Reference	
Prostatectomy	Female patient-female surgeon (concordant)	N/A	N/A	N/A	N/A
	Female patient-male surgeon (discordant)	N/A	N/A	Reference	
	Male patient-male surgeon (concordant)	1,861 (1,198)	11.6 (10.1 to 13.1)	-1.4 (-15.2 to +12.3)	0.84
	Male patient-female surgeon (discordant)	100 (62)	13.0 (-0.2 to 26.2)	Reference	
Hysterectomy	Female patient-female surgeon (concordant)	691 (424)	10.9 (7.7 to 14.0)	+1.5 (-2.9 to +5.9)	0.49

	Female patient-male surgeon (discordant)	1,307 (778)	9.3 (7.4 to 11.2)	Reference	
	Male patient-male surgeon (concordant)	N/A	N/A	N/A	N/A
	Male patient-female surgeon (discordant)	N/A	N/A	Reference	

Adjusted for patient characteristics (age, race and ethnicity, 27 chronic conditions, procedure type [for the analysis pooling the 14 procedure types], procedure electiveness, weekend versus weekday, month and year of surgery, and Medicaid coverage), surgeon characteristics (years of experience and operative volume), and hospital fixed effects (indicator variables for each hospital, effectively comparing patients treated at the same hospital).

Thyroidectomy and liver resection were removed as the estimate did not converge due to the small sample size.

Abbreviation: pp = percentage point.

**eTable 6. Comparison of patient adjusted 30-day mortality rates between female versus male patients, non-elective surgical procedures**

		No. of patients (No. of surgeons)	Adjusted mortality rate, % (95%CI)	Adjusted risk difference, pp (95%CI)	P-value
12 procedures (combined)	Female patient	345,985 (39,266)	4.9 (4.9 to 5.0)	-1.0 (-1.2 to -0.8)	<0.0001
	Male patient	263,105 (38,841)	5.9 (5.8 to 6.0)	Reference	
Knee replacement	Female patient	20,920 (3,779)	0.7 (0.6 to 0.8)	-0.1 (-0.3 to +0.1)	0.25
	Male patient	11,960 (2,836)	0.8 (0.7 to 1.0)	Reference	
Hip replacement	Female patient	151,650 (13,975)	4.6 (4.5 to 4.7)	-2.9 (-3.3 to -2.6)	<0.0001
	Male patient	65,824 (12,164)	7.5 (7.2 to 7.8)	Reference	
Laminectomy or Spinal Fusion	Female patient	21,110 (4,538)	2.5 (2.2 to 2.8)	-1.6 (-2.1 to -1.0)	<0.0001
	Male patient	21,925 (4,793)	4.1 (3.7 to 4.4)	Reference	
Colectomy	Female patient	44,521 (13,012)	13.3 (12.9 to 13.7)	-1.5 (-2.3 to -0.7)	0.0003

	Male patient	29,754 (11,224)	14.8 (14.2 to 15.3)	Reference	
Cholecystectomy	Female patient	63,920 (12,795)	2.4 (2.2 to 2.5)	-0.1 (-0.3 to +0.2)	0.52
	Male patient	65,628 (12,731)	2.4 (2.3 to 2.6)	Reference	
Coronary artery bypass surgery	Female patient	12,711 (2,130)	6.1 (5.6 to 6.6)	+2.2 (+1.7 to +2.8)	<0.0001
	Male patient	32,308 (2,420)	3.9 (3.7 to 4.1)	Reference	
Lung resection	Female patient	2,361 (1,071)	5.9 (4.5 to 7.3)	-2.5 (-4.7 to +0.2)	0.067
	Male patient	2,910 (1,346)	8.1 (6.9 to 9.4)	Reference	
Abdominal aortic aneurysm repair	Female patient	3,295 (1,832)	17.9 (16.0 to 19.8)	+1.1 (-1.4 to +3.7)	0.37
	Male patient	8,610 (2,900)	16.8 (15.8 to 17.7)	Reference	
Appendectomy	Female patient	20,783 (9,235)	2.5 (2.2 to 2.8)	+0.1 (-0.4 to +0.7)	0.68

	Male patient	18,201 (8,615)	2.4 (2.1 to 2.7)	Reference	
Cystectomy	Female patient	174 (138)	2.3 (-6.2 to 10.7)	-4.4 (-15.5 to +6.7)	0.44
	Male patient	559 (336)	6.6 (3.5 to 9.7)	Reference	
Liver resection	Female patient	83 (65)	6.7 (-19.7 to 33.0)	-4.6 (-46.9 to +37.7)	0.82
	Male patient	137 (100)	11.3 (-5.2 to 27.8)	Reference	

Adjusted for patient characteristics (age, race and ethnicity, 27 chronic conditions, procedure type [for the analysis pooling the 12 procedure types], weekend versus weekday, month and year of surgery, and Medicaid coverage), surgeon fixed effects (indicator variables for each hospital, effectively comparing patients treated at the same hospital), and hospital fixed effects (indicator variables for each surgeon, effectively comparing patients treated by the same surgeon).

Thyroidectomy was removed as the estimate did not converge due to the small sample size.

Abbreviation: pp = percentage point.

**eTable 7. Comparison of patient adjusted 30-day mortality rates between female versus male patients, elective surgical procedures**

		No. of patients (No. of surgeons)	Adjusted mortality rate, % (95%CI)	Adjusted risk difference, pp (95%CI)	P-value
12 procedures (combined)	Female patient	1,302,115 (44,436)	0.7 (0.7 to 0.7)	-0.1 (-0.1 to -0.1)	<0.0001
	Male patient	991,551 (40,998)	0.8 (0.8 to 0.8)	Reference	
Knee replacement	Female patient	529,641 (10,723)	0.1 (0.1 to 0.2)	-0.1 (-0.1 to -0.03)	<0.0001
	Male patient	305,647 (10,279)	0.2 (0.2 to 0.2)	Reference	
Hip replacement	Female patient	316,243 (9,716)	0.3 (0.3 to 0.3)	-0.1 (-0.1 to -0.03)	0.0005
	Male patient	194,618 (8,871)	0.4 (0.3 to 0.4)	Reference	
Laminectomy or Spinal Fusion	Female patient	200,300 (6,470)	0.3 (0.3 to 0.4)	-0.3 (-0.4 to -0.2)	<0.0001
	Male patient	166,942 (6,508)	0.6 (0.6 to 0.7)	Reference	
Colectomy	Female patient	94,064 (13,470)	2.0 (1.8 to 2.1)	-0.8 (-1.0 to -0.6)	<0.0001

	Male patient	65,151 (11,643)	2.7 (2.6 to 2.9)	Reference	
Cholecystectomy	Female patient	20,881 (8,039)	2.5 (2.1 to 2.8)	-0.6 (-1.1 to -0.1)	0.033
	Male patient	21,572 (7,694)	3.0 (2.7 to 3.4)	Reference	
Coronary artery bypass surgery	Female patient	28,586 (2,417)	3.7 (3.4 to 3.9)	+1.3 (+1.0 to +1.6)	<0.0001
	Male patient	85,804 (2,801)	2.4 (2.3 to 2.5)	Reference	
Lung resection	Female patient	42,610 (2,571)	1.4 (1.3 to 1.5)	-0.8 (-1.1 to -0.6)	<0.0001
	Male patient	36,980 (2,676)	2.2 (2.0 to 2.4)	Reference	
Abdominal aortic aneurysm repair	Female patient	12,680 (3,201)	4.0 (3.5 to 4.4)	+2.0 (+1.5 to +2.4)	<0.0001
	Male patient	40,257 (4,038)	2.0 (1.9 to 2.2)	Reference	
Appendectomy	Female patient	8,559 (4,228)	1.5 (1.1 to 2.0)	-1.1 (-2.5 to +0.3)	0.13



	Male patient	4,344 (3,036)	2.6 (1.7 to 3.6)	Reference	
Cystectomy	Female patient	3,126 (1,204)	2.4 (1.6 to 3.2)	-0.5 (-1.6 to +0.5)	0.31
	Male patient	10,377 (1,976)	2.9 (2.5 to 3.3)	Reference	
Thyroidectomy	Female patient	2,373 (1,399)	0.6 (-0.2 to 1.3)	-0.9 (-2.8 to +1.0)	0.36
	Male patient	1,514 (973)	1.4 (0.2 to 2.6)	Reference	
Liver resection	Female patient	894 (485)	4.6 (2.4 to 6.7)	-0.1 (-3.5 to +3.4)	0.97
	Male patient	1,140 (536)	4.6 (3.0 to 6.3)	Reference	

Adjusted for patient characteristics (age, race and ethnicity, 27 chronic conditions, procedure type [for the analysis pooling the 12 procedure types], weekend versus weekday, month and year of surgery, and Medicaid coverage), surgeon fixed effects (indicator variables for each hospital, effectively comparing patients treated at the same hospital), and hospital fixed effects (indicator variables for each surgeon, effectively comparing patients treated by the same surgeon).

Abbreviation: pp = percentage point.

**eTable 8. Association between patient-surgeon gender concordance and patient adjusted 30-day mortality rates, using hospital random effects instead of hospital fixed effects (elective and non-elective procedures combined)**

		No. of patients (No. of surgeons)	Adjusted mortality rate, % (95%CI)	Adjusted risk difference, pp (95%CI)	P-value
14 procedures (combined)	Female patient-female surgeon (concordant)	86,133 (8,556)	1.3 (1.1 to 1.4)	-0.2 (-0.3 to -0.01)	0.039
	Female patient-male surgeon (discordant)	1,561,967 (44,295)	1.4 (1.4 to 1.5)	Reference	
	Male patient-male surgeon (concordant)	1,201,712 (43,723)	2.0 (2.0 to 2.1)	+0.3 (+0.1 to +0.4)	0.0044
	Male patient-female surgeon (discordant)	52,944 (5,371)	1.8 (1.6 to 1.9)	Reference	
Knee replacement	Female patient-female surgeon (concordant)	8,775 (375)	0.2 (0.1 to 0.3)	+0.003 (-0.1 to +0.1)	0.95
	Female patient-male surgeon (discordant)	541,786 (10,639)	0.2 (0.1 to 0.2)	Reference	
	Male patient-male surgeon (concordant)	313,120 (10,202)	0.3 (0.2 to 0.3)	+0.1 (-0.03 to +0.3)	0.11
	Male patient-female surgeon (discordant)	4,487 (334)	0.1 (-0.005 to 0.3)	Reference	
Hip replacement	Female patient-female surgeon (concordant)	10,421 (792)	1.7 (1.4 to 1.9)	+0.03 (-0.3 to +0.3)	0.87

	Female patient-male surgeon (discordant)	457,472 (14,164)	1.6 (1.6 to 1.7)	Reference	
	Male patient-male surgeon (concordant)	255,394 (12,932)	2.3 (2.3 to 2.4)	+0.3 (-0.4 to +0.9)	0.46
	Male patient-female surgeon (discordant)	5,048 (661)	2.1 (1.4 to 2.7)	Reference	
Laminectomy or Spinal Fusion	Female patient-female surgeon (concordant)	5,417 (354)	0.5 (0.3 to 0.7)	+0.01 (-0.2 to +0.2)	0.92
	Female patient-male surgeon (discordant)	215,993 (6,486)	0.5 (0.5 to 0.5)	Reference	
	Male patient-male surgeon (concordant)	184,234 (6,602)	1.0 (1.0 to 1.1)	-0.3 (-0.6 to +0.1)	0.18
	Male patient-female surgeon (discordant)	4,633 (377)	1.3 (0.9 to 1.7)	Reference	
Colectomy	Female patient-female surgeon (concordant)	20,956 (3,400)	4.9 (4.6 to 5.3)	-0.6 (-1.0 to -0.2)	0.0018
	Female patient-male surgeon (discordant)	117,629 (13,956)	5.5 (5.3 to 5.7)	Reference	
	Male patient-male surgeon (concordant)	83,210 (12,908)	6.5 (6.3 to 6.7)	+0.5 (-0.1 to +1.0)	0.082

	Male patient-female surgeon (discordant)	11,695 (2,525)	6.0 (5.6 to 6.5)	Reference	
Cholecystectomy	Female patient-female surgeon (concordant)	11,213 (2,721)	2.2 (1.9 to 2.5)	-0.3 (-0.5 to +0.1)	0.10
	Female patient-male surgeon (discordant)	73,588 (12,189)	2.5 (2.3 to 2.6)	Reference	
	Male patient-male surgeon (concordant)	76,041 (12,029)	2.6 (2.5 to 2.8)	+0.6 (+0.3 to +0.9)	<0.0001
	Male patient-female surgeon (discordant)	11,159 (2,557)	2.0 (1.7 to 2.3)	Reference	
Coronary artery bypass surgery	Female patient-female surgeon (concordant)	1,341 (145)	4.7 (3.4 to 6.0)	-0.1 (-1.5 to +1.2)	0.85
	Female patient-male surgeon (discordant)	39,956 (2,426)	4.8 (4.6 to 5.1)	Reference	
	Male patient-male surgeon (concordant)	114,158 (2,790)	2.9 (2.8 to 3.0)	+0.1 (-0.5 to +0.7)	0.69
	Male patient-female surgeon (discordant)	3,954 (183)	2.8 (2.2 to 3.4)	Reference	
Lung resection	Female patient-female surgeon (concordant)	3,783 (246)	1.7 (1.2 to 2.3)	-0.1 (-0.6 to +0.5)	0.74

	Female patient-male surgeon (discordant)	41,188 (2,551)	1.8 (1.6 to 2.1)	Reference	
	Male patient-male surgeon (concordant)	36,870 (2,715)	3.2 (2.8 to 3.5)	+0.1 (-0.6 to +0.7)	0.87
	Male patient-female surgeon (discordant)	3,020 (243)	3.1 (2.4 to 3.8)	Reference	
Abdominal aortic aneurysm repair	Female patient-female surgeon (concordant)	950 (356)	7.9 (6.0 to 9.9)	+0.5 (-1.5 to +2.6)	0.61
	Female patient-male surgeon (discordant)	15,025 (3,251)	7.4 (6.9 to 7.9)	Reference	
	Male patient-male surgeon (concordant)	45,897 (4,009)	4.4 (4.1 to 4.7)	-0.3 (-1.2 to +0.7)	0.58
	Male patient-female surgeon (discordant)	2,970 (455)	4.7 (3.8 to 5.6)	Reference	
Appendectomy	Female patient-female surgeon (concordant)	5,126 (2,209)	2.2 (1.8 to 2.6)	+0.2 (-0.2 to +0.6)	0.39
	Female patient-male surgeon (discordant)	24,216 (9,195)	2.0 (1.8 to 2.2)	Reference	
	Male patient-male surgeon (concordant)	19,384 (8,466)	2.8 (2.6 to 3.0)	-0.1 (-0.8 to +0.5)	0.70

