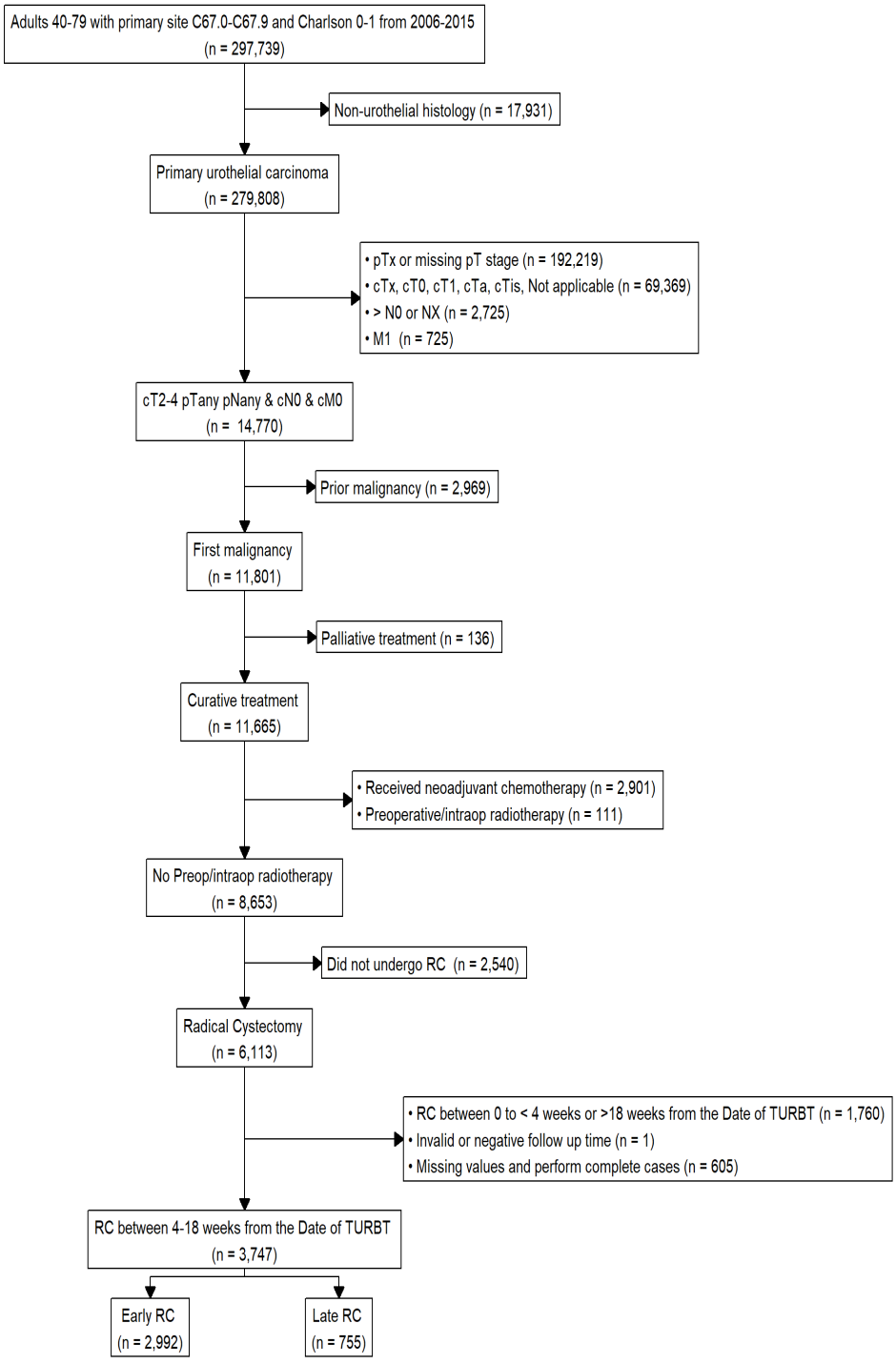
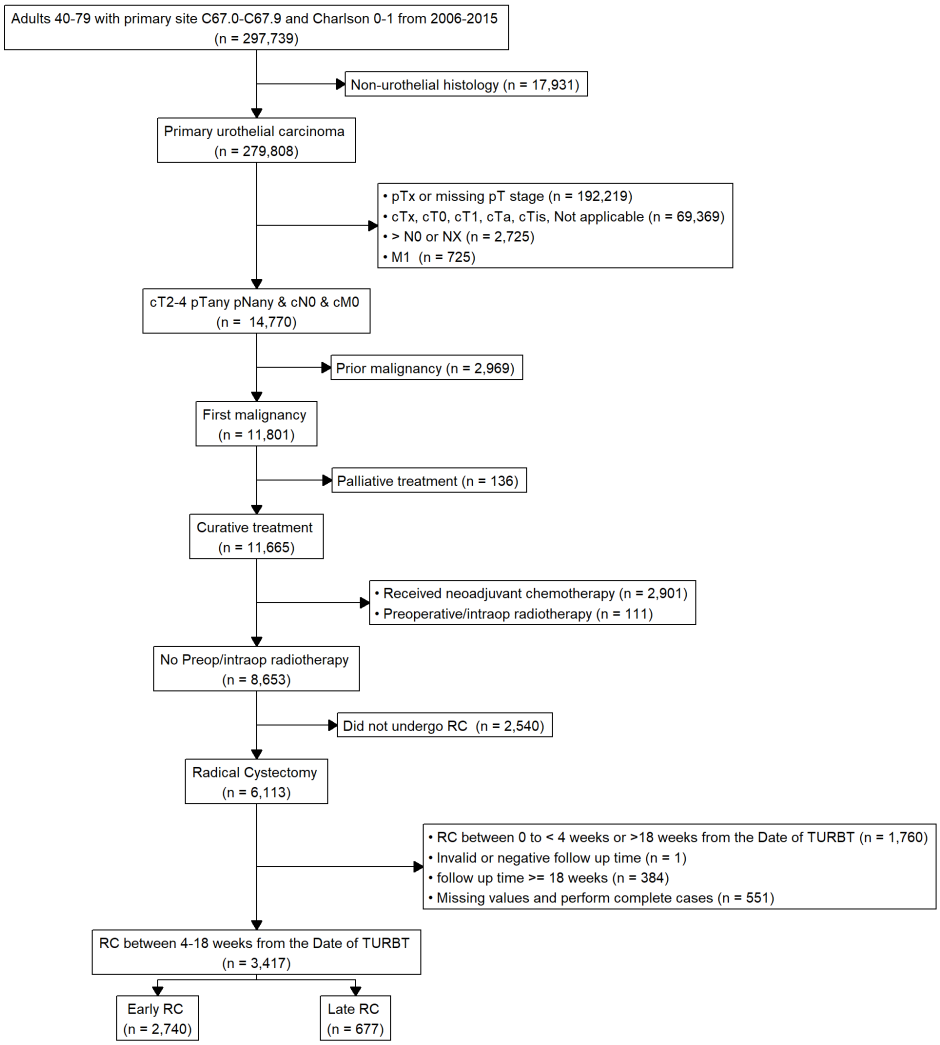
APPENDIX

