

# Supplementary Material: The Impact of Facility Surgical Caseload Volumes on Survival Outcomes in Patients Undergoing Radical Cystectomy

Giovanni E. Cacciamani <sup>1,†</sup>, Afsaneh Barzi <sup>2,†</sup>, Michael B. Eppler <sup>1</sup>, Primo N. Lara Jr. <sup>3</sup>, Chong-Xian Pan <sup>4</sup>, Sumeet K. Bhanvadia <sup>1</sup>, Parkash Gill <sup>5</sup>, Monish Aron <sup>1</sup>, Inderbir Gill <sup>1</sup> and Sarmad Sadeghi <sup>6,\*</sup>

- <sup>1</sup> Institute of Urology, USC Keck School of Medicine, Norris Comprehensive Cancer Center, University of Southern California, Los Angeles, CA 90033, USA
  - <sup>2</sup> City of Hope Comprehensive Cancer Center, Department of Medical Oncology & Therapeutics Research, Duarte, CA 91010, USA
  - <sup>3</sup> UC Davis Comprehensive Cancer Center, 4501 X Street, Sacramento, CA 95817, USA
  - <sup>4</sup> Department of Medicine, Harvard Medical School, West Roxbury, MA 02132, USA
  - <sup>5</sup> Department of Medicine, USC Norris Comprehensive Cancer Center, University of Southern California, Los Angeles, CA 90033, USA
  - <sup>6</sup> Norris Cancer Hospital and Clinics Norris Comprehensive Cancer Center, University of Southern California, Los Angeles, CA 90033, USA
- \* Correspondence: sarmad.sadeghi@usc.edu; Tel.: +323-865-0553
- † These authors contributed equally to this work.

**Table 3: Disease and treatment characteristics by volume group.**

\* ni: neoadjuvant chemo indicated. ng: neoadjuvant chemo given. ai: adjuvant chemo indicated. ag: adjuvant chemo given. (0) no, (1) yes.

\*\* These are patients who received neoadjuvant chemo without a clear indication, but post operatively based on pathology findings would have qualified for adjuvant chemo.