	Male patient-female surgeon (discordant)	3,161 (1,633)	2.9 (2.3 to 3.5)	Reference	
Cystectomy	Female patient-female surgeon (concordant)	306 (133)	2.1 (0.5 to 3.7)	-1.4 (-2.9 to +0.02)	0.054
	Female patient-male surgeon (discordant)	2,994 (1,133)	3.6 (2.7 to 4.5)	Reference	
	Male patient-male surgeon (concordant)	10,324 (1,945)	4.0 (3.4 to 4.6)	+0.7 (-0.8 to +2.2)	0.34
	Male patient-female surgeon (discordant)	612 (127)	3.3 (1.7 to 4.8)	Reference	
Thyroidectomy	Female patient-female surgeon (concordant)	410 (250)	0.7 (-0.2 to 1.6)	-0.1 (-1.0 to +0.7)	0.78
	Female patient-male surgeon (discordant)	2,198 (1,258)	0.8 (0.4 to 1.3)	Reference	
	Male patient-male surgeon (concordant)	1,398 (886)	1.5 (0.9 to 2.1)	-0.4 (-2.1 to +1.2)	0.60
	Male patient-female surgeon (discordant)	246 (150)	1.9 (0.4 to 3.4)	Reference	
Liver resection	Female patient-female surgeon (concordant)	80 (58)	6.5 (0.7 to 12.2)	+1.9 (-4.2 to +7.9)	0.54

	Female patient-male surgeon (discordant)	897 (464)	4.6 (3.1 to 6.1)	Reference	
	Male patient-male surgeon (concordant)	1,156 (522)	6.3 (4.5 to 8.1)	+3.2 (-1.0 to +7.4)	0.13
	Male patient-female surgeon (discordant)	121 (62)	3.1 (-0.9 to 7.2)	Reference	
Prostatectomy	Female patient-female surgeon (concordant)	N/A	N/A	N/A	N/A
	Female patient-male surgeon (discordant)	N/A	N/A	Reference	
	Male patient-male surgeon (concordant)	60,526 (5,479)	1.0 (0.8 to 1.1)	+0.3 (-0.3 to +0.9)	0.28
	Male patient-female surgeon (discordant)	1,838 (365)	0.7 (0.1 to 1.2)	Reference	
Hysterectomy	Female patient-female surgeon (concordant)	17,355 (3,533)	0.9 (0.7 to 1.0)	-0.2 (-0.4 to +0.03)	0.10
	Female patient-male surgeon (discordant)	29,025 (5,372)	1.0 (0.9 to 1.2)	Reference	
	Male patient-male surgeon (concordant)	N/A	N/A	N/A	N/A

	Male patient- female surgeon (discordant)	N/A	N/A	Reference
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Adjusted for patient characteristics (age, race and ethnicity, 27 chronic conditions, procedure type [for the analysis pooling the 14 procedure types], procedure electiveness, weekend versus weekday, month and year of surgery, and Medicaid coverage), surgeon characteristics (years of experience and operative volume), and hospital random effects.

Abbreviation: pp = percentage point.



**eTable 9. Association between patient-surgeon gender concordance and patient adjusted 30-day mortality rates for hospitals where at least 1 surgical procedure performed by a female surgeon (elective and non-elective procedures combined)**

		No. of patients (No. of surgeons)	Adjusted mortality rate, % (95%CI)	Adjusted risk difference, pp (95%CI)	P-value
14 procedures (combined)	Female patient- female surgeon (concordant)	86,133 (8,556)	1.4 (1.3 to 1.5)	-0.1 (-0.3 to -0.02)	0.025
	Female patient- male surgeon (discordant)	1,416,863 (41,862)	1.5 (1.5 to 1.5)	Reference	
	Male patient- male surgeon (concordant)	1,104,295 (41,429)	2.1 (2.0 to 2.1)	+0.3 (+0.1 to +0.5)	0.0006
	Male patient- female surgeon (discordant)	52,944 (5,371)	1.8 (1.6 to 1.9)	Reference	
Knee replacement	Female patient- female surgeon (concordant)	8,775 (375)	0.2 (0.1 to 0.3)	+0.03 (-0.1 to +0.1)	0.67
	Female patient- male surgeon (discordant)	474,551 (9,764)	0.2 (0.1 to 0.2)	Reference	
	Male patient- male surgeon (concordant)	274,034 (9,325)	0.3 (0.2 to 0.3)	+0.1 (-0.03 to +0.3)	0.10
	Male patient- female surgeon (discordant)	4,487 (334)	0.1 (-0.05 to 0.3)	Reference	
Hip replacement	Female patient- female surgeon (concordant)	10,421 (792)	1.8 (1.5 to 2.2)	+0.2 (-0.2 to +0.6)	0.35

	Female patient-male surgeon (discordant)	415,093 (13,314)	1.7 (1.6 to 1.7)	Reference	
	Male patient-male surgeon (concordant)	231,726 (12,080)	2.3 (2.3 to 2.4)	+0.3 (-0.4 to +0.9)	0.40
	Male patient-female surgeon (discordant)	5,048 (661)	2.0 (1.4 to 2.7)	Reference	
Laminectomy or Spinal Fusion	Female patient-female surgeon (concordant)	5,417 (354)	0.4 (0.2 to 0.7)	-0.1 (-0.3 to +0.2)	0.58
	Female patient-male surgeon (discordant)	199,865 (6,312)	0.5 (0.5 to 0.5)	Reference	
	Male patient-male surgeon (concordant)	171,309 (6,420)	1.1 (1.0 to 1.1)	-0.19 (-0.62 to +0.24)	0.39
	Male patient-female surgeon (discordant)	4,633 (377)	1.3 (0.8 to 1.7)	Reference	
Colectomy	Female patient-female surgeon (concordant)	20,956 (3,400)	5.1 (4.7 to 5.4)	-0.6 (-1.0 to -0.2)	0.0050
	Female patient-male surgeon (discordant)	109,809 (12,885)	5.6 (5.5 to 5.8)	Reference	
	Male patient-male surgeon (concordant)	77,505 (11,856)	6.5 (6.4 to 6.7)	+0.5 (-0.1 to +1.1)	0.10

	Male patient-female surgeon (discordant)	11,695 (2,525)	6.1 (5.5 to 6.6)	Reference	
Cholecystectomy	Female patient-female surgeon (concordant)	11,213 (2,721)	2.2 (1.9 to 2.5)	-0.2 (-0.6 to +0.1)	0.19
	Female patient-male surgeon (discordant)	67,794 (11,190)	2.4 (2.3 to 2.5)	Reference	
	Male patient-male surgeon (concordant)	70,119 (11,067)	2.6 (2.5 to 2.7)	+0.5 (+0.2 to +0.9)	0.0015
	Male patient-female surgeon (discordant)	11,159 (2,557)	2.1 (1.8 to 2.4)	Reference	
Coronary artery bypass surgery	Female patient-female surgeon (concordant)	1,341 (145)	4.1 (2.6 to 5.5)	-0.8 (-2.3 to +0.7)	0.28
	Female patient-male surgeon (discordant)	38,304 (2,396)	4.9 (4.7 to 5.1)	Reference	
	Male patient-male surgeon (concordant)	109,910 (2,750)	2.7 (2.6 to 2.8)	+0.1 (-0.6 to +0.8)	0.77
	Male patient-female surgeon (discordant)	3,954 (183)	2.6 (1.9 to 3.2)	Reference	
Lung resection	Female patient-female surgeon (concordant)	3,783 (246)	1.3 (0.8 to 1.8)	-0.2 (-0.7 to +0.3)	0.40

	Female patient-male surgeon (discordant)	40,466 (2,460)	1.5 (1.4 to 1.6)	Reference	
	Male patient-male surgeon (concordant)	36,110 (2,617)	2.7 (2.5 to 2.9)	-0.1 (-0.8 to +0.6)	0.80
	Male patient-female surgeon (discordant)	3,020 (243)	2.8 (2.1 to 3.5)	Reference	
Abdominal aortic aneurysm repair	Female patient-female surgeon (concordant)	950 (356)	7.3 (5.1 to 9.5)	-0.2 (-2.5 to +2.0)	0.84
	Female patient-male surgeon (discordant)	14,576 (3,159)	7.5 (7.1 to 7.9)	Reference	
	Male patient-male surgeon (concordant)	44,594 (3,899)	4.4 (4.2 to 4.6)	-0.2 (-1.2 to +0.9)	0.75
	Male patient-female surgeon (discordant)	2,970 (455)	4.6 (3.6 to 5.6)	Reference	
Appendectomy	Female patient-female surgeon (concordant)	5,126 (2,209)	2.1 (1.7 to 2.6)	+0.3 (-0.2 to +0.7)	0.24
	Female patient-male surgeon (discordant)	22,352 (8,436)	1.9 (1.7 to 2.0)	Reference	
	Male patient-male surgeon (concordant)	17,613 (7,707)	2.9 (2.6 to 3.1)	+0.1 (-0.7 to +0.9)	0.81

	Male patient-female surgeon (discordant)	3,161 (1,633)	2.8 (2.1 to 3.5)	Reference	
Cystectomy	Female patient-female surgeon (concordant)	306 (133)	1.0 (-0.6 to 2.6)	-1.7 (-3.6 to +0.1)	0.064
	Female patient-male surgeon (discordant)	2,956 (1,105)	2.7 (2.2 to 3.3)	Reference	
	Male patient-male surgeon (concordant)	10,224 (1,910)	3.0 (2.7 to 3.4)	+0.3 (-1.3 to +1.9)	0.70
	Male patient-female surgeon (discordant)	612 (127)	2.7 (1.2 to 4.2)	Reference	
Thyroidectomy	Female patient-female surgeon (concordant)	410 (250)	0.3 (-0.5 to 1.0)	-0.3 (-1.3 to +0.6)	0.47
	Female patient-male surgeon (discordant)	2,123 (1,196)	0.6 (0.3 to 0.9)	Reference	
	Male patient-male surgeon (concordant)	1,361 (854)	1.5 (0.8 to 2.2)	+0.03 (-2.3 to +2.4)	0.98
	Male patient-female surgeon (discordant)	246 (150)	1.5 (-0.7 to 3.6)	Reference	
Liver resection	Female patient-female surgeon (concordant)	80 (58)	5.9 (-1.2 to 13.0)	+1.5 (-6.1 to +9.1)	0.69

	Female patient-male surgeon (discordant)	895 (462)	4.4 (3.1 to 5.7)	Reference	
	Male patient-male surgeon (concordant)	1,154 (520)	6.0 (4.7 to 7.2)	+4.1 (-0.6 to +8.8)	0.089
	Male patient-female surgeon (discordant)	121 (62)	1.9 (-2.4 to 6.1)	Reference	
Prostatectomy	Female patient-female surgeon (concordant)	N/A	N/A	N/A	N/A
	Female patient-male surgeon (discordant)	N/A	N/A	Reference	
	Male patient-male surgeon (concordant)	58,636 (5,275)	0.9 (0.8 to 1.0)	+0.2 (-0.4 to +0.8)	0.46
	Male patient-female surgeon (discordant)	1,838 (365)	0.7 (0.1 to 1.3)	Reference	
Hysterectomy	Female patient-female surgeon (concordant)	17,355 (3,533)	0.9 (0.7 to 1.1)	-0.1 (-0.4 to +0.1)	0.22
	Female patient-male surgeon (discordant)	28,079 (5,022)	1.0 (0.9 to 1.2)	Reference	
	Male patient-male surgeon (concordant)	N/A	N/A	N/A	N/A

	Male patient- female surgeon (discordant)	N/A	N/A	Reference
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Adjusted for patient characteristics (age, race and ethnicity, 27 chronic conditions, procedure type [for the analysis pooling the 14 procedure types], procedure electiveness, weekend versus weekday, month and year of surgery, and Medicaid coverage), surgeon characteristics (years of experience and operative volume), and hospital fixed effects (indicator variables for each hospital, effectively comparing patients treated at the same hospital).

Abbreviation: pp = percentage point.