Supplementary Figure 1. CONSORT flow diagram for the main cohort.



Kim et al. Association between time from diagnosis to radical cystectomy and oncologic outcomes in muscle-invasive urothelial carcinoma of the bladder

Supplementary Figure 2: CONSORT flow diagram for the landmark time analysis cohort.



Supplementary Table 1. Hypothetical trial components	
Protocol component	**Hypothetical target trial (NCDB)**
Eligibility criteria	Adult patients age 40-79 with cT2-4 N0 M0 urothelial carcinoma of the bladder; Charlson 0-1 (surrogate for fitness to receive AC); diagnosed from 2006-2016; no prior radiotherapy or prior malignancies; no neoadjuvant chemotherapy.
Treatment strategies	Early vs delayed RC: Early: 4 to <12 weeks Late: 12-18 weeks
Assignment procedures	Un-blinded non-random assignment to treatments
Followup period	Starts at date of diagnosis; ends on date of last available data in observational dataset or at the occurrence of outcome event, loss to followup, or death (whichever is earlier)
Outcomes	Pathologic upstaging; overall survival
Causal contrasts	Causal effect comparing point (non-time-varying) treatments within a grace period
Analysis plan	Analyze patients as treated; compare overall survival using the Kaplan-Meier method with inverse-probability of treatment weighting; estimate the hazard ratio for overall survival comparing treatment groups with Cox proportional hazards regression with inverse probability of treatment weighting; estimate the odds ratio for pathologic upstaging comparing treatment groups using logistic regression with inverse probability of treatment weighting.

Supplementary Table 2. Baseline characteristics in the overall cohort				
		RC		
Characteristic	**Overall**, N=3747[1]	**Early** 2992 (80%)[1]	**Late** 755 (20%)[1]	**p**[2]
Age, years	67 (60, 73)	67 (60, 73)	67 (60, 73)	0.91
Gender				0.28
Male	2852 (76)	2266 (76)	586 (78)	
Female	895 (24)	726 (24)	169 (22)	
Charlson index				0.04
0	2736 (73)	2207 (74)	529 (70)	
1	1011 (27)	785 (26)	226 (30)	
Year of diagnosis				0.52
2006	204 (5)	171 (6)	33 (4)	
2007	199 (5)	161 (5)	38 (5)	
2008	328 (9)	263 (9)	65 (9)	
2009	350 (9)	288 (10)	62 (8)	
2010	483 (13)	379 (13)	104 (14)	
2011	470 (13)	371 (12)	99 (13)	
2012	431 (12)	349 (12)	82 (11)	
2013	438 (12)	352 (12)	86 (11)	
2014	455 (12)	362 (12)	93 (12)	

Supplementary Table 2. Baseline characteristics in the overall cohort				
		RC		
Characteristic	**Overall**, N=3747[1]	**Early** 2992 (80%)[1]	**Late** 755 (20%)[1]	**p**[2]
2015	389 (10)	296 (10)	93 (12)	
Race				0.47
White	3440 (92)	2754 (92)	686 (91)	
Black	218 (6)	167 (6)	51 (7)	
Others	89 (2)	71 (2)	18 (2)	
Hispanic				<0.01
No	3661 (98)	2939 (98)	722 (96)	
Yes	86 (2)	53 (2)	33 (4)	
Insurance status				<0.01
Not insured	99 (3)	77 (3)	22 (3)	
Private/managed care	1340 (36)	1102 (37)	238 (32)	
Medicaid	167 (4)	116 (4)	51 (7)	
Medicare	2107 (56)	1673 (56)	434 (57)	
VA/military	34 (1)	24 (1)	10 (1)	
Geographic location				<0.01
Northeast	731 (20)	544 (18)	187 (25)	
South/Southeast	1217 (32)	988 (33)	229 (30)	