	FASC					FAC				
	1	2	3	4	p-value	1	2	3	4	p-value
	<50th, [0-2]	50-74th, [3-5]	75-89th, [6-11]	90th+, [12+]		<50th, [0-28]	50-74th, [29-47]	75-89th, [48-70]	90th+, [71+]	
<b>Radiation Surgery Sequence at any CoC Facility</b>										
No radiation therapy and/or surgical procedures	2655 (94.7%)	4378 (95.5%)	6151 (96.8%)	13292 (98.2%)	<0.001	3631 (94.9%)	4831 (96.4%)	6422 (97.1%)	11592 (98.1%)	<0.001
Radiation therapy before surgery	14 (0.5%)	18 (0.4%)	19 (0.3%)	32 (0.2%)		19 (0.5%)	18 (0.4%)	16 (0.2%)	30 (0.3%)	
Radiation therapy after surgery	117 (4.2%)	157 (3.4%)	157 (2.5%)	163 (1.2%)		151 (3.9%)	136 (2.7%)	142 (2.1%)	165 (1.4%)	
Radiation therapy both before and after surgery	0 (0.0%)	1 (<1%)	2 (<1%)	4 (<1%)		1 (<1%)	0 (0.0%)	1 (<1%)	5 (<1%)	
Intraoperative radiation therapy	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (<1%)		0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (<1%)	
Sequence unknown	18 (0.6%)	30 (0.7%)	26 (0.4%)	36 (0.3%)		26 (0.7%)	26 (0.5%)	30 (0.5%)	28 (0.2%)	
<b>Surgical Margins Status at any CoC Facility- summarized</b>										
Negative	2219 (79.1%)	3842 (83.8%)	5428 (85.4%)	11842 (87.5%)	<0.001	3171 (82.8%)	4261 (85.0%)	5552 (84.0%)	10347 (87.5%)	<0.001
Positive	295 (10.5%)	434 (9.5%)	629 (9.9%)	1155 (8.5%)		397 (10.4%)	462 (9.2%)	563 (8.5%)	1091 (9.2%)	
Unknown	290 (10.3%)	308 (6.7%)	298 (4.7%)	532 (3.9%)		260 (6.8%)	288 (5.7%)	496 (7.5%)	384 (3.2%)	
<b>Lymph Node Dissection Status</b>										
0 nodes examined	548 (19.8%)	672 (14.7%)	714 (11.3%)	1026 (7.6%)	<0.001	3171 (82.8%)	4261 (85.0%)	5552 (84.0%)	10347 (87.5%)	<0.001
<10 nodes examined	1021 (36.9%)	1905 (41.8%)	2540 (40.1%)	3285 (24.3%)		1437 (37.8%)	1863 (37.4%)	2228 (33.9%)	3223 (27.3%)	
10-14 nodes examined	401 (14.5%)	782 (17.1%)	1179 (18.6%)	2351 (17.4%)		646 (17.0%)	831 (16.7%)	1112 (16.9%)	2124 (18.0%)	
15-29 nodes examined	523 (18.9%)	837 (18.4%)	1369 (21.6%)	4667 (34.6%)		768 (20.2%)	1129 (22.7%)	1585 (24.1%)	3914 (33.2%)	
30+ nodes examined	148 (5.3%)	215 (4.7%)	368 (5.8%)	2037 (15.1%)		209 (5.5%)	379 (7.6%)	656 (10.0%)	1524 (12.9%)	
Unknown	127 (4.6%)	150 (3.3%)	160 (2.5%)	136 (1.0%)		131 (3.4%)	154 (3.1%)	159 (2.4%)	129 (1.1%)	
<b>Treatment Subgroup *</b>										
ni(0) ng(0) ai(0) ag(0)	590 (21.0%)	1106 (24.1%)	1567 (24.7%)	3283 (24.3%)	<0.001	931 (24.3%)	1217 (24.3%)	1611 (24.4%)	2787 (23.6%)	<0.001
ni(0) ng(0) ai(0) ag(1)	107 (3.8%)	181 (3.9%)	222 (3.5%)	461 (3.4%)		124 (3.2%)	175 (3.5%)	294 (4.4%)	378 (3.2%)	
ni(0) ng(0) ai(1) ag(0)	259 (9.2%)	424 (9.2%)	659 (10.4%)	1287 (9.5%)		383 (10.0%)	466 (9.3%)	643 (9.7%)	1137 (9.6%)	
ni(0) ng(0) ai(1) ag(1)	203 (7.2%)	298 (6.5%)	361 (5.7%)	605 (4.5%)		254 (6.6%)	320 (6.4%)	383 (5.8%)	510 (4.3%)	