**eTable 10. Association between patient-surgeon gender concordance and patient adjusted 30-day mortality rates for hospitals where at least 10 surgical procedures performed by a female surgeon (elective and non-elective procedures combined)**

		No. of patients (No. of surgeons)	Adjusted mortality rate, % (95%CI)	Adjusted risk difference, pp (95%CI)	P-value
14 procedures (combined)	Female patient- female surgeon (concordant)	83,870 (7,764)	1.4 (1.3 to 1.5)	-0.1 (-0.2 to +0.02)	0.11
	Female patient- male surgeon (discordant)	1,188,154 (36,958)	1.5 (1.5 to 1.5)	Reference	
	Male patient- male surgeon (concordant)	941,671 (36,675)	2.1 (2.0 to 2.1)	+0.3 (+0.1 to +0.4)	0.0011
	Male patient- female surgeon (discordant)	51,839 (5,080)	1.8 (1.6 to 1.9)	Reference	
Knee replacement	Female patient- female surgeon (concordant)	8,709 (362)	0.2 (0.1 to 0.3)	+0.02 (-0.1 to +0.1)	0.68
	Female patient- male surgeon (discordant)	384,916 (8,158)	0.2 (0.1 to 0.2)	Reference	
	Male patient- male surgeon (concordant)	222,120 (7,737)	0.2 (0.2 to 0.3)	+0.1 (-0.03 to +0.3)	0.10
	Male patient- female surgeon (discordant)	4,450 (323)	0.1 (-0.1 to 0.3)	Reference	
Hip replacement	Female patient- female surgeon (concordant)	10,208 (751)	1.8 (1.4 to 2.2)	+0.1 (-0.2 to +0.6)	0.36



	Female patient-male surgeon (discordant)	344,928 (11,482)	1.6 (1.6 to 1.7)	Reference	
	Male patient-male surgeon (concordant)	193,480 (10,332)	2.3 (2.2 to 2.4)	+0.3 (-0.4 to +0.9)	0.41
	Male patient-female surgeon (discordant)	4,949 (628)	2.0 (1.4 to 2.7)	Reference	
Laminectomy or Spinal Fusion	Female patient-female surgeon (concordant)	5,369 (346)	0.5 (0.2 to 0.7)	-0.1 (-0.3 to +0.2)	0.62
	Female patient-male surgeon (discordant)	174,207 (5,824)	0.5 (0.5 to 0.6)	Reference	
	Male patient-male surgeon (concordant)	149,899 (5,925)	1.1 (1.1 to 1.2)	-0.1 (-0.6 to +0.3)	0.51
	Male patient-female surgeon (discordant)	4,599 (368)	1.3 (0.8 to 1.7)	Reference	
Colectomy	Female patient-female surgeon (concordant)	20,509 (3,216)	4.9 (4.6 to 5.3)	-0.5 (-0.9 to -0.1)	0.014
	Female patient-male surgeon (discordant)	92,735 (11,064)	5.4 (5.3 to 5.6)	Reference	
	Male patient-male surgeon (concordant)	65,167 (10,059)	6.4 (6.3 to 6.6)	+0.4 (-0.1 to +1.0)	0.14

	Male patient-female surgeon (discordant)	11,415 (2,397)	6.0 (5.5 to 6.5)	Reference	
Cholecystectomy	Female patient-female surgeon (concordant)	10,809 (2,562)	2.1 (1.8 to 2.4)	-0.3 (-0.7 to +0.1)	0.10
	Female patient-male surgeon (discordant)	55,901 (9,495)	2.4 (2.2 to 2.5)	Reference	
	Male patient-male surgeon (concordant)	57,993 (9,419)	2.6 (2.4 to 2.7)	+0.5 (+0.2 to +0.8)	0.0026
	Male patient-female surgeon (discordant)	10,796 (2,413)	2.0 (1.7 to 2.3)	Reference	
Coronary artery bypass surgery	Female patient-female surgeon (concordant)	1,335 (142)	4.1 (2.6 to 5.5)	-0.8 (-2.3 to +0.7)	0.31
	Female patient-male surgeon (discordant)	34,672 (2,252)	4.9 (4.6 to 5.1)	Reference	
	Male patient-male surgeon (concordant)	100,558 (2,593)	2.6 (2.5 to 2.7)	+0.1 (-0.6 to +0.8)	0.82
	Male patient-female surgeon (discordant)	3,941 (179)	2.5 (1.9 to 3.2)	Reference	
Lung resection	Female patient-female surgeon (concordant)	3,768 (243)	1.3 (0.8 to 1.7)	-0.2 (-0.7 to +0.3)	0.47

	Female patient-male surgeon (discordant)	37,563 (2,185)	1.5 (1.3 to 1.6)	Reference	
	Male patient-male surgeon (concordant)	33,341 (2,335)	2.6 (2.4 to 2.7)	-0.1 (-0.8 to +0.6)	0.79
	Male patient-female surgeon (discordant)	3,013 (241)	2.7 (2.0 to 3.4)	Reference	
Abdominal aortic aneurysm repair	Female patient-female surgeon (concordant)	933 (345)	7.2 (5.1 to 9.4)	-0.3 (-2.6 to +2.0)	0.79
	Female patient-male surgeon (discordant)	13,258 (2,886)	7.5 (7.1 to 8.0)	Reference	
	Male patient-male surgeon (concordant)	40,197 (3,547)	4.5 (4.3 to 4.7)	-0.1 (-1.1 to +1.0)	0.92
	Male patient-female surgeon (discordant)	2,896 (437)	4.6 (3.6 to 5.6)	Reference	
Appendectomy	Female patient-female surgeon (concordant)	4,942 (2,094)	2.1 (1.7 to 2.5)	+0.3 (-0.2 to +0.8)	0.18
	Female patient-male surgeon (discordant)	18,564 (7,059)	1.8 (1.6 to 2.0)	Reference	
	Male patient-male surgeon (concordant)	14,185 (6,354)	2.9 (2.6 to 3.2)	-0.1 (-0.8 to +0.7)	0.91

	Male patient-female surgeon (discordant)	3,030 (1,554)	2.9 (2.2 to 3.6)	Reference	
Cystectomy	Female patient-female surgeon (concordant)	305 (132)	0.9 (-0.7 to 2.5)	-1.7 (-3.5 to +0.1)	0.068
	Female patient-male surgeon (discordant)	2,846 (1,033)	2.6 (2.0 to 3.2)	Reference	
	Male patient-male surgeon (concordant)	9,769 (1,755)	2.9 (2.6 to 3.3)	+0.1 (-1.4 to +1.7)	0.86
	Male patient-female surgeon (discordant)	608 (124)	2.8 (1.3 to 4.3)	Reference	
Thyroidectomy	Female patient-female surgeon (concordant)	388 (232)	0.2 (-0.5 to 1.0)	-0.3 (-1.2 to +0.6)	0.50
	Female patient-male surgeon (discordant)	1,910 (1,050)	0.5 (0.2 to 0.8)	Reference	
	Male patient-male surgeon (concordant)	1,267 (771)	1.6 (0.9 to 2.3)	+0.03 (-2.3 to +2.4)	0.98
	Male patient-female surgeon (discordant)	241 (145)	1.6 (-0.5 to 3.7)	Reference	
Liver resection	Female patient-female surgeon (concordant)	79 (57)	6.0 (-1.0 to 13.1)	+1.6 (-6.0 to +9.1)	0.69

	Female patient-male surgeon (discordant)	876 (444)	4.5 (3.1 to 5.8)	Reference	
	Male patient-male surgeon (concordant)	1,132 (505)	5.7 (4.4 to 7.0)	+4.1 (-0.6 to +8.8)	0.085
	Male patient-female surgeon (discordant)	121 (62)	1.5 (-2.7 to 5.8)	Reference	
Prostatectomy	Female patient-female surgeon (concordant)	N/A	N/A	N/A	N/A
	Female patient-male surgeon (discordant)	N/A	N/A	Reference	
	Male patient-male surgeon (concordant)	52,563 (4,680)	0.9 (0.8 to 1.0)	+0.2 (-0.4 to +0.8)	0.50
	Male patient-female surgeon (discordant)	1,780 (342)	0.7 (0.1 to 1.3)	Reference	
Hysterectomy	Female patient-female surgeon (concordant)	16,516 (3,042)	0.9 (0.8 to 1.1)	-0.1 (-0.3 to +0.1)	0.40
	Female patient-male surgeon (discordant)	25,778 (4,327)	1.0 (0.9 to 1.1)	Reference	
	Male patient-male surgeon (concordant)	N/A	N/A	N/A	N/A

	Male patient- female surgeon (discordant)	N/A	N/A	Reference
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Adjusted for patient characteristics (age, race and ethnicity, 27 chronic conditions, procedure type [for the analysis pooling the 14 procedure types], procedure electiveness, weekend versus weekday, month and year of surgery, and Medicaid coverage), surgeon characteristics (years of experience and operative volume), and hospital fixed effects (indicator variables for each hospital, effectively comparing patients treated at the same hospital).

Abbreviation: pp = percentage point.

**eTable 11. Association between patient-surgeon gender concordance and patient adjusted 30-day mortality rates (non-elective procedures within 7 days since hospital admission)**

		No. of patients (No. of surgeons)	Adjusted mortality rate, % (95%CI)	Adjusted risk difference, pp (95%CI)	P-value
14 procedures (combined)	Female patient- female surgeon (concordant)	32,809 (5,264)	5.2 (4.9 to 5.4)	-0.1 (-0.4 to +0.2)	0.51
	Female patient- male surgeon (discordant)	366,728 (35,796)	5.3 (5.2 to 5.3)	Reference	
	Male patient- male surgeon (concordant)	297,462 (36,090)	6.1 (6.1 to 6.2)	+0.2 (-0.1 to +0.6)	0.15
	Male patient- female surgeon (discordant)	26,062 (4,562)	5.9 (5.6 to 6.2)	Reference	
Knee replacement	Female patient- female surgeon (concordant)	462 (108)	2.4 (0.8 to 3.9)	+1.5 (-0.1 to +3.1)	0.066
	Female patient- male surgeon (discordant)	21,474 (3,940)	0.9 (0.8 to 1.0)	Reference	
	Male patient- male surgeon (concordant)	12,231 (2,976)	0.9 (0.7 to 1.0)	+0.2 (-1.4 to +1.8)	0.81
	Male patient- female surgeon (discordant)	238 (76)	0.7 (-0.9 to 2.2)	Reference	
Hip replacement	Female patient- female surgeon (concordant)	5,622 (757)	4.9 (4.3 to 5.6)	+0.4 (-0.3 to +1.1)	0.26

	Female patient-male surgeon (discordant)	153,274 (13,377)	4.5 (4.4 to 4.6)	Reference	
	Male patient-male surgeon (concordant)	67,575 (11,756)	8.2 (8.0 to 8.4)	+0.3 (-1.0 to +1.5)	0.66
	Male patient-female surgeon (discordant)	2,588 (621)	7.9 (6.7 to 9.1)	Reference	
Laminectomy or Spinal Fusion	Female patient-female surgeon (concordant)	873 (255)	2.6 (1.2 to 4.0)	-0.1 (-1.5 to +1.3)	0.90
	Female patient-male surgeon (discordant)	25,620 (4,752)	2.7 (2.5 to 2.9)	Reference	
	Male patient-male surgeon (concordant)	27,037 (4,962)	4.9 (4.6 to 5.1)	-0.1 (-1.9 to +1.7)	0.89
	Male patient-female surgeon (discordant)	1,008 (298)	5.0 (3.3 to 6.7)	Reference	
Colectomy	Female patient-female surgeon (concordant)	8,634 (2,683)	12.4 (11.6 to 13.2)	-0.9 (-1.7 to +0.03)	0.059
	Female patient-male surgeon (discordant)	48,908 (11,600)	13.3 (13.0 to 13.6)	Reference	
	Male patient-male surgeon (concordant)	33,259 (10,458)	14.6 (14.2 to 15.0)	+0.9 (-0.3 to +2.1)	0.15



	Male patient-female surgeon (discordant)	5,386 (2,169)	13.7 (12.7 to 14.8)	Reference	
Cholecystectomy	Female patient-female surgeon (concordant)	10,671 (2,433)	2.7 (2.3 to 3.0)	-0.1 (-0.5 to +0.3)	0.71
	Female patient-male surgeon (discordant)	66,722 (11,080)	2.7 (2.6 to 2.9)	Reference	
	Male patient-male surgeon (concordant)	68,078 (10,978)	2.8 (2.7 to 2.9)	+0.4 (+0.02 to +0.7)	0.040
	Male patient-female surgeon (discordant)	10,699 (2,419)	2.4 (2.1 to 2.7)	Reference	
Coronary artery bypass surgery	Female patient-female surgeon (concordant)	771 (134)	6.1 (3.8 to 8.4)	-0.2 (-2.6 to +2.2)	0.86
	Female patient-male surgeon (discordant)	21,532 (2,252)	6.3 (6.0 to 6.6)	Reference	
	Male patient-male surgeon (concordant)	52,439 (2,481)	3.7 (3.6 to 3.9)	-0.2 (-1.2 to +0.9)	0.75
	Male patient-female surgeon (discordant)	1,882 (147)	3.9 (2.8 to 4.9)	Reference	
Lung resection	Female patient-female surgeon (concordant)	253 (127)	3.4 (-2.1 to 8.9)	-5.4 (-11.4 to +0.5)	0.073

	Female patient-male surgeon (discordant)	3,076 (1,324)	8.8 (7.8 to 9.8)	Reference	
	Male patient-male surgeon (concordant)	4,329 (1,734)	11.0 (10.0 to 11.9)	+3.5 (-1.9 to +8.8)	0.20
	Male patient-female surgeon (discordant)	313 (144)	7.5 (2.4 to 12.5)	Reference	
Abdominal aortic aneurysm repair	Female patient-female surgeon (concordant)	326 (192)	17.5 (11.7 to 23.2)	-1.1 (-7.2 to +5.1)	0.73
	Female patient-male surgeon (discordant)	3,653 (1,855)	18.5 (17.3 to 19.8)	Reference	
	Male patient-male surgeon (concordant)	9,149 (2,800)	15.0 (14.3 to 15.7)	-2.2 (-5.6 to +1.2)	0.21
	Male patient-female surgeon (discordant)	810 (325)	17.2 (14.0 to 20.4)	Reference	
Appendectomy	Female patient-female surgeon (concordant)	3,376 (1,724)	2.6 (2.0 to 3.1)	+0.1 (-0.6 to +0.7)	0.86
	Female patient-male surgeon (discordant)	18,651 (7,805)	2.5 (2.3 to 2.7)	Reference	
	Male patient-male surgeon (concordant)	16,295 (7,350)	3.1 (2.8 to 3.4)	+0.1 (-0.8 to +0.9)	0.91

	Male patient-female surgeon (discordant)	2,848 (1,498)	3.1 (2.3 to 3.9)	Reference	
Cystectomy	Female patient-female surgeon (concordant)	21 (21)	-13.4 (-47.1 to 20.3)	-22.1 (-59.4 to +15.1)	0.23
	Female patient-male surgeon (discordant)	192 (152)	8.8 (3.9 to 13.6)	Reference	
	Male patient-male surgeon (concordant)	657 (398)	5.7 (4.1 to 7.2)	+3.5 (-7.3 to +14.2)	0.52
	Male patient-female surgeon (discordant)	34 (25)	2.2 (-8.2 to 12.5)	Reference	
Prostatectomy	Female patient-female surgeon (concordant)	N/A	N/A	N/A	N/A
	Female patient-male surgeon (discordant)	N/A	N/A	Reference	
	Male patient-male surgeon (concordant)	6,125 (2,434)	2.6 (2.2 to 3.0)	-3.0 (-7.5 to +1.5)	0.19
	Male patient-female surgeon (discordant)	211 (120)	5.7 (1.3 to 10.0)	Reference	
Hysterectomy	Female patient-female surgeon (concordant)	1,748 (783)	2.7 (1.8 to 3.7)	-0.3 (-1.6 to +1.0)	0.65

	Female patient- male surgeon (discordant)	3,272 (1,314)	3.0 (2.4 to 3.7)	Reference	
	Male patient- male surgeon (concordant)	N/A	N/A	N/A	N/A
	Male patient- female surgeon (discordant)	N/A	N/A	Reference	

Adjusted for patient characteristics (age, race and ethnicity, 27 chronic conditions, procedure type [for the analysis pooling the 14 procedure types], weekend versus weekday, month and year of surgery, and Medicaid coverage), surgeon characteristics (years of experience and operative volume), and hospital fixed effects (indicator variables for each hospital, effectively comparing patients treated at the same hospital).