Supplementary Table 2. Baseline characteristics in the overall cohort				
		RC		
Characteristic	**Overall**, N=3747[1]	**Early** 2992 (80%)[1]	**Late** 755 (20%)[1]	**p**[2]
Midwest	1199 (32)	997 (33)	202 (27)	
West	600 (16)	463 (15)	137 (18)	
Facility type				0.01
Community cancer program	198 (5)	160 (5)	38 (5)	
Comprehensive community cancer program	1269 (34)	1046 (35)	223 (30)	
Academic/research program	1907 (51)	1483 (50)	424 (56)	
Integrated network cancer program	373 (10)	303 (10)	70 (9)	
Distance from hospital	17 (7, 50)	17 (7, 49)	19 (7, 56)	0.11
Rurality				0.35
Metropolitan	2860 (76)	2274 (76)	586 (78)	
Urban	759 (20)	619 (21)	140 (19)	
Rural	128 (3)	99 (3)	29 (4)	
Income				0.69
<$30 000	465 (12)	375 (13)	90 (12)	
$30 000−34 999	751 (20)	603 (20)	148 (20)	
$35 000−45 999	1149 (31)	904 (30)	245 (32)	
≥$46 000	1382 (37)	1110 (37)	272 (36)	

Supplementary Table 2. Baseline characteristics in the overall cohort				
		RC		
Characteristic	**Overall**, N=3747[1]	**Early** 2992 (80%)[1]	**Late** 755 (20%)[1]	**p**[2]
Education level				0.78
>29	548 (15)	445 (15)	103 (14)	
20−28.9	980 (26)	776 (26)	204 (27)	
14−19.9	951 (25)	755 (25)	196 (26)	
<14	1268 (34)	1016 (34)	252 (33)	
cT stage				0.58
cT2	3195 (85)	2559 (86)	636 (84)	
cT3	350 (9)	277 (9)	73 (10)	
cT4	202 (5)	156 (5)	46 (6)	
Tumor grade				0.29
Grade 1−2	95 (3)	70 (2)	25 (3)	
Grade 3−4	3293 (88)	2632 (88)	661 (88)	
Unknown	359 (10)	290 (10)	69 (9)	
Annual hospital cystectomy volume	6.80 (3.27, 17.30)	6.70 (3.14, 16.70)	8.90 (3.57, 18.30)	<0.01
pT stage				<0.01
≤pT1 (pTa, pTis, pT0, pT1)	319 (9)	219 (7)	100 (13)	
pT2	1364 (36)	1092 (36)	272 (36)	

Supplementary Table 2. Baseline characteristics in the overall cohort				
		RC		
Characteristic	**Overall**, N=3747[1]	**Early** 2992 (80%)[1]	**Late** 755 (20%)[1]	**p**[2]
pT3	1524 (41)	1249 (42)	275 (36)	
pT4	540 (14)	432 (14)	108 (14)	
pN stage				0.47
pNX	2654 (71)	2112 (71)	542 (72)	
pN0	919 (25)	745 (25)	174 (23)	
pN+	174 (5)	135 (5)	39 (5)	
Surgical margins				0.50
Negative	3370 (90)	2696 (90)	674 (89)	
Positive	377 (10)	296 (10)	81 (11)	
LNs removed	14 (7, 22)	13 (7, 22)	14 (8, 23)	0.01
LNs positive	0 (0, 1)	0 (0, 1)	0 (0, 0)	0.32
Missing	174	135	39	
Followup (months)	28.1 (11.3, 56.4)	28.8 (11.5, 57.3)	26.2 (9.9, 54.0)	0.02

[1]Median (IQR); n (%). [2]Wilcoxon rank sum test; Pearson's Chi-squared test

Supplementary Table 3. Baseline characteristics in the overall cohort reweighed using sIPWs			
Characteristic	**RC**		
	Early 2992[1]	**Late** 755[1]	**SMD**[1]
Age, years	67 (60, 73)	67 (60, 73)	0.009
Gender			0.010
Male	2278 (76)	578 (77)	
Female	714 (24)	177 (23)	
Charlson index			0.002
0	2185 (73)	551 (73)	
1	807 (27)	204 (27)	
Year of diagnosis			0.024
2006	163 (5)	44 (6)	
2007	159 (5)	39 (5)	
2008	261 (9)	64 (8)	
2009	280 (9)	69 (9)	
2010	384 (13)	94 (12)	
2011	376 (13)	95 (13)	
2012	345 (11)	90 (12)	
2013	350 (12)	88 (12)	
2014	363 (12)	93 (12)	
2015	311 (10)	78 (10)	