ni(0) ng(1) ai(0) ag(0)	49 (1.7%)	81 (1.8%)	136 (2.1%)	416 (3.1%)		67 (1.8%)	89 (1.8%)	158 (2.4%)	368 (3.1%)	
ni(1) ng(0) ai(0) ag(0)	441 (15.7%)	693 (15.1%)	983 (15.5%)	1851 (13.7%)		581 (15.2%)	778 (15.5%)	974 (14.7%)	1635 (13.8%)	
ni(1) ng(0) ai(0) ag(1)	126 (4.5%)	167 (3.6%)	233 (3.7%)	445 (3.3%)		136 (3.6%)	179 (3.6%)	223 (3.4%)	433 (3.7%)	
ni(1) ng(0) ai(1) ag(0)	397 (14.2%)	695 (15.2%)	959 (15.1%)	1976 (14.6%)		562 (14.7%)	769 (15.3%)	951 (14.4%)	1745 (14.8%)	
ni(1) ng(0) ai(1) ag(1)	333 (11.9%)	461 (10.1%)	638 (10.0%)	1058 (7.8%)		417 (10.9%)	517 (10.3%)	608 (9.2%)	948 (8.0%)	
ni(1) ng(1) ai(0) ag(0)	142 (5.1%)	199 (4.3%)	260 (4.1%)	888 (6.6%)		173 (4.5%)	221 (4.4%)	302 (4.6%)	793 (6.7%)	
ni(1) ng(1) ai(1) ag(0)	97 (3.5%)	149 (3.3%)	195 (3.1%)	830 (6.1%)		120 (3.1%)	160 (3.2%)	264 (4.0%)	727 (6.1%)	
ni(0) ng(1) ai(0/1) ag(0)- ret	60 (2.1%)	130 (2.8%)	142 (2.2%)	429 (3.2%)		80 (2.1%)	120 (2.4%)	200 (3.0%)	361 (3.1%)	
<b>Multiagent chemotherapy as first course</b>										
No chemo	1476 (58.0%)	2535 (61.4%)	3642 (63.3%)	7461 (60.8%)	<0.001	2162 (62.4%)	2815 (62.3%)	3661 (61.4%)	6476 (60.2%)	<0.001
Multiagent chemotherapy administered	871 (34.2%)	1299 (31.5%)	1718 (29.9%)	4090 (33.3%)		1047 (30.2%)	1427 (31.6%)	1887 (31.6%)	3617 (33.6%)	
Single agent chemotherapy administered	109 (4.3%)	177 (4.3%)	212 (3.7%)	380 (3.1%)		150 (4.3%)	162 (3.6%)	215 (3.6%)	351 (3.3%)	
Unknown number of agents administered	90 (3.5%)	115 (2.8%)	181 (3.1%)	349 (2.8%)		106 (3.1%)	114 (2.5%)	200 (3.4%)	315 (2.9%)	
<b>90 Day Mortality 0: Patient alive at 90 days</b>										
No distant met at diagnosis	2804 (100.0%)	4584 (100.0%)	6355 (100.0%)	13529 (100.0%)		3828 (100.0%)	5011 (100.0%)	6611 (100.0%)	11822 (100.0%)	
Urothelial carcinoma	2804 (100.0%)	4584 (100.0%)	6355 (100.0%)	13529 (100.0%)		3828 (100.0%)	5011 (100.0%)	6611 (100.0%)	11822 (100.0%)	
Pathologic T2 or higher status	2106 (85.3%)	3469 (83.2%)	4703 (81.0%)	9320 (73.5%)	<0.001	2859 (82.5%)	3770 (82.4%)	4694 (79.0%)	8275 (74.2%)	<0.001
Clinical T2 or higher status	1495 (78.6%)	2299 (76.6%)	3193 (76.4%)	6901 (71.6%)	<0.001	1938 (77.1%)	2563 (77.3%)	3239 (74.1%)	6148 (72.2%)	<0.001
Pathologic T3 or higher status	1262 (51.1%)	2000 (48.0%)	2790 (48.0%)	5723 (45.1%)	<0.001	1707 (49.3%)	2190 (47.9%)	2819 (47.4%)	5059 (45.4%)	<0.001
Pathologic node+ status	622 (23.2%)	964 (21.7%)	1337 (21.5%)	2932 (22.1%)	0.36	860 (23.2%)	1069 (22.0%)	1373 (21.4%)	2553 (22.0%)	0.24
Clinical node+ status	164 (5.9%)	245 (5.4%)	295 (4.7%)	627 (4.6%)	0.016	233 (6.1%)	252 (5.0%)	319 (4.9%)	527 (4.5%)	<0.001
<b>N</b>	<b>2804</b>	<b>4584</b>	<b>6355</b>	<b>13529</b>		<b>3828</b>	<b>5011</b>	<b>6611</b>	<b>11822</b>	