Thyroidectomy and liver resection were removed as the estimate did not converge due to the small sample size.

Abbreviation: pp = percentage point.

**eTable 12. Association between patient-surgeon gender concordance and patient adjusted 30-day mortality rates (non-elective procedures within 14 days since hospital admission)**

Total= 760,415		No. of patients (No. of surgeons)	Adjusted mortality rate, % (95%CI)	Adjusted risk difference, pp (95%CI)	P-value
14 procedures (combined)	Female patient-female surgeon (concordant)	34,456 (5,365)	5.4 (5.1 to 5.7)	-0.1 (-0.4 to +0.2)	0.37
	Female patient-male surgeon (discordant)	382,428 (36,327)	5.5 (5.5 to 5.6)	Reference	
	Male patient-male surgeon (concordant)	316,035 (36,661)	6.4 (6.4 to 6.5)	+0.3 (-0.1 to +0.6)	0.12
	Male patient-female surgeon (discordant)	27,496 (4,652)	6.2 (5.9 to 6.5)	Reference	
Knee replacement	Female patient-female surgeon (concordant)	469 (112)	2.6 (1.0 to 4.2)	+1.6 (+0.004 to +3.2)	0.049
	Female patient-male surgeon (discordant)	21,743 (4,023)	1.0 (0.9 to 1.1)	Reference	
	Male patient-male surgeon (concordant)	12,393 (3,050)	0.9 (0.8 to 1.1)	+0.3 (-1.2 to +1.7)	0.75
	Male patient-female surgeon (discordant)	247 (82)	0.7 (-0.8 to 2.1)	Reference	
Hip replacement	Female patient-female surgeon (concordant)	5,663 (758)	5.0 (4.3 to 5.6)	+0.4 (-0.3 to +1.1)	0.24

	Female patient-male surgeon (discordant)	154,563 (13,425)	4.6 (4.5 to 4.7)	Reference	
	Male patient-male surgeon (concordant)	68,461 (11,816)	8.3 (8.1 to 8.5)	+0.3 (-1.0 to +1.5)	0.66
	Male patient-female surgeon (discordant)	2,630 (629)	8.0 (6.8 to 9.2)	Reference	
Laminectomy or Spinal Fusion	Female patient-female surgeon (concordant)	960 (266)	2.6 (1.2 to 3.9)	-0.3 (-1.7 to +1.1)	0.68
	Female patient-male surgeon (discordant)	27,619 (4,917)	2.9 (2.7 to 3.1)	Reference	
	Male patient-male surgeon (concordant)	29,262 (5,126)	5.2 (4.9 to 5.4)	+0.5 (-1.2 to +2.3)	0.56
	Male patient-female surgeon (discordant)	1,106 (315)	4.7 (3.0 to 6.4)	Reference	
Colectomy	Female patient-female surgeon (concordant)	9,472 (2,789)	12.9 (12.2 to 13.7)	-0.6 (-1.4 to +0.3)	0.18
	Female patient-male surgeon (discordant)	53,674 (12,189)	13.5 (13.2 to 13.8)	Reference	
	Male patient-male surgeon (concordant)	36,728 (11,095)	15.2 (14.8 to 15.5)	+0.9 (-0.3 to +2.0)	0.14

	Male patient-female surgeon (discordant)	5,908 (2,265)	14.3 (13.2 to 15.3)	Reference	
Cholecystectomy	Female patient-female surgeon (concordant)	10,973 (2,457)	2.8 (2.5 to 3.2)	-0.2 (-0.5 to +0.2)	0.46
	Female patient-male surgeon (discordant)	68,957 (11,259)	3.0 (2.8 to 3.1)	Reference	
	Male patient-male surgeon (concordant)	70,304 (11,143)	3.0 (2.9 to 3.1)	+0.4 (+0.1 to +0.8)	0.027
	Male patient-female surgeon (discordant)	10,982 (2,451)	2.6 (2.3 to 2.9)	Reference	
Coronary artery bypass surgery	Female patient-female surgeon (concordant)	893 (145)	5.9 (3.8 to 8.0)	-0.7 (-2.8 to +1.5)	0.56
	Female patient-male surgeon (discordant)	25,049 (2,326)	6.6 (6.2 to 6.9)	Reference	
	Male patient-male surgeon (concordant)	59,502 (2,587)	4.0 (3.8 to 4.1)	-0.3 (-1.4 to +0.7)	0.52
	Male patient-female surgeon (discordant)	2,176 (165)	4.3 (3.3 to 5.3)	Reference	
Lung resection	Female patient-female surgeon (concordant)	301 (146)	3.7 (-1.2 to 8.6)	-7.3 (-12.6 to -2.0)	0.0070

	Female patient-male surgeon (discordant)	3,727 (1,545)	11.0 (10.0 to 12.0)	Reference	
	Male patient-male surgeon (concordant)	5,359 (1,994)	12.8 (11.9 to 13.7)	+3.4 (-1.6 to +8.4)	0.18
	Male patient-female surgeon (discordant)	374 (164)	9.4 (4.7 to 14.1)	Reference	
Abdominal aortic aneurysm repair	Female patient-female surgeon (concordant)	351 (204)	17.8 (12.3 to 23.2)	-0.4 (-6.2 to +5.4)	0.90
	Female patient-male surgeon (discordant)	3,919 (1,941)	18.1 (16.9 to 19.4)	Reference	
	Male patient-male surgeon (concordant)	9,697 (2,912)	15.1 (14.4 to 15.8)	-2.2 (-5.5 to +1.1)	0.19
	Male patient-female surgeon (discordant)	870 (335)	17.3 (14.2 to 20.4)	Reference	
Appendectomy	Female patient-female surgeon (concordant)	3,454 (1,751)	2.6 (2.0 to 3.2)	-0.1 (-0.8 to +0.6)	0.75
	Female patient-male surgeon (discordant)	19,043 (7,904)	2.7 (2.5 to 3.0)	Reference	
	Male patient-male surgeon (concordant)	16,597 (7,444)	3.3 (3.0 to 3.6)	-0.03 (-0.9 to +0.9)	0.95



	Male patient-female surgeon (discordant)	2,883 (1,509)	3.3 (2.5 to 4.1)	Reference	
Cystectomy	Female patient-female surgeon (concordant)	25 (24)	-13.0 (-43.5 to 17.6)	-23.4 (-57.3 to +10.6)	0.17
	Female patient-male surgeon (discordant)	214 (173)	10.4 (5.7 to 15.0)	Reference	
	Male patient-male surgeon (concordant)	756 (457)	6.1 (4.6 to 7.6)	+1.8 (-8.9 to +12.5)	0.74
	Male patient-female surgeon (discordant)	39 (30)	4.3 (-5.9 to 14.6)	Reference	
Thyroidectomy	Female patient-female surgeon (concordant)	48 (46)	5.8 (0.6 to 11.0)	+2.2 (-3.8 to +8.1)	0.47
	Female patient-male surgeon (discordant)	310 (255)	3.6 (2.6 to 4.6)	Reference	
	Male patient-male surgeon (concordant)	181 (154)	3.7 (-1.9 to 9.4)	-8.7 (-51.6 to +34.2)	0.65
	Male patient-female surgeon (discordant)	26 (25)	12.4 (-25.0 to 49.8)	Reference	
Prostatectomy	Female patient-female surgeon (concordant)	N/A	N/A	N/A	N/A

	Female patient-male surgeon (discordant)	N/A	N/A	Reference	
	Male patient-male surgeon (concordant)	6,640 (2,594)	3.0 (2.6 to 3.4)	-2.1 (-6.2 to +2.0)	0.31
	Male patient-female surgeon (discordant)	233 (132)	5.1 (1.1 to 9.1)	Reference	
Hysterectomy	Female patient-female surgeon (concordant)	1,832 (816)	2.8 (1.8 to 3.8)	-0.5 (-1.8 to +0.9)	0.50
	Female patient-male surgeon (discordant)	3,501 (1,405)	3.3 (2.6 to 3.9)	Reference	
	Male patient-male surgeon (concordant)	N/A	N/A	N/A	N/A
	Male patient-female surgeon (discordant)	N/A	N/A	Reference	

Adjusted for patient characteristics (age, race and ethnicity, 27 chronic conditions, procedure type [for the analysis pooling the 14 procedure types], weekend versus weekday, month and year of surgery, and Medicaid coverage), surgeon characteristics (years of experience and operative volume), and hospital fixed effects (indicator variables for each hospital, effectively comparing patients treated at the same hospital).

Liver resection was removed as the estimate did not converge due to the small sample size.

Abbreviation: pp = percentage point.

**eTable 13. Association between patient-surgeon gender concordance and patient adjusted 30-day mortality rates, adjusting for individual ICD-10-PCS procedure codes instead of procedure type (elective and non-elective procedures combined)**

		No. of patients (No. of surgeons)	Adjusted mortality rate, % (95%CI)	Adjusted risk difference, pp (95%CI)	P-value
14 procedures (combined)	Female patient- female surgeon (concordant)	86,133 (8,556)	1.4 (1.3 to 1.5)	-0.1 (-0.2 to +0.01)	0.063
	Female patient- male surgeon (discordant)	1,561,967 (44,295)	1.5 (1.5 to 1.5)	Reference	
	Male patient- male surgeon (concordant)	1,201,712 (43,723)	2.0 (2.0 to 2.0)	+0.2 (+0.1 to +0.4)	0.0052
	Male patient- female surgeon (discordant)	52,944 (5,371)	1.8 (1.6 to 1.9)	Reference	
Knee replacement	Female patient- female surgeon (concordant)	8,775 (375)	0.2 (0.1 to 0.3)	+0.03 (-0.1 to +0.1)	0.66
	Female patient- male surgeon (discordant)	541,786 (10,639)	0.2 (0.1 to 0.2)	Reference	
	Male patient- male surgeon (concordant)	313,120 (10,202)	0.3 (0.2 to 0.3)	+0.1 (-0.04 to +0.3)	0.13
	Male patient- female surgeon (discordant)	4,487 (334)	0.1 (-0.04 to 0.3)	Reference	
Hip replacement	Female patient- female surgeon (concordant)	10,421 (792)	1.8 (1.4 to 2.1)	+0.1 (-0.2 to +0.5)	0.47

	Female patient-male surgeon (discordant)	457,472 (14,164)	1.6 (1.6 to 1.7)	Reference	
	Male patient-male surgeon (concordant)	255,394 (12,932)	2.3 (2.2 to 2.4)	+0.4 (-0.3 to +1.1)	0.22
	Male patient-female surgeon (discordant)	5,048 (661)	1.9 (1.2 to 2.5)	Reference	
Laminectomy or Spinal Fusion	Female patient-female surgeon (concordant)	5,417 (354)	0.4 (0.2 to 0.7)	-0.1 (-0.3 to +0.2)	0.60
	Female patient-male surgeon (discordant)	215,993 (6,486)	0.5 (0.5 to 0.5)	Reference	
	Male patient-male surgeon (concordant)	184,234 (6,602)	1.0 (1.0 to 1.1)	-0.2 (-0.6 to +0.3)	0.42
	Male patient-female surgeon (discordant)	4,633 (377)	1.2 (0.8 to 1.6)	Reference	
Colectomy	Female patient-female surgeon (concordant)	20,956 (3,400)	5.2 (4.8 to 5.5)	-0.5 (-0.9 to -0.1)	0.020
	Female patient-male surgeon (discordant)	117,629 (13,956)	5.7 (5.5 to 5.8)	Reference	
	Male patient-male surgeon (concordant)	83,210 (12,908)	6.6 (6.4 to 6.7)	+0.5 (-0.1 to +1.0)	0.11

	Male patient-female surgeon (discordant)	11,695 (2,525)	6.1 (5.6 to 6.6)	Reference	
Cholecystectomy	Female patient-female surgeon (concordant)	11,213 (2,721)	2.3 (1.9 to 2.6)	-0.2 (-0.5 to +0.2)	0.27
	Female patient-male surgeon (discordant)	73,588 (12,189)	2.5 (2.3 to 2.6)	Reference	
	Male patient-male surgeon (concordant)	76,041 (12,029)	2.6 (2.5 to 2.7)	+0.5 (+0.2 to +0.9)	0.0017
	Male patient-female surgeon (discordant)	11,159 (2,557)	2.1 (1.8 to 2.4)	Reference	
Coronary artery bypass surgery	Female patient-female surgeon (concordant)	1,341 (145)	4.0 (2.6 to 5.5)	-0.8 (-2.3 to +0.7)	0.27
	Female patient-male surgeon (discordant)	39,956 (2,426)	4.9 (4.6 to 5.1)	Reference	
	Male patient-male surgeon (concordant)	114,158 (2,790)	2.7 (2.6 to 2.8)	+0.1 (-0.6 to +0.7)	0.84
	Male patient-female surgeon (discordant)	3,954 (183)	2.6 (2.0 to 3.3)	Reference	
Lung resection	Female patient-female surgeon (concordant)	3,783 (246)	1.3 (0.8 to 1.8)	-0.2 (-0.7 to +0.3)	0.35