Supplementary Table 3. Baseline characteristics in the overall cohort reweighed using sIPWs			
Characteristic	**RC**		
	Early 2992[1]	**Late** 755[1]	**SMD**[1]
Race			0.004
White	2746 (92)	693 (92)	
Black	174 (6)	44 (6)	
Others	72 (2)	19 (3)	
Hispanic			<0.01
No	2923 (98)	737 (98)	
Yes	69 (2)	17 (2)	
Insurance status			0.012
Not insured	80 (3)	20 (3)	
Private/managed care	1070 (36)	266 (35)	
Medicaid	132 (4)	33 (4)	
Medicare	1683 (56)	429 (57)	
VA/military	27 (1)	7 (1)	
Geographic location			0.013
Northeast	584 (20)	148 (20)	
South/Southeast	970 (32)	241 (32)	
Midwest	958 (32)	246 (33)	

Supplementary Table 3. Baseline characteristics in the overall cohort reweighed using sIPWs			
Characteristic	**RC**		
	Early 2992[1]	**Late** 755[1]	**SMD**[1]
West	479 (16)	120 (16)	
Facility type			0.018
Community cancer program	158 (5)	41 (5)	
Comprehensive community cancer program	1011 (34)	249 (33)	
Academic /research program	1525 (51)	389 (52)	
Integrated network cancer program	298 (10)	75 (10)	
Distance from hospital	16.80 (6.50, 49.50)	18.34 (7.10, 54.86)	0.002
Rurality			0.012
Metropolitan	2283 (76)	572 (76)	
Urban	606 (20)	157 (21)	
Rural	102 (3)	26 (3)	
Income			0.011
<$30 000	371 (12)	92 (12)	
$30 000−34 999	600 (20)	153 (20)	
$35 000−45 999	918 (31)	234 (31)	
≥$46 000	1103 (37)	276 (37)	
Education level			0.018

Supplementary Table 3. Baseline characteristics in the overall cohort reweighed using sIPWs			
Characteristic	**RC**		
	Early 2992[1]	**Late** 755[1]	**SMD**[1]
>29	437 (15)	107 (14)	
20−28.9	782 (26)	197 (26)	
14−19.9	761 (25)	197 (26)	
<14	1,012 (34)	254 (34)	
cT stage			0.008
cT2	2,552 (85)	646 (86)	
cT3	279 (9)	69 (9)	
cT4	161 (5)	40 (5)	
Tumor grade			0.013
Grade 1−2	75 (3)	18 (2)	
Grade 3−4	2629 (88)	662 (88)	
Unknown	288 (9)	75 (10)	
Annual average cystectomy volume	6.80 (3.20, 16.80)	7.20 (3.30, 18.00)	0.008
pT stage			0.204
≤pT1	219 (7)	100 (13)	
pT2	1086 (36)	273 (36)	
pT3	1247 (42)	280 (37)	

Supplementary Table 3. Baseline characteristics in the overall cohort reweighed using sIPWs			
Characteristic	**RC**		
	Early 2992[1]	**Late** 755[1]	**SMD**[1]
pT4	440 (15)	101 (13)	
pN stage			0.076
pNX	133 (5)	41 (5)	
pN0	2,113 (71)	547 (73)	
pN+	746 (25)	167 (22)	
Surgical margins			0.015
Negative	2,695 (90)	676 (90)	
Positive	297 (10)	78 (10)	
LNs removed	13 (7, 22)	14 (8, 22)	0.032

[1]Median (IQR); n (%). [2]SMD: standardized mean difference.

Supplementary Table 4. Adjusted rates of pathologic upstaging, stratified by treatment group (sIPW-adjusted)				
Characteristic	**RC**			
	Early 2992[1]	**Late** 755[1]	**SMD**[1]	**p**
Pathologic upstaging			0.086	0.216
No upstaging	1441 (48)	392 (52)		
cT2: pT3 or pT4 or pN+	1424 (48)	329 (44)		
cT3: pT4 or pN+	82 (3)	24 (3)		

Supplementary Table 4. Adjusted rates of pathologic upstaging, stratified by treatment group (sIPW-adjusted)				
Characteristic	**RC**			
	Early 2992[1]	**Late** 755[1]	**SMD**[1]	**p**
cT4: pN+	45 (2)	9 (1)		
Any pathologic upstaging			0.076	0.071
No	1441 (48)	392 (52)		
Yes	1551 (52)	363 (48)		

Supplementary Table 5. Baseline characteristics for the survival (landmark time) analysis cohort				
		RC		
Characteristic	**Overall**, N=3417[1]	**Early** 2740 (80%)[1]	**Late** 677 (20%)[1]	**p**[2]
Age, years	67 (60, 73)	67 (60, 73)	67 (60, 73)	0.91
Gender				0.37
Male	2626 (77)	2097 (77)	529 (78)	
Female	791 (23)	643 (23)	148 (22)	
Charlson index				0.04
0	2529 (74)	2049 (75)	480 (71)	
1	888 (26)	691 (25)	197 (29)	
Year of diagnosis				0.33
2006	192 (6)	163 (6)	29 (4)	