**Figure S1. Disease and Treatment Characteristics by Volume Group.**

**Table S1.** Results by Facility Volume Groups.

	Volume Groups										
	FASC						FAC				
Variable	1: <50th, [0-2]	2: 50-74th, [3-5]	3: 75-89th, [6-11]	4: 90th+, [12+]	P-value	All	1: <50th, [0-28]	2: 50-74th, [29-47]	3: 75-89th, [48-70]	4: 90th+, [71+]	P-value
N	2804	4584	6355	13529		27,272	3828	5011	6611	11822	
Age groups											
1: <50	109 (3.9%)	240 (5.2%)	286 (4.5%)	707 (5.2%)	0.010	1,342 (4.9%)	231 (6.0%)	236 (4.7%)	340 (5.1%)	535 (4.5%)	0.001
2: 50-64	889 (31.7%)	1395 (30.4%)	1971 (31.0%)	4357 (32.2%)		8,612 (31.6%)	1264 (33.0%)	1582 (31.6%)	2062 (31.2%)	3704 (31.3%)	
3: 65-74	1021 (36.4%)	1673 (36.5%)	2264 (35.6%)	4711 (34.8%)		9,669 (35.5%)	1332 (34.8%)	1810 (36.1%)	2365 (35.8%)	4162 (35.2%)	
4: 75+	785 (28.0%)	1276 (27.8%)	1834 (28.9%)	3754 (27.7%)		7,649 (28.0%)	1001 (26.1%)	1383 (27.6%)	1844 (27.9%)	3421 (28.9%)	
Sex						0 (0.0%)					
1: Male	2102 (75.0%)	3491 (76.2%)	4863 (76.5%)	10515 (77.7%)	0.005	20,971 (76.9%)	2887 (75.4%)	3836 (76.6%)	5041 (76.3%)	9207 (77.9%)	0.005
2: Female	702 (25.0%)	1093 (23.8%)	1492 (23.5%)	3014 (22.3%)		6,301 (23.1%)	941 (24.6%)	1175 (23.4%)	1570 (23.7%)	2615 (22.1%)	
Race											
White	2570 (92.3%)	4209 (92.3%)	5815 (92.5%)	12289 (92.1%)	0.028	24,883 (91.2%)	3436 (90.3%)	4587 (92.4%)	6092 (93.0%)	10768 (92.4%)	<0.001
Black	156 (5.6%)	259 (5.7%)	366 (5.8%)	727 (5.4%)		1,508 (5.5%)	277 (7.3%)	283 (5.7%)	328 (5.0%)	620 (5.3%)	
Other	58 (2.1%)	91 (2.0%)	107 (1.7%)	331 (2.5%)		587 (2.2%)	90 (2.4%)	95 (1.9%)	131 (2.0%)	271 (2.3%)	
Primary Payor											
0: Not Insured	90 (3.2%)	188 (4.1%)	223 (3.5%)	299 (2.2%)	<0.001	800 (2.9%)	201 (5.3%)	180 (3.6%)	173 (2.6%)	246 (2.1%)	<0.001
1: Private Insurance	869 (31.0%)	1449 (31.6%)	1989 (31.3%)	4590 (33.9%)		8,897 (32.6%)	1144 (29.9%)	1570 (31.3%)	2138 (32.3%)	4045 (34.2%)	
2: Medicaid	141 (5.0%)	208 (4.5%)	271 (4.3%)	524 (3.9%)		1,144 (4.2%)	234 (6.1%)	231 (4.6%)	255 (3.9%)	424 (3.6%)	
3: Medicare	1630 (58.1%)	2657 (58.0%)	3722 (58.6%)	7633 (56.4%)		15,642 (57.4%)	2129 (55.6%)	2918 (58.2%)	3729 (56.4%)	6866 (58.1%)	
4: Other Government	37 (1.3%)	32 (0.7%)	55 (0.9%)	147 (1.1%)		271 (1.0%)	45 (1.2%)	52 (1.0%)	62 (0.9%)	112 (0.9%)	
9: Insurance Status Unknown	37 (1.3%)	50 (1.1%)	95 (1.5%)	336 (2.5%)		518 (1.9%)	75 (2.0%)	60 (1.2%)	254 (3.8%)	129 (1.1%)	
Charlson-Deyo Score											
0	1973 (70.4%)	3230 (70.5%)	4316 (67.9%)	9744 (72.0%)	<0.001	19,263 (70.6%)	2698 (70.5%)	3489 (69.6%)	4699 (71.1%)	8377 (70.9%)	0.32