	Female patient-male surgeon (discordant)	41,188 (2,551)	1.6 (1.4 to 1.7)	Reference	
	Male patient-male surgeon (concordant)	36,870 (2,715)	2.7 (2.6 to 2.9)	-0.1 (-0.8 to +0.6)	0.81
	Male patient-female surgeon (discordant)	3,020 (243)	2.8 (2.1 to 3.5)	Reference	
Abdominal aortic aneurysm repair	Female patient-female surgeon (concordant)	950 (356)	7.4 (5.2 to 9.5)	-0.1 (-2.3 to +2.2)	0.96
	Female patient-male surgeon (discordant)	15,025 (3,251)	7.5 (7.0 to 7.9)	Reference	
	Male patient-male surgeon (concordant)	45,897 (4,009)	4.4 (4.2 to 4.6)	-0.3 (-1.3 to +0.7)	0.59
	Male patient-female surgeon (discordant)	2,970 (455)	4.7 (3.7 to 5.6)	Reference	
Appendectomy	Female patient-female surgeon (concordant)	5,126 (2,209)	2.0 (1.6 to 2.4)	+0.1 (-0.4 to +0.5)	0.83
	Female patient-male surgeon (discordant)	24,216 (9,195)	1.9 (1.8 to 2.1)	Reference	
	Male patient-male surgeon (concordant)	19,384 (8,466)	2.8 (2.6 to 3.1)	+0.1 (-0.7 to +0.9)	0.81

	Male patient-female surgeon (discordant)	3,161 (1,633)	2.7 (2.1 to 3.4)	Reference	
Cystectomy	Female patient-female surgeon (concordant)	306 (133)	0.9 (-0.8 to 2.5)	-1.9 (-3.8 to -0.1)	0.042
	Female patient-male surgeon (discordant)	2,994 (1,133)	2.8 (2.2 to 3.4)	Reference	
	Male patient-male surgeon (concordant)	10,324 (1,945)	3.1 (2.7 to 3.4)	+0.4 (-1.2 to +1.9)	0.65
	Male patient-female surgeon (discordant)	612 (127)	2.7 (1.2 to 4.2)	Reference	
Thyroidectomy	Female patient-female surgeon (concordant)	410 (250)	0.3 (-0.5 to 1.1)	-0.3 (-1.3 to +0.6)	0.47
	Female patient-male surgeon (discordant)	2,198 (1,258)	0.6 (0.3 to 0.9)	Reference	
	Male patient-male surgeon (concordant)	1,398 (886)	1.5 (0.8 to 2.2)	+0.02 (-2.4 to +2.4)	0.99
	Male patient-female surgeon (discordant)	246 (150)	1.5 (-0.7 to 3.7)	Reference	
Liver resection	Female patient-female surgeon (concordant)	80 (58)	6.0 (-1.0 to 13.0)	+1.6 (-5.9 to +9.1)	0.67

	Female patient-male surgeon (discordant)	897 (464)	4.4 (3.0 to 5.7)	Reference	
	Male patient-male surgeon (concordant)	1,156 (522)	6.0 (4.7 to 7.2)	+4.2 (-0.6 to +9.0)	0.086
	Male patient-female surgeon (discordant)	121 (62)	1.8 (-2.5 to 6.1)	Reference	
Prostatectomy	Female patient-female surgeon (concordant)	N/A	N/A	N/A	N/A
	Female patient-male surgeon (discordant)	N/A	N/A	Reference	
	Male patient-male surgeon (concordant)	60,526 (5,479)	0.9 (0.8 to 1.0)	+0.3 (-0.3 to +1.0)	0.28
	Male patient-female surgeon (discordant)	1,838 (365)	0.6 (-0.01 to 1.2)	Reference	
Hysterectomy	Female patient-female surgeon (concordant)	17,355 (3,533)	0.9 (0.8 to 1.1)	-0.1 (-0.3 to +0.1)	0.37
	Female patient-male surgeon (discordant)	29,025 (5,372)	1.0 (0.9 to 1.2)	Reference	
	Male patient-male surgeon (concordant)	N/A	N/A	N/A	N/A



	Male patient- female surgeon (discordant)	N/A	N/A	Reference
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Adjusted for patient characteristics (age, race and ethnicity, 27 chronic conditions, ICD-10-PCS procedure codes, procedure type [for the analysis pooling the 14 procedure types], procedure electiveness, weekend versus weekday, month and year of surgery, and Medicaid coverage), surgeon characteristics (years of experience and operative volume), and hospital fixed effects (indicator variables for each hospital, effectively comparing patients treated at the same hospital).

Abbreviation: pp = percentage point.

**eTable 14. Association between patient-surgeon gender concordance and patient adjusted 30-day mortality rates, additionally adjusting for social deprivation index (elective and non-elective procedures combined)**

		No. of patients (No. of surgeons)	Adjusted mortality rate, % (95%CI)	Adjusted risk difference, pp (95%CI)	P-value
14 procedures (combined)	Female patient- female surgeon (concordant)	84,878 (8,518)	1.3 (1.2 to 1.5)	-0.2 (-0.3 to -0.04)	0.011
	Female patient- male surgeon (discordant)	1,541,640 (44,204)	1.5 (1.5 to 1.5)	Reference	
	Male patient- male surgeon (concordant)	1,182,339 (43,642)	2.0 (2.0 to 2.0)	+0.3 (+0.1 to +0.4)	0.0011
	Male patient- female surgeon (discordant)	51,954 (5,344)	1.7 (1.6 to 1.9)	Reference	
Knee replacement	Female patient- female surgeon (concordant)	8,635 (375)	0.2 (0.1 to 0.3)	+0.03 (-0.1 to +0.2)	0.59
	Female patient- male surgeon (discordant)	534,981 (10,621)	0.2 (0.1 to 0.2)	Reference	
	Male patient- male surgeon (concordant)	308,348 (10,188)	0.3 (0.2 to 0.3)	+0.1 (-0.1 to +0.3)	0.16
	Male patient- female surgeon (discordant)	4,384 (332)	0.1 (-0.03 to 0.3)	Reference	
Hip replacement	Female patient- female surgeon (concordant)	10,237 (791)	1.8 (1.4 to 2.2)	+0.2 (-0.2 to +0.5)	0.39

	Female patient-male surgeon (discordant)	451,359 (14,143)	1.6 (1.6 to 1.7)	Reference	
	Male patient-male surgeon (concordant)	251,223 (12,901)	2.3 (2.2 to 2.4)	+0.3 (-0.4 to +1.0)	0.38
	Male patient-female surgeon (discordant)	4,925 (658)	2.0 (1.4 to 2.7)	Reference	
Laminectomy or Spinal Fusion	Female patient-female surgeon (concordant)	5,351 (353)	0.4 (0.2 to 0.7)	-0.1 (-0.3 to +0.2)	0.61
	Female patient-male surgeon (discordant)	213,170 (6,474)	0.5 (0.5 to 0.5)	Reference	
	Male patient-male surgeon (concordant)	181,213 (6,593)	1.0 (1.0 to 1.1)	-0.2 (-0.6 to +0.3)	0.42
	Male patient-female surgeon (discordant)	4,544 (372)	1.2 (0.8 to 1.6)	Reference	
Colectomy	Female patient-female surgeon (concordant)	20,649 (3,386)	5.1 (4.7 to 5.4)	-0.6 (-1.0 to -0.2)	0.0034
	Female patient-male surgeon (discordant)	116,163 (13,906)	5.7 (5.5 to 5.8)	Reference	
	Male patient-male surgeon (concordant)	81,760 (12,826)	6.5 (6.4 to 6.7)	+0.5 (-0.1 to +1.0)	0.12

	Male patient-female surgeon (discordant)	11,490 (2,512)	6.1 (5.5 to 6.6)	Reference	
Cholecystectomy	Female patient-female surgeon (concordant)	11,055 (2,703)	2.2 (1.9 to 2.5)	-0.2 (-0.6 to +0.1)	0.19
	Female patient-male surgeon (discordant)	72,496 (12,155)	2.5 (2.3 to 2.6)	Reference	
	Male patient-male surgeon (concordant)	74,745 (11,991)	2.6 (2.5 to 2.7)	+0.6 (+0.2 to +0.9)	0.0010
	Male patient-female surgeon (discordant)	10,976 (2,543)	2.1 (1.8 to 2.4)	Reference	
Coronary artery bypass surgery	Female patient-female surgeon (concordant)	1,322 (144)	3.9 (2.5 to 5.4)	-0.9 (-2.4 to +0.6)	0.23
	Female patient-male surgeon (discordant)	39,403 (2,422)	4.9 (4.7 to 5.1)	Reference	
	Male patient-male surgeon (concordant)	112,242 (2,780)	2.7 (2.6 to 2.8)	+0.03 (-0.7 to +0.7)	0.94
	Male patient-female surgeon (discordant)	3,881 (181)	2.7 (2.0 to 3.3)	Reference	
Lung resection	Female patient-female surgeon (concordant)	3,751 (246)	1.3 (0.8 to 1.8)	-0.2 (-0.8 to +0.3)	0.34

	Female patient-male surgeon (discordant)	40,773 (2,541)	1.5 (1.4 to 1.7)	Reference	
	Male patient-male surgeon (concordant)	36,363 (2,699)	2.7 (2.6 to 2.9)	-0.1 (-0.9 to +0.6)	0.71
	Male patient-female surgeon (discordant)	2,979 (242)	2.9 (2.2 to 3.6)	Reference	
Abdominal aortic aneurysm repair	Female patient-female surgeon (concordant)	937 (356)	7.1 (4.9 to 9.3)	-0.4 (-2.6 to +1.9)	0.76
	Female patient-male surgeon (discordant)	14,841 (3,235)	7.4 (7.0 to 7.9)	Reference	
	Male patient-male surgeon (concordant)	45,216 (3,999)	4.4 (4.2 to 4.6)	-0.08 (-1.11 to +0.94)	0.87
	Male patient-female surgeon (discordant)	2,909 (454)	4.5 (3.5 to 5.5)	Reference	
Appendectomy	Female patient-female surgeon (concordant)	5,059 (2,199)	2.2 (1.8 to 2.6)	+0.3 (-0.2 to +0.8)	0.20
	Female patient-male surgeon (discordant)	23,862 (9,153)	1.9 (1.7 to 2.1)	Reference	
	Male patient-male surgeon (concordant)	19,049 (8,405)	2.8 (2.6 to 3.1)	+0.1 (-0.7 to +0.8)	0.89

	Male patient-female surgeon (discordant)	3,103 (1,615)	2.8 (2.1 to 3.5)	Reference	
Cystectomy	Female patient-female surgeon (concordant)	305 (133)	1.0 (-0.7 to 2.7)	-1.8 (-3.7 to +0.1)	0.059
	Female patient-male surgeon (discordant)	2,957 (1,124)	2.8 (2.2 to 3.4)	Reference	
	Male patient-male surgeon (concordant)	10,194 (1,938)	3.1 (2.8 to 3.4)	+0.3 (-1.3 to +1.9)	0.75
	Male patient-female surgeon (discordant)	601 (125)	2.8 (1.3 to 4.4)	Reference	
Thyroidectomy	Female patient-female surgeon (concordant)	402 (245)	0.3 (-0.5 to 1.1)	-0.35 (-1.29 to +0.59)	0.47
	Female patient-male surgeon (discordant)	2,163 (1,244)	0.6 (0.3 to 0.9)	Reference	
	Male patient-male surgeon (concordant)	1,371 (869)	1.6 (0.9 to 2.2)	-0.02 (-2.5 to +2.5)	0.99
	Male patient-female surgeon (discordant)	238 (146)	1.6 (-0.7 to 3.8)	Reference	
Liver resection	Female patient-female surgeon (concordant)	78 (56)	5.9 (-1.3 to 13.1)	+1.4 (-6.3 to +9.1)	0.71

	Female patient-male surgeon (discordant)	882 (460)	4.5 (3.1 to 5.8)	Reference	
	Male patient-male surgeon (concordant)	1,147 (521)	5.9 (4.6 to 7.2)	+4.0 (-0.9 to +8.8)	0.11
	Male patient-female surgeon (discordant)	118 (60)	1.9 (-2.4 to 6.3)	Reference	
Prostatectomy	Female patient-female surgeon (concordant)	N/A	N/A	N/A	N/A
	Female patient-male surgeon (discordant)	N/A	N/A	Reference	
	Male patient-male surgeon (concordant)	59,468 (5,456)	0.9 (0.8 to 1.0)	+0.2 (-0.4 to +0.9)	0.46
	Male patient-female surgeon (discordant)	1,806 (362)	0.7 (0.1 to 1.3)	Reference	
Hysterectomy	Female patient-female surgeon (concordant)	17,097 (3,507)	0.9 (0.7 to 1.1)	-0.1 (-0.4 to +0.1)	0.30
	Female patient-male surgeon (discordant)	28,590 (5,338)	1.0 (0.9 to 1.2)	Reference	
	Male patient-male surgeon (concordant)	N/A	N/A	N/A	N/A

	Male patient- female surgeon (discordant)	N/A	N/A	Reference
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Adjusted for patient characteristics (age, race and ethnicity, 27 chronic conditions, procedure type [for the analysis pooling the 14 procedure types], procedure electiveness, weekend versus weekday, month and year of surgery, Medicaid coverage, and social deprivation index), surgeon characteristics (years of experience and operative volume), and hospital fixed effects (indicator variables for each hospital, effectively comparing patients treated at the same hospital).

Abbreviation: pp = percentage point.