Supplementary Table 5. Baseline characteristics for the survival (landmark time) analysis cohort				
		RC		
Characteristic	**Overall**, N=3417[1]	**Early** 2740 (80%)[1]	**Late** 677 (20%)[1]	**p**[2]
2007	184 (5)	148 (5)	36 (5)	
2008	303 (9)	243 (9)	60 (9)	
2009	322 (9)	265 (10)	57 (8)	
2010	448 (13)	351 (13)	97 (14)	
2011	421 (12)	335 (12)	86 (13)	
2012	401 (12)	328 (12)	73 (11)	
2013	387 (11)	311 (11)	76 (11)	
2014	412 (12)	334 (12)	78 (12)	
2015	347 (10)	262 (10)	85 (13)	
Race				0.93
White	3146 (92)	2525 (92)	621 (92)	
Black	188 (6)	149 (5)	39 (6)	
Others	83 (2)	66 (2)	17 (3)	
Hispanic				<0.01
No	3340 (98)	2693 (98)	647 (96)	
Yes	77 (2)	47 (2)	30 (4)	
Insurance status				<0.01

Supplementary Table 5. Baseline characteristics for the survival (landmark time) analysis cohort				
		RC		
Characteristic	**Overall**, N=3417[1]	**Early** 2740 (80%)[1]	**Late** 677 (20%)[1]	**p**[2]
Not insured	88 (3)	67 (2)	21 (3)	
Private/managed care	1,258 (37)	1,039 (38)	219 (32)	
Medicaid	148 (4)	100 (4)	48 (7)	
Medicare	1,891 (55)	1,511 (55)	380 (56)	
VA/military	32 (1)	23 (1)	9 (1)	
Geographic location				<0.01
Northeast	672 (20)	500 (18)	172 (25)	
South/Southeast	1112 (33)	908 (33)	204 (30)	
Midwest	1087 (32)	909 (33)	178 (26)	
West	546 (16)	423 (15)	123 (18)	
Facility type				<0.01
Community cancer program	185 (5)	150 (5)	35 (5)	
Comprehensive community cancer program	1146 (34)	954 (35)	192 (28)	
Academic /research program	1741 (51)	1356 (49)	385 (57)	
Integrated network cancer program	345 (10)	280 (10)	65 (10)	
Distance from hospital	18 (7, 51)	17 (7, 50)	20 (8, 57)	0.04
Rurality				0.26

Supplementary Table 5. Baseline characteristics for the survival (landmark time) analysis cohort				
		RC		
Characteristic	**Overall**, N=3417[1]	**Early** 2740 (80%)[1]	**Late** 677 (20%)[1]	**p**[2]
Metropolitan	2602 (76)	2073 (76)	529 (78)	
Urban	703 (21)	579 (21)	124 (18)	
Rural	112 (3)	88 (3)	24 (4)	
Income				0.51
<$30 000	426 (12)	343 (13)	83 (12)	
$30 000−34 999	673 (20)	547 (20)	126 (19)	
$35 000−45 999	1040 (30)	818 (30)	222 (33)	
≥$46 000	1278 (37)	1032 (38)	246 (36)	
Education level				0.73
>29	497 (15)	405 (15)	92 (14)	
20−28.9	883 (26)	700 (26)	183 (27)	
14−19.9	872 (26)	695 (25)	177 (26)	
<14	1165 (34)	940 (34)	225 (33)	
cT stage				0.42
cT2	2929 (86)	2357 (86)	572 (84)	
cT3	314 (9)	250 (9)	64 (9)	
cT4	174 (5)	133 (5)	41 (6)	

Supplementary Table 5. Baseline characteristics for the survival (landmark time) analysis cohort				
		RC		
Characteristic	**Overall**, N=3417[1]	**Early** 2740 (80%)[1]	**Late** 677 (20%)[1]	**p**[2]
Tumor grade				0.30
Grade 1−2	86 (3)	65 (2)	21 (3)	
Grade 3−4	3008 (88)	2408 (88)	600 (89)	
Unknown	323 (9)	267 (10)	56 (8)	
Annual hospital cystectomy volume	6.80 (3.20, 17.30)	6.70 (3.11, 16.73)	9.00 (3.70, 18.30)	<0.01
pT stage				<0.01
≤pT1 (pTa, pTis, pT0, pT1)	302 (9)	208 (8)	94 (14)	
pT2	1279 (37)	1033 (38)	246 (36)	
pT3	1387 (41)	1140 (42)	247 (36)	
pT4	449 (13)	359 (13)	90 (13)	
pN stage				0.63
pNX	2457 (72)	1966 (72)	491 (73)	
pN0	810 (24)	657 (24)	153 (23)	
pN+	150 (4)	117 (4)	33 (5)	
Surgical margins				0.51
Negative	3106 (91)	2495 (91)	611 (90)	
Positive	311 (9)	245 (9)	66 (10)	

Supplementary Table 5. Baseline characteristics for the survival (landmark time) analysis cohort

		RC		
Characteristic	**Overall**, N=3417[1]	**Early** 2740 (80%)[1]	**Late** 677 (20%)[1]	**p**[2]
LNs removed	14 (7, 22)	13 (7, 22)	15 (8, 23)	0.01
LNs positive	0 (0, 0)	0 (0, 1)	0 (0, 0)	0.44
Missing	150	117	33	
Followup (months)	32.2 (14.7, 60.1)	32.8 (15.0, 61.4)	30.1 (13.8, 56.4)	0.08

[1]Median (IQR); n (%). [2]Wilcoxon rank sum test; Pearson's Chi-squared test.