1	635 (22.6%)	1040 (22.7%)	1549 (24.4%)	2922 (21.6%)		6,146 (22.5%)	869 (22.7%)	1154 (23.0%)	1447 (21.9%)	2676 (22.6%)	
2	196 (7.0%)	314 (6.8%)	490 (7.7%)	863 (6.4%)		1,863 (6.8%)	261 (6.8%)	368 (7.3%)	465 (7.0%)	769 (6.5%)	
<b>Facility Type</b>											
1: Community Cancer Program	984 (35.2%)	586 (12.9%)	142 (2.2%)	15 (0.1%)	<0.0 01	1,727 (6.3%)	1321 (34.8%)	323 (6.5%)	48 (0.7%)	35 (0.3%)	<0.0 01
2: Comprehensive Community Cancer Program	1506 (53.9%)	2795 (61.3%)	3303 (52.2%)	1101 (8.2%)		8,705 (31.9%)	1653 (43.5%)	2950 (59.2%)	2613 (39.7%)	1489 (12.7%)	
3: Academic/Research Program	266 (9.5%)	932 (20.5%)	2175 (34.4%)	10766 (80.1%)		14,139 (51.8%)	794 (20.9%)	1587 (31.9%)	3441 (52.3%)	8317 (70.8%)	
4: Integrated Network Cancer Program	38 (1.4%)	244 (5.4%)	702 (11.1%)	1551 (11.5%)		2,535 (9.3%)	33 (0.9%)	119 (2.4%)	475 (7.2%)	1908 (16.2%)	
<b>Radiation Surgery Sequence at any CoC Facility</b>											
0: No radiation therapy and/or surgical procedures	2655 (94.7%)	4378 (95.5%)	6151 (96.8%)	13292 (98.2%)	<0.0 01	26,476 (97.1%)	3631 (94.9%)	4831 (96.4%)	6422 (97.1%)	11592 (98.1%)	<0.0 01
2: Radiation therapy before surgery	14 (0.5%)	18 (0.4%)	19 (0.3%)	32 (0.2%)		83 (0.3%)	19 (0.5%)	18 (0.4%)	16 (0.2%)	30 (0.3%)	
3: Radiation therapy after surgery	117 (4.2%)	157 (3.4%)	157 (2.5%)	163 (1.2%)		594 (2.2%)	151 (3.9%)	136 (2.7%)	142 (2.1%)	165 (1.4%)	
4: Radiation therapy both before and after surgery	0 (0.0%)	1 (<1%)	2 (<1%)	4 (<1%)		7 (0.0%)	1 (<1%)	0 (0.0%)	1 (<1%)	5 (<1%)	
5: Intraoperative radiation therapy	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (<1%)		2 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (<1%)	
9: Sequence unknown	18 (0.6%)	30 (0.7%)	26 (0.4%)	36 (0.3%)		110 (0.4%)	26 (0.7%)	26 (0.5%)	30 (0.5%)	28 (0.2%)	
<b>Surgical Margins Status at any CoC Facility-summarized</b>											
0: Negative	2219 (79.1%)	3842 (83.8%)	5428 (85.4%)	11842 (87.5%)	<0.0 01	23,331 (85.5%)	3171 (82.8%)	4261 (85.0%)	5552 (84.0%)	10347 (87.5%)	<0.0 01
1: Positive	295 (10.5%)	434 (9.5%)	629 (9.9%)	1155 (8.5%)		2,513 (9.2%)	397 (10.4%)	462 (9.2%)	563 (8.5%)	1091 (9.2%)	