**eTable 15. Association between patient-surgeon gender concordance and patient adjusted 30-day mortality rates, additionally adjusting for claims-based measure of frailty (elective and non-elective procedures combined)**

		No. of patients (No. of surgeons)	Adjusted mortality rate, % (95%CI)	Adjusted risk difference, pp (95%CI)	P-value
14 procedures (combined)	Female patient-female surgeon (concordant)	65,700 (7,650)	1.4 (1.2 to 1.5)	-0.1 (-0.2 to +0.03)	0.13
	Female patient-male surgeon (discordant)	1,162,917 (42,032)	1.5 (1.5 to 1.5)	Reference	
	Male patient-male surgeon (concordant)	892,907 (41,929)	2.0 (2.0 to 2.1)	+0.4 (+0.2 to +0.6)	0.0001
	Male patient-female surgeon (discordant)	40,797 (5,061)	1.7 (1.5 to 1.8)	Reference	
Knee replacement	Female patient-female surgeon (concordant)	6,621 (351)	0.2 (0.0 to 0.3)	+0.02 (-0.1 to +0.2)	0.73
	Female patient-male surgeon (discordant)	396,398 (10,238)	0.2 (0.1 to 0.2)	Reference	
	Male patient-male surgeon (concordant)	228,258 (9,801)	0.3 (0.2 to 0.3)	+0.2 (+0.1 to +0.4)	0.0075
	Male patient-female surgeon (discordant)	3,331 (309)	0.04 (-0.1 to 0.2)	Reference	
Hip replacement	Female patient-female surgeon (concordant)	8,146 (730)	1.8 (1.4 to 2.2)	+0.2 (-0.2 to +0.6)	0.34

	Female patient-male surgeon (discordant)	348,580 (13,543)	1.6 (1.5 to 1.6)	Reference	
	Male patient-male surgeon (concordant)	195,441 (12,275)	2.2 (2.2 to 2.3)	+0.03 (-0.7 to +0.8)	0.94
	Male patient-female surgeon (discordant)	3,909 (615)	2.2 (1.4 to 2.9)	Reference	
Laminectomy or Spinal Fusion	Female patient-female surgeon (concordant)	4,024 (330)	0.4 (0.1 to 0.6)	-0.2 (-0.5 to +0.1)	0.29
	Female patient-male surgeon (discordant)	159,813 (6,209)	0.5 (0.5 to 0.6)	Reference	
	Male patient-male surgeon (concordant)	136,765 (6,278)	1.1 (1.0 to 1.1)	-0.2 (-0.7 to +0.4)	0.55
	Male patient-female surgeon (discordant)	3,495 (354)	1.2 (0.7 to 1.7)	Reference	
Colectomy	Female patient-female surgeon (concordant)	16,270 (3,147)	5.1 (4.7 to 5.5)	-0.6 (-1.0 to -0.1)	0.016
	Female patient-male surgeon (discordant)	88,146 (12,829)	5.7 (5.5 to 5.8)	Reference	
	Male patient-male surgeon (concordant)	62,135 (11,727)	6.5 (6.3 to 6.7)	+0.6 (-0.02 to +1.3)	0.056

	Male patient-female surgeon (discordant)	9,096 (2,291)	5.9 (5.3 to 6.5)	Reference	
Cholecystectomy	Female patient-female surgeon (concordant)	8,632 (2,473)	2.3 (1.9 to 2.7)	-0.1 (-0.5 to +0.3)	0.67
	Female patient-male surgeon (discordant)	54,830 (11,289)	2.4 (2.2 to 2.5)	Reference	
	Male patient-male surgeon (concordant)	56,664 (11,148)	2.7 (2.5 to 2.8)	+0.7 (+0.3 to +1.1)	0.0003
	Male patient-female surgeon (discordant)	8,611 (2,330)	2.0 (1.6 to 2.3)	Reference	
Coronary artery bypass surgery	Female patient-female surgeon (concordant)	1,076 (137)	3.8 (2.2 to 5.4)	-1.1 (-2.7 to +0.6)	0.20
	Female patient-male surgeon (discordant)	29,412 (2,340)	4.9 (4.6 to 5.1)	Reference	
	Male patient-male surgeon (concordant)	85,730 (2,628)	2.7 (2.5 to 2.8)	-0.1 (-0.9 to +0.6)	0.75
	Male patient-female surgeon (discordant)	3,129 (164)	2.8 (2.1 to 3.5)	Reference	
Lung resection	Female patient-female surgeon (concordant)	2,967 (227)	1.4 (0.8 to 1.9)	-0.1 (-0.7 to +0.5)	0.68

	Female patient-male surgeon (discordant)	31,198 (2,311)	1.5 (1.4 to 1.6)	Reference	
	Male patient-male surgeon (concordant)	27,484 (2,435)	2.7 (2.5 to 2.8)	-0.1 (-0.9 to +0.8)	0.90
	Male patient-female surgeon (discordant)	2,340 (224)	2.7 (1.9 to 3.5)	Reference	
Abdominal aortic aneurysm repair	Female patient-female surgeon (concordant)	746 (314)	7.6 (5.1 to 10.2)	+0.1 (-2.5 to +2.8)	0.92
	Female patient-male surgeon (discordant)	11,137 (2,939)	7.5 (7.0 to 8.0)	Reference	
	Male patient-male surgeon (concordant)	33,813 (3,697)	4.4 (4.2 to 4.6)	-0.2 (-1.4 to +0.9)	0.71
	Male patient-female surgeon (discordant)	2,347 (434)	4.6 (3.5 to 5.7)	Reference	
Appendectomy	Female patient-female surgeon (concordant)	3,941 (1,937)	2.3 (1.9 to 2.8)	+0.5 (-0.01 to +1.1)	0.056
	Female patient-male surgeon (discordant)	18,171 (8,078)	1.8 (1.6 to 2.0)	Reference	
	Male patient-male surgeon (concordant)	14,439 (7,291)	3.0 (2.7 to 3.3)	+0.2 (-0.7 to +1.1)	0.70

	Male patient-female surgeon (discordant)	2,419 (1,416)	2.8 (2.0 to 3.6)	Reference	
Cystectomy	Female patient-female surgeon (concordant)	228 (111)	0.3 (-1.8 to 2.3)	-2.4 (-4.7 to -0.04)	0.047
	Female patient-male surgeon (discordant)	2,220 (940)	2.7 (2.0 to 3.3)	Reference	
	Male patient-male surgeon (concordant)	7,656 (1,667)	3.0 (2.6 to 3.4)	+0.4 (-1.4 to +2.2)	0.65
	Male patient-female surgeon (discordant)	465 (111)	2.6 (0.9 to 4.3)	Reference	
Thyroidectomy	Female patient-female surgeon (concordant)	296 (190)	0.2 (-1.0 to 1.4)	-0.6 (-2.1 to +0.9)	0.40
	Female patient-male surgeon (discordant)	1,534 (943)	0.8 (0.4 to 1.3)	Reference	
	Male patient-male surgeon (concordant)	1,034 (694)	1.8 (0.9 to 2.6)	+1.5 (-1.1 to +4.1)	0.25
	Male patient-female surgeon (discordant)	185 (116)	0.3 (-1.9 to 2.4)	Reference	
Liver resection	Female patient-female surgeon (concordant)	60 (43)	12.2 (2.5 to 21.8)	+7.7 (-2.5 to +18.0)	0.14

	Female patient-male surgeon (discordant)	674 (391)	4.4 (2.8 to 6.0)	Reference	
	Male patient-male surgeon (concordant)	890 (449)	6.2 (4.8 to 7.6)	+4.3 (-0.7 to +9.2)	0.091
	Male patient-female surgeon (discordant)	99 (57)	1.9 (-2.5 to 6.4)	Reference	
Prostatectomy	Female patient-female surgeon (concordant)	N/A	N/A	N/A	N/A
	Female patient-male surgeon (discordant)	N/A	N/A	Reference	
	Male patient-male surgeon (concordant)	42,598 (4,975)	0.9 (0.9 to 1.0)	+0.4 (-0.3 to +1.1)	0.26
	Male patient-female surgeon (discordant)	1,371 (311)	0.6 (-0.1 to 1.2)	Reference	
Hysterectomy	Female patient-female surgeon (concordant)	12,693 (2,876)	0.9 (0.7 to 1.1)	-0.2 (-0.4 to +0.1)	0.27
	Female patient-male surgeon (discordant)	20,804 (4,386)	1.0 (0.9 to 1.2)	Reference	
	Male patient-male surgeon (concordant)	N/A	N/A	N/A	N/A

	Male patient- female surgeon (discordant)	N/A	N/A	Reference
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Adjusted for patient characteristics (age, race and ethnicity, 27 chronic conditions, claims-based measure of frailty, procedure type [for the analysis pooling the 14 procedure types], procedure electiveness, weekend versus weekday, month and year of surgery, and Medicaid coverage), surgeon characteristics (years of experience and operative volume), and hospital fixed effects (indicator variables for each hospital, effectively comparing patients treated at the same hospital).

Abbreviation: pp = percentage point.

**eTable 16. Association between patient-surgeon gender concordance and patient adjusted 30-day mortality rates for major or minor teaching hospitals (elective and non-elective procedures combined)**

		No. of patients (No. of surgeons)	Adjusted mortality rate, % (95%CI)	Adjusted risk difference, pp (95%CI)	P-value
14 procedures (combined)	Female patient- female surgeon (concordant)	63,410 (6,714)	1.3 (1.2 to 1.5)	-0.2 (-0.3 to -0.1)	0.0051
	Female patient- male surgeon (discordant)	1,046,462 (34,542)	1.5 (1.5 to 1.5)	Reference	
	Male patient- male surgeon (concordant)	829,426 (34,040)	2.1 (2.0 to 2.1)	+0.5 (+0.3 to +0.7)	<0.0001
	Male patient- female surgeon (discordant)	38,626 (4,283)	1.6 (1.4 to 1.8)	Reference	
Knee replacement	Female patient- female surgeon (concordant)	5,102 (267)	0.2 (0.02 to 0.3)	+0.02 (-0.1 to +0.2)	0.77
	Female patient- male surgeon (discordant)	340,622 (7,489)	0.2 (0.1 to 0.2)	Reference	
	Male patient- male surgeon (concordant)	194,317 (6,988)	0.3 (0.2 to 0.3)	+0.1 (-0.1 to +0.3)	0.44
	Male patient- female surgeon (discordant)	2,526 (231)	0.2 (-0.05 to 0.4)	Reference	
Hip replacement	Female patient- female surgeon (concordant)	6,746 (608)	1.7 (1.2 to 2.1)	+0.1 (-0.4 to +0.5)	0.73



	Female patient-male surgeon (discordant)	298,454 (10,539)	1.6 (1.5 to 1.6)	Reference	
	Male patient-male surgeon (concordant)	166,651 (9,290)	2.2 (2.2 to 2.3)	+0.8 (+0.02 to +1.5)	0.045
	Male patient-female surgeon (discordant)	3,366 (480)	1.5 (0.8 to 2.2)	Reference	
Laminectomy or Spinal Fusion	Female patient-female surgeon (concordant)	3,695 (310)	0.5 (0.2 to 0.8)	-0.1 (-0.4 to +0.2)	0.64
	Female patient-male surgeon (discordant)	154,444 (5,475)	0.5 (0.5 to 0.6)	Reference	
	Male patient-male surgeon (concordant)	132,535 (5,561)	1.1 (1.1 to 1.2)	-0.2 (-0.7 to +0.4)	0.53
	Male patient-female surgeon (discordant)	3,161 (331)	1.3 (0.8 to 1.8)	Reference	
Colectomy	Female patient-female surgeon (concordant)	15,839 (2,639)	4.9 (4.5 to 5.3)	-0.6 (-1.0 to -0.1)	0.011
	Female patient-male surgeon (discordant)	81,476 (10,137)	5.5 (5.3 to 5.6)	Reference	
	Male patient-male surgeon (concordant)	57,238 (9,207)	6.5 (6.3 to 6.7)	+0.8 (+0.1 to +1.4)	0.020

	Male patient-female surgeon (discordant)	8,777 (1,898)	5.7 (5.1 to 6.3)	Reference	
Cholecystectomy	Female patient-female surgeon (concordant)	7,722 (2,069)	2.2 (1.8 to 2.5)	-0.2 (-0.7 to +0.2)	0.24
	Female patient-male surgeon (discordant)	48,010 (8,705)	2.4 (2.3 to 2.6)	Reference	
	Male patient-male surgeon (concordant)	50,318 (8,588)	2.6 (2.5 to 2.8)	+0.8 (+0.4 to +1.2)	<0.0001
	Male patient-female surgeon (discordant)	7,684 (1,906)	1.8 (1.5 to 2.1)	Reference	
Coronary artery bypass surgery	Female patient-female surgeon (concordant)	7,722 (2,069)	3.7 (2.1 to 5.3)	-1.2 (-2.8 to +0.5)	0.16
	Female patient-male surgeon (discordant)	48,010 (8,705)	4.9 (4.6 to 5.1)	Reference	
	Male patient-male surgeon (concordant)	50,318 (8,588)	2.6 (2.5 to 2.7)	+0.2 (-0.5 to +0.9)	0.57
	Male patient-female surgeon (discordant)	7,684 (1,906)	2.4 (1.7 to 3.1)	Reference	
Lung resection	Female patient-female surgeon (concordant)	3,448 (216)	1.1 (0.7 to 1.6)	-0.3 (-0.8 to +0.2)	0.20

	Female patient-male surgeon (discordant)	34,551 (2,063)	1.5 (1.3 to 1.6)	Reference	
	Male patient-male surgeon (concordant)	30,409 (2,185)	2.5 (2.3 to 2.7)	-0.1 (-0.8 to +0.7)	0.90
	Male patient-female surgeon (discordant)	2,729 (210)	2.6 (1.9 to 3.3)	Reference	
Abdominal aortic aneurysm repair	Female patient-female surgeon (concordant)	826 (311)	7.2 (5.0 to 9.4)	-0.5 (-2.7 to +2.0)	0.77
	Female patient-male surgeon (discordant)	12,321 (2,662)	7.6 (7.1 to 8.0)	Reference	
	Male patient-male surgeon (concordant)	36,942 (3,284)	4.5 (4.3 to 4.7)	+0.2 (-0.8 to +1.3)	0.67
	Male patient-female surgeon (discordant)	2,569 (394)	4.3 (3.3 to 5.3)	Reference	
Appendectomy	Female patient-female surgeon (concordant)	3,730 (1,678)	2.1 (1.6 to 2.5)	+0.3 (-0.2 to +0.8)	0.29
	Female patient-male surgeon (discordant)	15,990 (6,330)	1.8 (1.6 to 2.0)	Reference	
	Male patient-male surgeon (concordant)	11,984 (5,647)	3.1 (2.8 to 3.4)	+0.9 (+0.1 to +1.8)	0.040

	Male patient-female surgeon (discordant)	2,112 (1,167)	2.2 (1.4 to 3.0)	Reference	
Cystectomy	Female patient-female surgeon (concordant)	296 (124)	0.8 (-0.8 to 2.4)	-1.8 (-3.7 to +0.01)	0.051
	Female patient-male surgeon (discordant)	2,662 (957)	2.7 (2.1 to 3.3)	Reference	
	Male patient-male surgeon (concordant)	9,276 (1,629)	3.0 (2.7 to 3.3)	+0.4 (-1.1 to +1.9)	0.60
	Male patient-female surgeon (discordant)	594 (115)	2.6 (1.2 to 4.0)	Reference	
Thyroidectomy	Female patient-female surgeon (concordant)	345 (202)	0.02 (-0.8 to 0.8)	-0.5 (-1.4 to +0.5)	0.33
	Female patient-male surgeon (discordant)	1,795 (976)	0.5 (0.2 to 0.8)	Reference	
	Male patient-male surgeon (concordant)	1,180 (705)	1.6 (0.9 to 2.3)	-0.3 (-2.6 to +2.0)	0.82
	Male patient-female surgeon (discordant)	226 (133)	1.9 (-0.2 to 3.9)	Reference	
Liver resection	Female patient-female surgeon (concordant)	78 (56)	4.8 (-1.9 to 11.5)	+0.3 (-6.9 to +7.6)	0.93