Supplementary Table 6. Baseline characteristics in the survival (landmark time) analysis cohort, reweighed using sIPWs

	RC		
Characteristic	**Early** 2740[1]	**Late** 678[1]	**SMD**[1]
Age, years	67 (60, 73)	67 (60, 73)	0.005
Gender			0.006
Male	2,106 (77)	523 (77)	
Female	634 (23)	155 (23)	
Charlson index			0.005
0	2028 (74)	500 (74)	
1	712 (26)	178 (26)	
Year of diagnosis			0.035
2006	154 (6)	41 (6)	
2007	148 (5)	35 (5)	

Supplementary Table 6. Baseline characteristics in the survival (landmark time) analysis cohort, reweighed using sIPWs

Characteristic	RC		
	Early 2740[1]	**Late** 678[1]	**SMD**[1]
2008	242 (9)	57 (8)	
2009	259 (10)	63 (9)	
2010	358 (13)	87 (13)	
2011	338 (12)	82 (12)	
2012	323 (12)	83 (12)	
2013	310 (11)	76 (11)	
2014	331 (12)	86 (13)	
2015	278 (10)	68 (10)	
Race			0.011
White	2522 (92)	622 (92)	
Black	152 (6)	39 (6)	
Others	67 (2)	17 (2)	
Hispanic			0.001
No	2678 (98)	662 (98)	
Yes	62 (2)	16 (2)	
Insurance status			0.008
Not insured	72 (3)	18 (3)	

Supplementary Table 6. Baseline characteristics in the survival (landmark time) analysis cohort, reweighed using sIPWs

Characteristic	RC		
	Early 2740[1]	**Late** 678[1]	**SMD**[1]
Private/managed care	1,008 (37)	247 (37)	
Medicaid	118 (4)	30 (4)	
Medicare	1,516 (55)	376 (56)	
VA/military	26 (1)	6 (1)	
Geographic location			0.014
Northeast	539 (20)	132 (20)	
South/Southeast	891 (33)	218 (32)	
Midwest	873 (32)	220 (33)	
West	438 (16)	107 (16)	
Facility type			0.013
Community cancer program	148 (5)	37 (5)	
Comprehensive community cancer program	917 (34)	223 (33)	
Academic /Research Program	1399 (51)	350 (52)	
Integrated network cancer program	276 (10)	67 (10)	
Distance from hospital	16.90 (6.60, 50.10)	18.84 (7.70, 55.52)	0.001
Rurality			0.023
Metropolitan	2086 (76)	511 (76)	

Supplementary Table 6. Baseline characteristics in the survival (landmark time) analysis cohort, reweighed using sIPWs

Characteristic	RC		
	Early 2740[1]	**Late** 678[1]	**SMD**[1]
Urban	565 (21)	145 (22)	
Rural	90 (3)	21 (3)	
Income			0.016
<$30 000	341 (12)	82 (12)	
$30 000−34 999	540 (20)	136 (20)	
$35 000−45 999	834 (30)	209 (31)	
≥$46 000	1,024 (37)	251 (37)	
Education level			0.018
>29	398 (15)	95 (14)	
20−28.9	708 (26)	175 (26)	
14−19.9	701 (26)	178 (26)	
<14	934 (34)	230 (34)	
cT stage			0.010
cT2	2350 (86)	583 (86)	
cT3	251 (9)	61 (9)	
cT4	139 (5)	34 (5)	
Tumor grade			0.012

Supplementary Table 6. Baseline characteristics in the survival (landmark time) analysis cohort, reweighed using sIPWs

Characteristic	RC		
	Early 2740[1]	**Late** 678[1]	**SMD**[1]
Grade 1−2	68 (3)	16 (2)	
Grade 3−4	2412 (88)	595 (88)	
Unknown	260 (10)	66 (10)	
Annual average cystectomy volume	6.80 (3.20, 16.90)	7.30 (3.30, 18.00)	0.008
pT stage			0.210
≤pT1	207 (7)	95 (14)	
pT2	1028 (38)	247 (36)	
pT3	1139 (42)	254 (38)	
pT4	366 (13)	83 (12)	
pN stage			0.066
pNX	116 (4)	34 (5)	
pN0	1966 (72)	497 (73)	
pN+	658 (24)	146 (22)	
Surgical margins			0.012
Negative	2494 (91)	614 (91)	
Positive	246 (9)	63 (9)	
LNs removed	14 (7, 22)	14 (8, 22)	0.034

[1]Median (IQR); n (%). [2]SMD: standardized mean difference.