2: Unknown	290 (10.3%)	308 (6.7%)	298 (4.7%)	532 (3.9%)		1,428 (5.2%)	260 (6.8%)	288 (5.7%)	496 (7.5%)	384 (3.2%)	
Surgical Margins Status at any CoC Facility- detailed											
0: No residual tumor All margins are grossly and microscopically negative	2219 (79.1%)	3842 (83.8%)	5428 (85.4%)	11842 (87.5%)	<0.001	23,331 (85.5%)	3171 (82.8%)	4261 (85.0%)	5552 (84.0%)	10347 (87.5%)	
1: Residual tumor, NOS Involvement is indicated, but not otherwise specified	136 (4.9%)	165 (3.6%)	212 (3.3%)	388 (2.9%)		901 (3.3%)	158 (4.1%)	184 (3.7%)	209 (3.2%)	350 (3.0%)	
2: Microscopic residual tumor Cannot be seen by the naked eye	135 (4.8%)	241 (5.3%)	381 (6.0%)	708 (5.2%)		1,465 (5.4%)	211 (5.5%)	247 (4.9%)	328 (5.0%)	679 (5.7%)	
3: Macroscopic residual tumor, Gross tumor of the primary site which is visible to the naked eye	24 (0.9%)	28 (0.6%)	36 (0.6%)	59 (0.4%)		147 (0.5%)	28 (0.7%)	31 (0.6%)	26 (0.4%)	62 (0.5%)	
7: Margins not evaluable, Cannot be assessed (indeterminate)	123 (4.4%)	146 (3.2%)	142 (2.2%)	210 (1.6%)		621 (2.3%)	123 (3.2%)	124 (2.5%)	162 (2.5%)	212 (1.8%)	
9: Unknown or not applicable	167 (6.0%)	162 (3.5%)	156 (2.5%)	322 (2.4%)		807 (3.0%)	137 (3.6%)	164 (3.3%)	334 (5.1%)	172 (1.5%)	
Lymph Node Dissection Status											
0: 0 nodes examined	548 (19.8%)	672 (14.7%)	714 (11.3%)	1026 (7.6%)	<0.001	23,331 (85.5%)	3171 (82.8%)	4261 (85.0%)	5552 (84.0%)	10347 (87.5%)	
1: <10 nodes examined	1021 (36.9%)	1905 (41.8%)	2540 (40.1%)	3285 (24.3%)		8,751 (32.1%)	1437 (37.8%)	1863 (37.4%)	2228 (33.9%)	3223 (27.3%)	
2: 10-14 nodes examined	401 (14.5%)	782 (17.1%)	1179 (18.6%)	2351 (17.4%)		4,713 (17.3%)	646 (17.0%)	831 (16.7%)	1112 (16.9%)	2124 (18.0%)	
3: 15-29 nodes examined	523 (18.9%)	837 (18.4%)	1369 (21.6%)	4667 (34.6%)		7,396 (27.1%)	768 (20.2%)	1129 (22.7%)	1585 (24.1%)	3914 (33.2%)	
4: 30+ nodes examined	148 (5.3%)	215 (4.7%)	368 (5.8%)	2037 (15.1%)		2,768 (10.1%)	209 (5.5%)	379 (7.6%)	656 (10.0%)	1524 (12.9%)	
5: Unknown	127 (4.6%)	150 (3.3%)	160 (2.5%)	136 (1.0%)		573 (2.1%)	131 (3.4%)	154 (3.1%)	159 (2.4%)	129 (1.1%)	

Treatment Cohort											
0: ni(0) ng(0) ai(0) ag(0)	590 (21.0%)	1106 (24.1%)	1567 (24.7%)	3283 (24.3%)	<0.0 01	6,546 (24.0%)	931 (24.3%)	1217 (24.3%)	1611 (24.4%)	2787 (23.6%)	<0.0 01
1: ni(0) ng(0) ai(0) ag(1)	107 (3.8%)	181 (3.9%)	222 (3.5%)	461 (3.4%)		971 (3.6%)	124 (3.2%)	175 (3.5%)	294 (4.4%)	378 (3.2%)	
2: ni(0) ng(0) ai(1) ag(0)	259 (9.2%)	424 (9.2%)	659 (10.4%)	1287 (9.5%)		2,629 (9.6%)	383 (10.0%)	466 (9.3%)	643 (9.7%)	1137 (9.6%)	
3: ni(0) ng(0) ai(1) ag(1)	203 (7.2%)	298 (6.5%)	361 (5.7%)	605 (4.5%)		1,467 (5.4%)	254 (6.6%)	320 (6.4%)	383 (5.8%)	510 (4.3%)	
4: ni(0) ng(1) ai(0) ag(0)	49 (1.7%)	81 (1.8%)	136 (2.1%)	416 (3.1%)		682 (2.5%)	67 (1.8%)	89 (1.8%)	158 (2.4%)	368 (3.1%)	
8: ni(1) ng(0) ai(0) ag(0)	441 (15.7%)	693 (15.1%)	983 (15.5%)	1851 (13.7%)		3,968 (14.5%)	581 (15.2%)	778 (15.5%)	974 (14.7%)	1635 (13.8%)	
9: ni(1) ng(0) ai(0) ag(1)	126 (4.5%)	167 (3.6%)	233 (3.7%)	445 (3.3%)		971 (3.6%)	136 (3.6%)	179 (3.6%)	223 (3.4%)	433 (3.7%)	
10: ni(1) ng(0) ai(1) ag(0)	397 (14.2%)	695 (15.2%)	959 (15.1%)	1976 (14.6%)		4,027 (14.8%)	562 (14.7%)	769 (15.3%)	951 (14.4%)	1745 (14.8%)	
11: ni(1) ng(0) ai(1) ag(1)	333 (11.9%)	461 (10.1%)	638 (10.0%)	1058 (7.8%)		2,490 (9.1%)	417 (10.9%)	517 (10.3%)	608 (9.2%)	948 (8.0%)	
12: ni(1) ng(1) ai(0) ag(0)	142 (5.1%)	199 (4.3%)	260 (4.1%)	888 (6.6%)		1,489 (5.5%)	173 (4.5%)	221 (4.4%)	302 (4.6%)	793 (6.7%)	
14: ni(1) ng(1) ai(1) ag(0)	97 (3.5%)	149 (3.3%)	195 (3.1%)	830 (6.1%)		1,271 (4.7%)	120 (3.1%)	160 (3.2%)	264 (4.0%)	727 (6.1%)	
16: ni(0) ng(1) ai(0/1) ag(0)- ret- rospect	60 (2.1%)	130 (2.8%)	142 (2.2%)	429 (3.2%)		761 (2.8%)	80 (2.1%)	120 (2.4%)	200 (3.0%)	361 (3.1%)	
<b>Multiagent chemotherapy as first course</b>											
0: No chemo	1476 (58.0%)	2535 (61.4%)	3642 (63.3%)	7461 (60.8%)	<0.0 01	15,114 (55.4%)	2162 (62.4%)	2815 (62.3%)	3661 (61.4%)	6476 (60.2%)	<0.0 01
1: Multiagent chemotherapy administered	871 (34.2%)	1299 (31.5%)	1718 (29.9%)	4090 (33.3%)		7,978 (29.3%)	1047 (30.2%)	1427 (31.6%)	1887 (31.6%)	3617 (33.6%)	
2: Single agent chemotherapy administered	109 (4.3%)	177 (4.3%)	212 (3.7%)	380 (3.1%)		878 (3.2%)	150 (4.3%)	162 (3.6%)	215 (3.6%)	351 (3.3%)	
3: Unknown number of agents administered	90 (3.5%)	115 (2.8%)	181 (3.1%)	349 (2.8%)		735 (2.7%)	106 (3.1%)	114 (2.5%)	200 (3.4%)	315 (2.9%)	
<b>90 Day Mortality 0: Patient alive, or died more than 90 days af- ter surgery per- formed</b>	2804 (100.0%)	4584 (100.0%)	6355 (100.0%)	13529 (100.0%)		27,272 (100.0%)	3828 (100.0%)	5011 (100.0%)	6611 (100.0%)	11822 (100.0%)	