	Female patient-male surgeon (discordant)	807 (420)	4.5 (3.1 to 5.9)	Reference	
	Male patient-male surgeon (concordant)	1,060 (482)	5.5 (4.2 to 6.8)	+4.0 (-0.6 to +8.7)	0.089
	Male patient-female surgeon (discordant)	118 (59)	1.5 (-2.7 to 5.7)	Reference	
Prostatectomy	Female patient-female surgeon (concordant)	N/A	N/A	N/A	N/A
	Female patient-male surgeon (discordant)	N/A	N/A	Reference	
	Male patient-male surgeon (concordant)	46,814 (4,210)	0.9 (0.8 to 1.0)	+0.3 (-0.3 to +1.0)	0.33
	Male patient-female surgeon (discordant)	1,534 (287)	0.6 (-0.1 to 1.2)	Reference	
Hysterectomy	Female patient-female surgeon (concordant)	14,476 (2,666)	0.9 (0.7 to 1.0)	-0.2 (-0.4 to +0.1)	0.14
	Female patient-male surgeon (discordant)	23,741 (3,868)	1.1 (0.9 to 1.2)	Reference	
	Male patient-male surgeon (concordant)	N/A	N/A	N/A	N/A

	Male patient- female surgeon (discordant)	N/A	N/A	Reference
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Adjusted for patient characteristics (age, race and ethnicity, 27 chronic conditions, procedure type [for the analysis pooling the 14 procedure types], procedure electiveness, weekend versus weekday, month and year of surgery, and Medicaid coverage), surgeon characteristics (years of experience and operative volume), and hospital fixed effects (indicator variables for each hospital, effectively comparing patients treated at the same hospital).

Abbreviation: pp = percentage point.

**eTable 17. Association between patient-surgeon gender concordance and patient adjusted 30-day mortality rates for non-teaching hospitals (elective and non-elective procedures combined)**

		No. of patients (No. of surgeons)	Adjusted mortality rate, % (95%CI)	Adjusted risk difference, pp (95%CI)	P-value
14 procedures (combined)	Female patient- female surgeon (concordant)	22,723 (2,681)	1.4 (1.2 to 1.7)	+0.01 (-0.2 to +0.3)	0.96
	Female patient- male surgeon (discordant)	515,505 (18,193)	1.4 (1.4 to 1.5)	Reference	
	Male patient- male surgeon (concordant)	372,286 (17,840)	1.9 (1.9 to 1.9)	-0.3 (-0.7 to -0.01)	0.046
	Male patient- female surgeon (discordant)	14,318 (1,690)	2.2 (1.9 to 2.6)	Reference	
Knee replacement	Female patient- female surgeon (concordant)	3,673 (161)	0.2 (0.02 to 0.3)	+0.02 (-0.1 to +0.2)	0.83
	Female patient- male surgeon (discordant)	201,164 (5,491)	0.2 (0.1 to 0.2)	Reference	
	Male patient- male surgeon (concordant)	118,803 (5,167)	0.3 (0.2 to 0.3)	+0.2 (-0.04 to +0.4)	0.11
	Male patient- female surgeon (discordant)	1,961 (143)	0.1 (-0.2 to 0.3)	Reference	
Hip replacement	Female patient- female surgeon (concordant)	3,675 (321)	2.1 (1.5 to 2.8)	+0.4 (-0.3 to +1.1)	0.26

	Female patient-male surgeon (discordant)	159,018 (6,897)	1.7 (1.7 to 1.8)	Reference	
	Male patient-male surgeon (concordant)	88,743 (6,126)	2.4 (2.3 to 2.5)	-0.8 (-2.1 to +0.6)	0.27
	Male patient-female surgeon (discordant)	1,682 (267)	3.1 (1.9 to 4.4)	Reference	
Laminectomy or Spinal Fusion	Female patient-female surgeon (concordant)	1,722 (89)	0.4 (-0.03 to 0.8)	-0.04 (-0.4 to +0.4)	0.84
	Female patient-male surgeon (discordant)	61,549 (2,385)	0.4 (0.4 to 0.5)	Reference	
	Male patient-male surgeon (concordant)	51,699 (2,404)	0.9 (0.8 to 0.9)	-0.2 (-1.0 to +0.5)	0.59
	Male patient-female surgeon (discordant)	1,472 (85)	1.1 (0.3 to 1.8)	Reference	
Colectomy	Female patient-female surgeon (concordant)	5,117 (1,023)	5.7 (4.9 to 6.4)	-0.5 (-1.3 to +0.4)	0.27
	Female patient-male surgeon (discordant)	36,153 (5,233)	6.1 (5.9 to 6.4)	Reference	
	Male patient-male surgeon (concordant)	25,972 (4,778)	6.7 (6.4 to 7.0)	-0.6 (-1.8 to +0.7)	0.37



	Male patient-female surgeon (discordant)	2,918 (799)	7.3 (6.1 to 8.4)	Reference	
Cholecystectomy	Female patient-female surgeon (concordant)	3,491 (865)	2.3 (1.7 to 2.9)	-0.2 (-0.9 to +0.5)	0.56
	Female patient-male surgeon (discordant)	25,578 (4,778)	2.5 (2.3 to 2.7)	Reference	
	Male patient-male surgeon (concordant)	25,723 (4,735)	2.6 (2.4 to 2.8)	-0.1 (-0.8 to +0.6)	0.73
	Male patient-female surgeon (discordant)	3,475 (863)	2.8 (2.1 to 3.4)	Reference	
Coronary artery bypass surgery	Female patient-female surgeon (concordant)	234 (30)	6.3 (2.8 to 9.8)	+1.5 (-2.1 to +5.0)	0.42
	Female patient-male surgeon (discordant)	8,367 (655)	4.8 (4.4 to 5.3)	Reference	
	Male patient-male surgeon (concordant)	23,456 (816)	2.9 (2.7 to 3.1)	-0.8 (-2.6 to +0.9)	0.36
	Male patient-female surgeon (discordant)	724 (42)	3.7 (2.0 to 5.4)	Reference	
Lung resection	Female patient-female surgeon (concordant)	335 (53)	3.5 (0.2 to 6.8)	+1.5 (-1.9 to +4.8)	0.40

	Female patient-male surgeon (discordant)	6,637 (772)	2.1 (1.7 to 2.4)	Reference	
	Male patient-male surgeon (concordant)	6,461 (827)	3.8 (3.3 to 4.2)	-1.4 (-4.9 to +2.2)	0.44
	Male patient-female surgeon (discordant)	291 (51)	5.2 (1.7 to 8.6)	Reference	
Abdominal aortic aneurysm repair	Female patient-female surgeon (concordant)	124 (57)	8.2 (-1.0 to 17.4)	+1.2 (-8.4 to +10.8)	0.80
	Female patient-male surgeon (discordant)	2,704 (779)	7.0 (6.0 to 8.0)	Reference	
	Male patient-male surgeon (concordant)	8,955 (1,108)	3.9 (3.5 to 4.3)	-3.9 (-7.6 to -0.3)	0.034
	Male patient-female surgeon (discordant)	401 (92)	7.8 (4.3 to 11.4)	Reference	
Appendectomy	Female patient-female surgeon (concordant)	1,396 (641)	2.5 (1.6 to 3.4)	+0.3 (-0.7 to +1.3)	0.56
	Female patient-male surgeon (discordant)	8,226 (3,500)	2.2 (1.8 to 2.5)	Reference	
	Male patient-male surgeon (concordant)	7,400 (3,300)	2.4 (2.0 to 2.7)	-1.8 (-3.3 to -0.3)	0.016

	Male patient-female surgeon (discordant)	1,049 (540)	4.2 (2.8 to 5.6)	Reference	
Cystectomy	Female patient-female surgeon (concordant)	10 (10)	18.8 (-5.8 to 43.4)	+15.4 (-9.0 to +39.9)	0.21
	Female patient-male surgeon (discordant)	332 (196)	3.3 (1.6 to 5.1)	Reference	
	Male patient-male surgeon (concordant)	1,048 (380)	3.6 (2.4 to 4.9)	-1.3 (-22.5 to +20.1)	0.91
	Male patient-female surgeon (discordant)	18 (14)	4.9 (-16.1 to 25.9)	Reference	
Thyroidectomy	Female patient-female surgeon (concordant)	65 (54)	-0.8 (-7.9 to 6.3)	-2.4 (-10.7 to +5.9)	0.56
	Female patient-male surgeon (discordant)	403 (303)	1.6 (0.05 to 3.2)	Reference	
	Male patient-male surgeon (concordant)	218 (187)	1.9 (-1.9 to 5.6)	+12.1 (-24.3 to +48.4)	0.49
	Male patient-female surgeon (discordant)	20 (17)	-10.2 (-43.1 to 22.7)	Reference	
Prostatectomy	Female patient-female surgeon (concordant)	N/A	N/A	N/A	N/A

	Female patient-male surgeon (discordant)	N/A	N/A	Reference	
	Male patient-male surgeon (concordant)	13,712 (1,939)	0.9 (0.8 to 1.1)	-0.3 (-1.8 to +1.3)	0.71
	Male patient-female surgeon (discordant)	304 (98)	1.2 (-0.3 to 2.7)	Reference	
Hysterectomy	Female patient-female surgeon (concordant)	2,879 (998)	1.1 (0.6 to 1.6)	+0.2 (-0.5 to +0.8)	0.64
	Female patient-male surgeon (discordant)	5,284 (1,757)	0.9 (0.6 to 1.3)	Reference	
	Male patient-male surgeon (concordant)	N/A	N/A	N/A	N/A
	Male patient-female surgeon (discordant)	N/A	N/A	Reference	

Adjusted for patient characteristics (age, race and ethnicity, 27 chronic conditions, procedure type [for the analysis pooling the 14 procedure types], procedure electiveness, weekend versus weekday, month and year of surgery, and Medicaid coverage), surgeon characteristics (years of experience and operative volume), and hospital fixed effects (indicator variables for each hospital, effectively comparing patients treated at the same hospital).

Liver resection was removed as the estimate did not converge due to the small sample size.

Abbreviation: pp = percentage point.

**eTable 18. Association between patient-surgeon gender concordance and patient adjusted 30-day mortality rates for low-mortality hospitals (elective and non-elective procedures combined)**

		No. of patients (No. of surgeons)	Adjusted mortality rate, % (95%CI)	Adjusted risk difference, pp (95%CI)	P-value
14 procedures (combined)	Female patient- female surgeon (concordant)	46,836 (5,076)	1.1 (0.9 to 1.2)	-0.1 (-0.3 to +0.04)	0.15
	Female patient- male surgeon (discordant)	777,532 (27,300)	1.2 (1.2 to 1.2)	Reference	
	Male patient- male surgeon (concordant)	599,850 (27,008)	1.6 (1.6 to 1.6)	-0.02 (-0.2 to +0.2)	0.83
	Male patient- female surgeon (discordant)	27,146 (3,216)	1.6 (1.4 to 1.8)	Reference	
Knee replacement	Female patient- female surgeon (concordant)	4,565 (228)	0.2 (0.03 to 0.3)	+0.1 (-0.1 to +0.2)	0.40
	Female patient- male surgeon (discordant)	260,772 (6,463)	0.1 (0.1 to 0.1)	Reference	
	Male patient- male surgeon (concordant)	148,668 (6,140)	0.2 (0.2 to 0.2)	+0.1 (-0.2 to +0.4)	0.52
	Male patient- female surgeon (discordant)	2,206 (193)	0.1 (-0.2 to 0.4)	Reference	
Hip replacement	Female patient- female surgeon (concordant)	5,375 (502)	1.5 (1.1 to 2.0)	+0.2 (-0.2 to +0.7)	0.35

	Female patient-male surgeon (discordant)	230,634 (8,930)	1.3 (1.3 to 1.3)	Reference	
	Male patient-male surgeon (concordant)	128,254 (7,896)	1.9 (1.8 to 2.0)	+0.2 (-0.7 to +1.1)	0.71
	Male patient-female surgeon (discordant)	2,545 (409)	1.8 (0.9 to 2.6)	Reference	
Laminectomy or Spinal Fusion	Female patient-female surgeon (concordant)	2,517 (188)	0.4 (0.03 to 0.7)	-0.1 (-0.4 to +0.3)	0.79
	Female patient-male surgeon (discordant)	103,396 (3,944)	0.4 (0.4 to 0.4)	Reference	
	Male patient-male surgeon (concordant)	89,136 (3,973)	0.9 (0.8 to 0.9)	-0.7 (-1.3 to -0.1)	0.026
	Male patient-female surgeon (discordant)	2,075 (206)	1.6 (1.0 to 2.2)	Reference	
Colectomy	Female patient-female surgeon (concordant)	11,854 (1,953)	4.0 (3.5 to 4.4)	-0.3 (-0.8 to +0.2)	0.21
	Female patient-male surgeon (discordant)	62,515 (8,040)	4.3 (4.1 to 4.4)	Reference	
	Male patient-male surgeon (concordant)	44,329 (7,278)	4.9 (4.7 to 5.1)	-0.04 (-0.7 to +0.7)	0.91