Supplementary Table 7. Table of overall survival estimates at 1, 3, 5 ,7, and 10 years, stratified by treatment arm in the survival (landmark time) analysis cohort

Characteristic	Time (years)	Survival estimate
Early	1	0.85 (0.83, 0.86)
Late	1	0.83 (0.80, 0.87)
Early	3	0.60 (0.58, 0.62)
Late	3	0.59 (0.55, 0.63)
Early	5	0.50 (0.48, 0.52)
Late	5	0.46 (0.42, 0.51)
Early	7	0.43 (0.41, 0.46)
Late	7	0.38 (0.34, 0.44)
Early	10	0.32 (0.29, 0.36)
Late	10	0.26 (0.19, 0.37)

Supplementary Table 8. Univariable and multivariable associations of time from diagnosis to RC, modeled as a continuous linear variable, with pathologic upstaging at RC

	Univariable regression models	Multivariable regression model
Characteristic	OR (95% CI)[1,2]	OR (95% CI)[1,2]
Time from diagnosis to RC (weeks)	0.98 (0.96, 1.00)*	0.98 (0.96, 1.00)*
Age, years	1.00 (1.00, 1.01)	1.00 (0.99, 1.01)
Gender		
Male	–	–
Female	1.22 (1.05, 1.42)*	1.23 (1.05, 1.44)*

Supplementary Table 8. Univariable and multivariable associations of time from diagnosis to RC, modeled as a continuous linear variable, with pathologic upstaging at RC

	Univariable regression models	Multivariable regression model
Characteristic	OR (95% CI)[1,2]	OR (95% CI)[1,2]
Charlson index		
0	–	–
1	1.23 (1.06, 1.42)*	1.17 (1.00, 1.36)*
Year of diagnosis		
2006	–	–
2007	1.21 (0.82, 1.78)	1.31 (0.88, 1.97)
2008	0.96 (0.68, 1.37)	0.97 (0.67, 1.39)
2009	0.99 (0.70, 1.39)	1.01 (0.71, 1.44)
2010	1.29 (0.93, 1.79)	1.36 (0.97, 1.91)
2011	1.29 (0.92, 1.79)	1.33 (0.95, 1.86)
2012	1.44 (1.03, 2.02)*	1.53 (1.08, 2.16)*
2013	1.39 (1.00, 1.94)	1.42 (1.01, 2.01)*
2014	1.37 (0.98, 1.90)	1.41 (1.00, 1.99)*
2015	1.13 (0.80, 1.59)	1.17 (0.82, 1.66)
Race		
White	–	–
Black	1.14 (0.86, 1.50)	1.09 (0.81, 1.47)
Others	0.99 (0.65, 1.50)	1.10 (0.71, 1.71)
Hispanic		
No	–	–
Yes	1.00 (0.65, 1.54)	0.92 (0.58, 1.44)
Insurance status		

Supplementary Table 8. Univariable and multivariable associations of time from diagnosis to RC, modeled as a continuous linear variable, with pathologic upstaging at RC

	Univariable regression models	Multivariable regression model
Characteristic	OR (95% CI)[1,2]	OR (95% CI)[1,2]
Not insured	–	–
Private/managed care	1.10 (0.73, 1.65)	1.08 (0.71, 1.66)
Medicaid	1.40 (0.85, 2.31)	1.50 (0.89, 2.51)
Medicare	1.36 (0.91, 2.04)	1.41 (0.90, 2.20)
VA/military	1.35 (0.62, 2.95)	1.36 (0.60, 3.05)
Geographic location		
Northeast	–	–
South/Southeast	0.92 (0.76, 1.10)	0.80 (0.66, 0.98)*
Midwest	0.94 (0.79, 1.14)	0.85 (0.70, 1.03)
West	0.86 (0.70, 1.07)	0.81 (0.65, 1.02)
Facility type		
Community cancer program	–	–
Comprehensive community cancer program	1.29 (0.95, 1.74)	1.37 (1.00, 1.88)*
Academic/research program	1.09 (0.82, 1.47)	1.07 (0.77, 1.49)
Integrated network cancer program	1.15 (0.81, 1.62)	1.20 (0.84, 1.72)
Distance from hospital	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)
Rurality		
Metropolitan	—	—
Urban	0.96 (0.82, 1.12)	0.94 (0.78, 1.13)
Rural	1.04 (0.73, 1.49)	1.00 (0.69, 1.47)
Income		

Supplementary Table 8. Univariable and multivariable associations of time from diagnosis to RC, modeled as a continuous linear variable, with pathologic upstaging at RC

	Univariable regression models	Multivariable regression model
Characteristic	OR (95% CI)[1,2]	OR (95% CI)[1,2]
<$30 000	—	—
$30 000−34 999	1.01 (0.80, 1.27)	1.11 (0.87, 1.43)
$35 000−45 999	1.09 (0.88, 1.35)	1.25 (0.97, 1.63)
≥$46 000	0.88 (0.71, 1.08)	1.01 (0.75, 1.35)
Education level		
>29	–	–
20-28.9	0.91 (0.74, 1.12)	0.83 (0.66, 1.05)
14-19.9	0.85 (0.69, 1.05)	0.77 (0.59, 0.99)*
<14	0.83 (0.68, 1.01)	0.79 (0.60, 1.04)
cT stage		
cT2	–	–
cT3	0.37 (0.29, 0.47)*	0.35 (0.27, 0.44)*
cT4	0.30 (0.22, 0.41)*	0.28 (0.20, 0.39)*
Tumor grade		
Grade 1−2	—	—
Grade 3−4	1.79 (1.17, 2.72)*	1.90 (1.24, 2.92)*
Unknown	1.33 (0.84, 2.12)	1.35 (0.83, 2.17)
Annual hospital cystectomy volume(unit OR per 10 RC)	1.01 (0.95, 1.06)	1.05 (0.98, 1.14)

[1]*p<0.05. [2]OR: odds ratio; CI: confidence interval.