No distant met at diagnosis	2804 (100.0%)	4584 (100.0%)	6355 (100.0%)	13529 (100.0%)	27,272 (100.0%)	3828 (100.0%)	5011 (100.0%)	6611 (100.0%)	11822 (100.0%)		
Urothelial carcinoma	2804 (100.0%)	4584 (100.0%)	6355 (100.0%)	13529 (100.0%)	27,272 (100.0%)	3828 (100.0%)	5011 (100.0%)	6611 (100.0%)	11822 (100.0%)		
Pathologic T2 or higher status	2106 (85.3%)	3469 (83.2%)	4703 (81.0%)	9320 (73.5%)	<0.001	19,598 (71.9%)	2859 (82.5%)	3770 (82.4%)	4694 (79.0%)	8275 (74.2%)	<0.001
Clinical T2 or higher status	1495 (78.6%)	2299 (76.6%)	3193 (76.4%)	6901 (71.6%)	<0.001	13,888 (50.9%)	1938 (77.1%)	2563 (77.3%)	3239 (74.1%)	6148 (72.2%)	<0.001
Pathologic T3 or higher status	1262 (51.1%)	2000 (48.0%)	2790 (48.0%)	5723 (45.1%)	<0.001	11,775 (43.2%)	1707 (49.3%)	2190 (47.9%)	2819 (47.4%)	5059 (45.4%)	<0.001
Pathologic node status	622 (23.2%)	964 (21.7%)	1337 (21.5%)	2932 (22.1%)	0.36	5,855 (21.5%)	860 (23.2%)	1069 (22.0%)	1373 (21.4%)	2553 (22.0%)	0.24
Clinical node status	164 (5.9%)	245 (5.4%)	295 (4.7%)	627 (4.6%)	0.01	1,331 (4.9%)	233 (6.1%)	252 (5.0%)	319 (4.9%)	527 (4.5%)	<0.001