	Male patient-female surgeon (discordant)	6,435 (1,410)	4.9 (4.3 to 5.6)	Reference	
Cholecystectomy	Female patient-female surgeon (concordant)	5,978 (1,554)	1.6 (1.3 to 2.0)	-0.002 (-0.4 to +0.4)	0.99
	Female patient-male surgeon (discordant)	38,158 (7,034)	1.6 (1.5 to 1.8)	Reference	
	Male patient-male surgeon (concordant)	39,060 (6,945)	1.7 (1.6 to 1.9)	+0.1 (-0.3 to +0.5)	0.69
	Male patient-female surgeon (discordant)	5,838 (1,463)	1.7 (1.3 to 2.0)	Reference	
Coronary artery bypass surgery	Female patient-female surgeon (concordant)	514 (72)	3.0 (1.0 to 5.0)	-0.8 (-2.9 to +1.2)	0.43
	Female patient-male surgeon (discordant)	18,849 (1,423)	3.9 (3.6 to 4.1)	Reference	
	Male patient-male surgeon (concordant)	56,061 (1,663)	2.0 (1.9 to 2.1)	-0.1 (-1.0 to +0.8)	0.87
	Male patient-female surgeon (discordant)	1,550 (96)	2.1 (1.2 to 3.0)	Reference	
Lung resection	Female patient-female surgeon (concordant)	2,434 (151)	1.0 (0.6 to 1.5)	-0.2 (-0.7 to +0.3)	0.44

	Female patient-male surgeon (discordant)	23,519 (1,391)	1.2 (1.1 to 1.4)	Reference	
	Male patient-male surgeon (concordant)	20,377 (1,493)	2.0 (1.8 to 2.2)	-0.6 (-1.5 to +0.3)	0.19
	Male patient-female surgeon (discordant)	1,806 (146)	2.6 (1.7 to 3.4)	Reference	
Abdominal aortic aneurysm repair	Female patient-female surgeon (concordant)	439 (176)	7.5 (4.3 to 10.6)	+1.2 (-2.1 to +4.4)	0.48
	Female patient-male surgeon (discordant)	7,209 (1,720)	6.3 (5.7 to 6.8)	Reference	
	Male patient-male surgeon (concordant)	22,527 (2,232)	3.5 (3.2 to 3.7)	-0.3 (-1.6 to +1.0)	0.61
	Male patient-female surgeon (discordant)	1,385 (259)	3.8 (2.6 to 5.0)	Reference	
Appendectomy	Female patient-female surgeon (concordant)	2,867 (1,269)	1.5 (1.0 to 1.9)	+0.3 (-0.3 to +0.8)	0.32
	Female patient-male surgeon (discordant)	13,112 (5,188)	1.2 (1.0 to 1.4)	Reference	
	Male patient-male surgeon (concordant)	10,302 (4,740)	1.9 (1.6 to 2.2)	+0.1 (-0.8 to +1.0)	0.79



	Male patient-female surgeon (discordant)	1,728 (940)	1.8 (1.0 to 2.6)	Reference	
Cystectomy	Female patient-female surgeon (concordant)	194 (79)	0.7 (-1.3 to 2.7)	-1.4 (-3.7 to +0.8)	0.22
	Female patient-male surgeon (discordant)	1,779 (585)	2.1 (1.5 to 2.8)	Reference	
	Male patient-male surgeon (concordant)	6,065 (1,047)	2.3 (1.9 to 2.7)	-0.7 (-3.0 to +1.5)	0.52
	Male patient-female surgeon (discordant)	351 (74)	3.0 (0.9 to 5.2)	Reference	
Thyroidectomy	Female patient-female surgeon (concordant)	202 (129)	0.8 (0.1 to 1.5)	+0.2 (-0.3 to +0.8)	0.43
	Female patient-male surgeon (discordant)	1,183 (667)	0.5 (0.2 to 0.9)	Reference	
	Male patient-male surgeon (concordant)	742 (467)	1.5 (0.5 to 2.4)	+0.5 (-2.9 to +3.9)	0.79
	Male patient-female surgeon (discordant)	125 (78)	1.0 (-2.0 to 4.0)	Reference	
Liver resection	Female patient-female surgeon (concordant)	50 (37)	8.5 (-1.1 to 18.1)	+5.4 (-4.9 to +15.6)	0.30

	Female patient-male surgeon (discordant)	477 (249)	3.1 (1.4 to 4.8)	Reference	
	Male patient-male surgeon (concordant)	643 (274)	3.5 (2.1 to 5.0)	+4.3 (-3.7 to +12.3)	0.29
	Male patient-female surgeon (discordant)	69 (36)	-0.8 (-8.0 to 6.4)	Reference	
Prostatectomy	Female patient-female surgeon (concordant)	N/A	N/A	N/A	N/A
	Female patient-male surgeon (discordant)	N/A	N/A	Reference	
	Male patient-male surgeon (concordant)	33,686 (3,334)	0.7 (0.6 to 0.8)	-0.4 (-1.3 to +0.6)	0.44
	Male patient-female surgeon (discordant)	1,033 (202)	1.1 (0.2 to 2.0)	Reference	
Hysterectomy	Female patient-female surgeon (concordant)	9,847 (2,026)	0.6 (0.4 to 0.8)	-0.04 (-0.3 to +0.2)	0.76
	Female patient-male surgeon (discordant)	15,929 (3,006)	0.7 (0.5 to 0.8)	Reference	
	Male patient-male surgeon (concordant)	N/A	N/A	N/A	N/A

	Male patient- female surgeon (discordant)	N/A	N/A	Reference
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Adjusted for patient characteristics (age, race and ethnicity, 27 chronic conditions, procedure type [for the analysis pooling the 14 procedure types], procedure electiveness, weekend versus weekday, month and year of surgery, and Medicaid coverage), surgeon characteristics (years of experience and operative volume), and hospital fixed effects (indicator variables for each hospital, effectively comparing patients treated at the same hospital).

Abbreviation: pp = percentage point.

**eTable 19. Association between patient-surgeon gender concordance and patient adjusted 30-day mortality rates for high-mortality hospitals (elective and non-elective procedures combined)**

		No. of patients (No. of surgeons)	Adjusted mortality rate, % (95%CI)	Adjusted risk difference, pp (95%CI)	P-value
14 procedures (combined)	Female patient- female surgeon (concordant)	39,297 (4,476)	1.6 (1.4 to 1.8)	-0.2 (-0.4 to +0.03)	0.095
	Female patient- male surgeon (discordant)	784,435 (25,722)	1.8 (1.8 to 1.8)	Reference	
	Male patient- male surgeon (concordant)	601,862 (25,341)	2.4 (2.4 to 2.5)	+0.6 (+0.3 to +0.8)	<0.0001
	Male patient- female surgeon (discordant)	25,798 (2,929)	1.9 (1.6 to 2.1)	Reference	
Knee replacement	Female patient- female surgeon (concordant)	4,210 (193)	0.2 (0.02 to 0.3)	-0.01 (-0.2 to +0.2)	0.92
	Female patient- male surgeon (discordant)	281,014 (6,333)	0.2 (0.2 to 0.2)	Reference	
	Male patient- male surgeon (concordant)	164,452 (5,960)	0.3 (0.3 to 0.3)	+0.2 (-0.03 to +0.4)	0.10
	Male patient- female surgeon (discordant)	2,281 (173)	0.1 (-0.05 to 0.3)	Reference	
Hip replacement	Female patient- female surgeon (concordant)	5,046 (423)	2.1 (1.5 to 2.6)	+0.1 (-0.5 to +0.7)	0.73

	Female patient-male surgeon (discordant)	226,838 (8,491)	2.0 (1.9 to 2.0)	Reference	
	Male patient-male surgeon (concordant)	127,140 (7,552)	2.7 (2.6 to 2.8)	+0.5 (-0.5 to +1.4)	0.36
	Male patient-female surgeon (discordant)	2,503 (337)	2.2 (1.3 to 3.2)	Reference	
Laminectomy or Spinal Fusion	Female patient-female surgeon (concordant)	2,900 (226)	0.5 (0.1 to 0.9)	-0.1 (-0.5 to +0.3)	0.63
	Female patient-male surgeon (discordant)	112,597 (3,935)	0.6 (0.6 to 0.6)	Reference	
	Male patient-male surgeon (concordant)	95,098 (4,029)	1.2 (1.2 to 1.3)	+0.3 (-0.3 to +1.0)	0.28
	Male patient-female surgeon (discordant)	2,558 (224)	0.9 (0.3 to 1.5)	Reference	
Colectomy	Female patient-female surgeon (concordant)	9,102 (1,775)	6.4 (5.8 to 7.0)	-0.9 (-1.6 to -0.2)	0.0087
	Female patient-male surgeon (discordant)	55,114 (7,446)	7.3 (7.1 to 7.5)	Reference	
	Male patient-male surgeon (concordant)	38,881 (6,821)	8.5 (8.2 to 8.8)	+1.2 (+0.2 to +2.1)	0.016

	Male patient-female surgeon (discordant)	5,260 (1,326)	7.3 (6.5 to 8.2)	Reference	
Cholecystectomy	Female patient-female surgeon (concordant)	5,235 (1,433)	2.9 (2.3 to 3.4)	-0.5 (-1.1 to +0.1)	0.092
	Female patient-male surgeon (discordant)	35,430 (6,551)	3.3 (3.2 to 3.5)	Reference	
	Male patient-male surgeon (concordant)	36,981 (6,464)	3.6 (3.4 to 3.8)	+1.0 (+0.5 to +1.6)	0.0002
	Male patient-female surgeon (discordant)	5,321 (1,354)	2.5 (2.0 to 3.0)	Reference	
Coronary artery bypass surgery	Female patient-female surgeon (concordant)	827 (91)	4.9 (2.9 to 6.9)	-0.9 (-2.9 to +1.2)	0.42
	Female patient-male surgeon (discordant)	21,107 (1,475)	5.7 (5.4 to 6.1)	Reference	
	Male patient-male surgeon (concordant)	58,097 (1,725)	3.3 (3.2 to 3.5)	+0.1 (-0.8 to +1.1)	0.77
	Male patient-female surgeon (discordant)	2,404 (113)	3.2 (2.3 to 4.1)	Reference	
	Female patient-female surgeon (concordant)	1,349 (134)	1.9 (0.8 to 3.0)	-0.1 (-1.3 to +1.1)	0.86

Lung resection	Female patient-male surgeon (discordant)	17,669 (1,511)	2.0 (1.8 to 2.2)	Reference	
	Male patient-male surgeon (concordant)	16,493 (1,607)	3.7 (3.4 to 4.0)	+0.8 (-0.5 to +2.1)	0.23
	Male patient-female surgeon (discordant)	1,214 (135)	2.9 (1.6 to 4.1)	Reference	
Abdominal aortic aneurysm repair	Female patient-female surgeon (concordant)	511 (199)	7.1 (4.1 to 10.2)	-1.4 (-4.6 to +1.8)	0.39
	Female patient-male surgeon (discordant)	7,816 (1,818)	8.6 (7.9 to 9.2)	Reference	
	Male patient-male surgeon (concordant)	23,370 (2,271)	5.3 (5.0 to 5.6)	+0.03 (-1.5 to +1.6)	0.97
	Male patient-female surgeon (discordant)	1,585 (250)	5.3 (3.8 to 6.7)	Reference	
Appendectomy	Female patient-female surgeon (concordant)	2,259 (1,063)	3.0 (2.2 to 3.8)	+0.3 (-0.6 to +1.1)	0.51
	Female patient-male surgeon (discordant)	11,104 (4,661)	2.7 (2.4 to 3.0)	Reference	
	Male patient-male surgeon (concordant)	9,082 (4,242)	3.9 (3.5 to 4.3)	+0.1 (-1.2 to +1.4)	0.92

	Male patient-female surgeon (discordant)	1,433 (785)	3.8 (2.6 to 5.0)	Reference	
Cystectomy	Female patient-female surgeon (concordant)	112 (57)	1.8 (-1.4 to 4.9)	-2.0 (-5.4 to +1.5)	0.26
	Female patient-male surgeon (discordant)	1,215 (580)	3.7 (2.7 to 4.7)	Reference	
	Male patient-male surgeon (concordant)	4,259 (1,001)	4.2 (3.6 to 4.8)	+2.6 (+0.7 to +4.5)	0.0080
	Male patient-female surgeon (discordant)	261 (58)	1.6 (-0.2 to 3.4)	Reference	
Thyroidectomy	Female patient-female surgeon (concordant)	208 (124)	-0.3 (-1.7 to 1.2)	-1.0 (-2.8 to +0.8)	0.29
	Female patient-male surgeon (discordant)	1,015 (620)	0.7 (0.2 to 1.2)	Reference	
	Male patient-male surgeon (concordant)	656 (440)	1.7 (0.7 to 2.7)	+0.2 (-2.8 to +3.2)	0.89
	Male patient-female surgeon (discordant)	121 (72)	1.5 (-1.1 to 4.1)	Reference	
	Female patient-female surgeon (concordant)	30 (22)	5.2 (-5.0 to 15.4)	-0.4 (-11.2 to +10.5)	0.94



Liver resection	Female patient-male surgeon (discordant)	420 (228)	5.6 (3.5 to 7.6)	Reference	
	Male patient-male surgeon (concordant)	513 (260)	8.8 (6.5 to 11.0)	+0.9 (-5.9 to +7.7)	0.79
	Male patient-female surgeon (discordant)	52 (27)	7.8 (1.4 to 14.2)	Reference	
Prostatectomy	Female patient-female surgeon (concordant)	N/A	N/A	N/A	N/A
	Female patient-male surgeon (discordant)	N/A	N/A	Reference	
	Male patient-male surgeon (concordant)	26,840 (2,889)	1.2 (1.0 to 1.3)	+1.0 (+0.3 to +1.7)	0.0079
	Male patient-female surgeon (discordant)	805 (192)	0.2 (-0.5 to 0.9)	Reference	
Hysterectomy	Female patient-female surgeon (concordant)	7,508 (1,691)	1.3 (1.0 to 1.6)	-0.2 (-0.6 to +0.2)	0.26
	Female patient-male surgeon (discordant)	13,096 (2,681)	1.5 (1.3 to 1.7)	Reference	
	Male patient-male surgeon (concordant)	N/A	N/A	N/A	N/A

	Male patient- female surgeon (discordant)	N/A	N/A	Reference
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Adjusted for patient characteristics (age, race and ethnicity, 27 chronic conditions, procedure type [for the analysis pooling the 14 procedure types], procedure electiveness, weekend versus weekday, month and year of surgery, and Medicaid coverage), surgeon characteristics (years of experience and operative volume), and hospital fixed effects (indicator variables for each hospital, effectively comparing patients treated at the same hospital).

Abbreviation: pp = percentage point.