Supplementary Table 9. Univariable and multivariable associations of time from diagnosis to RC, modeled as a continuous linear variable, with all-cause mortality		
	Univariable regression models	**Multivariable regression model**
Characteristic	**Unadjusted** HR (95% CI)[12]	**Adjusted** HR (95% CI)[12]
Time from diagnosis to RC (weeks)	1.01 (1.00, 1.03)	1.01 (1.00, 1.03)
Age, years	1.02 (1.01, 1.03)*	1.01 (1.00, 1.02)*
Gender		
Male	–	–
Female	0.96 (0.86, 1.08)	0.93 (0.83, 1.05)
Charlson Index		
0	–	–
1	1.30 (1.17, 1.45)*	1.23 (1.10, 1.37)*
Year of diagnosis		
2006	–	–
2007	1.18 (0.91, 1.53)	1.18 (0.91, 1.53)
2008	1.15 (0.90, 1.46)	1.13 (0.88, 1.44)
2009	1.08 (0.85, 1.38)	1.08 (0.85, 1.38)
2010	1.31 (1.04, 1.64)*	1.24 (0.99, 1.57)
2011	1.18 (0.93, 1.49)	1.11 (0.88, 1.40)
2012	1.08 (0.85, 1.38)	1.03 (0.81, 1.32)
2013	1.10 (0.85, 1.41)	1.05 (0.82, 1.35)
2014	1.23 (0.95, 1.57)	1.20 (0.93, 1.55)
2015	1.16 (0.87, 1.54)	1.09 (0.82, 1.45)
Race		
White	–	–

Supplementary Table 9. Univariable and multivariable associations of time from diagnosis to RC, modeled as a continuous linear variable, with all-cause mortality		
	Univariable regression models	**Multivariable regression model**
Characteristic	**Unadjusted** HR (95% CI)[12]	**Adjusted** HR (95% CI)[12]
Black	1.30 (1.06, 1.59)*	1.20 (0.97, 1.48)
Others	0.97 (0.70, 1.35)	0.94 (0.67, 1.31)
Hispanic		
No	–	–
Yes	1.18 (0.87, 1.60)	1.13 (0.83, 1.55)
Insurance status		
Not Insured	–	–
Private/Managed care	0.99 (0.70, 1.38)	0.98 (0.70, 1.39)
Medicaid	1.40 (0.94, 2.10)	1.30 (0.86, 1.95)
Medicare	1.48 (1.06, 2.06)*	1.27 (0.89, 1.82)
VA/Military	1.44 (0.80, 2.60)	1.31 (0.72, 2.37)
Geographic location		
Northeast	–	–
South/Southeast	1.08 (0.94, 1.24)	1.04 (0.90, 1.21)
Midwest	0.98 (0.85, 1.12)	1.02 (0.88, 1.18)
West	0.96 (0.82, 1.14)	0.96 (0.82, 1.14)
Facility type		
Community cancer program	—	—
Comprehensive community cancer program	1.01 (0.82, 1.25)	1.03 (0.83, 1.29)
Academic/research program	0.86 (0.69, 1.06)	0.98 (0.77, 1.24)

Supplementary Table 9. Univariable and multivariable associations of time from diagnosis to RC, modeled as a continuous linear variable, with all-cause mortality		
	Univariable regression models	**Multivariable regression model**
Characteristic	**Unadjusted** HR (95% CI)[12]	**Adjusted** HR (95% CI)[12]
Integrated network cancer program	0.93 (0.72, 1.20)	0.97 (0.75, 1.25)
Distance from hospital	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)
Rurality		
Metropolitan	–	–
Urban	1.07 (0.95, 1.20)	1.02 (0.89, 1.17)
Rural	0.90 (0.67, 1.19)	0.83 (0.62, 1.12)
Income		
<$30,000	–	–
$30,000-$34,999	0.99 (0.83, 1.17)	1.04 (0.86, 1.24)
$35,000-$45,999	0.95 (0.81, 1.12)	1.05 (0.87, 1.27)
>=$46,000	0.86 (0.74, 1.01)	1.02 (0.82, 1.26)
Education level		
>29	—	—
20−28.9	0.91 (0.78, 1.07)	0.89 (0.75, 1.05)
14−19.9	0.89 (0.76, 1.04)	0.90 (0.75, 1.09)
<14	0.79 (0.68, 0.91)*	0.82 (0.67, 1.00)*
cT stage		
cT2	–	–
cT3	1.31 (1.11, 1.53)*	1.25 (1.06, 1.47)*
cT4	1.36 (1.11, 1.67)*	1.35 (1.10, 1.66)*
Tumor grade		

Supplementary Table 9. Univariable and multivariable associations of time from diagnosis to RC, modeled as a continuous linear variable, with all-cause mortality

	Univariable regression models	**Multivariable regression model**
Characteristic	**Unadjusted** HR (95% CI)[12]	**Adjusted** HR (95% CI)[12]
Grade 1-2	–	–
Grade 3-4	1.15 (0.84, 1.57)	1.16 (0.85, 1.59)
Unknown	1.13 (0.79, 1.59)	1.14 (0.81, 1.63)
Annual hospital cystectomy volume	0.92 (0.88, 0.96)*	0.94 (0.89, 0.99)*

[1]*$p<0.05$. [2]HR: hazard ratio; CI: confidence interval.