

	Urothelial carcinoma (N= 4596)	Micropapillary UC (N=88)	Lymphoepithelioma-like UC (N=11)	Sarcomatoid UC (N=72)	Adenocarcinoma (N=175)	Giant & Spindle-cell carcinoma (N=17)	Squamous cell carcinoma (N=220)	Neuroendocrine tumour (N=117)	Sarcoma (N=3)
<b>Age at diagnosis, median (IQR)</b>	68 (60-75)	71 (61-76)	73 (67-76)	67 (58-74)	62 (53-71)	71 (56-82)	67 (55-76)	67 (60-75)	59 (55-69)
<b>Female sex, N (%)</b>	1170 (25.5)	15 (17.0)	2 (18.2)	30 (41.7)	71 (40.6)	5 (29.4)	123 (55.9)	20 (17.1)	2 (66.7)
<b>Race, N (%)</b>									
White	3735 (81.3)	76 (86.4)	9 (81.8)	52 (72.2)	115 (65.7)	16 (94.1)	175 (79.5)	98 (83.8)	2 (66.7)
Black	326 (7.1)	2 (2.3)	2 (18.2)	11 (15.3)	21 (12)	0 (0)	18 (8.2)	7 (6)	0 (0)
Hispanics	311 (6.8)	4 (4.5)	0 (0)	6 (8.3)	26 (14.9)	1 (5.9)	19 (8.6)	7 (6)	1 (33.3)
Asiatic	200 (4.4)	5 (5.7)	0 (0)	2 (2.8)	13 (7.4)	0 (0)	7 (3.2)	5 (4.3)	0 (0)
Others	24 (0.5)	1 (1.1)	0 (0)	1 (1.4)	0 (0)	0 (0)	1 (0.5)	0 (0)	0 (0)
<b>Socioeconomical status, N (%)</b>									
High	2299 (50)	44 (50)	4 (36.4)	37 (51.4)	90 (51.4)	10 (58.8)	112 (50.9)	58 (49.6)	2 (66.7)
Low	2297 (50)	44 (50)	7 (63.6)	35 (48.6)	85 (48.6)	7 (41.2)	108 (49.1)	59 (50.4)	1 (33.3)
<b>Region, N (%)</b>									
West	2480 (54)	43 (48.9)	7 (63.6)	29 (40.3)	108 (61.7)	7 (41.2)	115 (52.39)	63 (53.8)	2 (66.7)
Midwest	498 (10.8)	13 (14.8)	1 (9.1)	8 (11.1)	9 (5.1)	2 (11.8)	27 (12.3)	14 (12)	0 (0)
North-East	798 (17.4)	7 (8.0)	0 (0)	12 (16.7)	30 (17.1)	4 (23.5)	32 (14.5)	21 (17.9)	0 (0)
South	820 (17.8)	25 (28.4)	3 (27.3)	23 (31.9)	28 (16)	4 (23.5)	46 (20.9)	19 816.2)	1 (33.3)
<b>Marital status, N (%)</b>									
Married	2861 (62.2)	57 (64.8)	8 (72.7)	41 (56.9)	102 (58.3)	6 (35.3)	109 (49.5)	73 (62.4)	2 (66.7)
Never married	548 (11.9)	9 (10.2)	2 (18.2)	6 (8.3)	33 (18.9)	4 (23.5)	37 (16.8)	16 (13.7)	1 (33.3)
Previously married	1044 (22.7)	17 819.3)	1 (9.1)	24 (33.3)	35 (20)	6 (35.3)	64 (29.1)	23 (19.7)	0 (0)
Unknown	143 (3.1)	5 (5.7)	0 (0)	1 (1.4)	5 (2.9)	1 (5.9)	10 (4.5)	5 (4.3)	0 (0)
<b>Treatment, N (%)</b>									
Radical cystectomy	3895 (84.8)	77 (87.5)	10 (90.9)	66 (91.7)	118 (67.4)	16 (94.1)	168 (76.4)	95 (81.2)	3 (100)
Partial cystectomy	100 (2.2)	3 (3.4)	0 (0)	1 (1.4)	19 (10.9)	0 (0)	7 (3.2)	3 (2.6)	0 (0)
TURB only	241 (5.2)	3 (3.4)	1 (9.1)	1 (1.4)	5 (2.9)	0 (0)	10 (4.5)	5 (4.3)	0 (0)
Radiotherapy	6 (0.1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.5)	0 (0)	0 (0)
TMT	69 (1.5)	2 (2.3)	0 (0)	0 (0)	5 (2.9)	1 (5.9)	0 (0)	2 (1.7)	0 (0)
No local treatment	21 (0.5)	0 (0)	0 (0)	0 (0)	2 (1.1)	0 (0)	6 (2.7)	1 (0.9)	0 (0)
Other/Unknown	264 (5.7)	3 (3.4)	0 (0)	4 (5.6)	26 (14.9)	0 (0)	28 (12.7)	11 (9.4)	0 (0)
<b>Perioperative CT, N (%)</b>									
Yes	2562 (55.7)	55 (62.5)	9 (81.8)	33 (45.8)	95 (54.3)	8 (47.1)	78 (35.5)	77 (65.8)	2 (66.7)
No/Unknown	2034 (44.3)	33 (37.5)	2 (18.2)	39 (54.2)	80 (45.7)	9 (52.9)	142 (64.5)	40 (34.2)	1 (33.3)
<b>T stage, N (%)</b>									
T0/x	38 (0.8)	0 (0)	0 (0)	0 (0)	4 (2.3)	0 (0)	8 (3.6)	1 (0.9)	0 (0)
T<2	144 (3.1)	3 (3.4)	0 (0)	2 (2.8)	2 (1.1)	0 (0)	5 (2.3)	2 (1.7)	0 (0)
T2	916 (19.9)	24 (27.3)	2 (18.2)	10 (13.9)	18 (10.3)	1 (5.9)	20 (9.1)	17 (14.5)	0 (0)
T3-4	3498 (76.1)	61 (69.3)	9 (81.8)	60 (83.3)	151 (86.3)	16 (94.1)	187 (85)	97 (82.9)	3 (100)
<b>Grade, N (%)</b>									
G1	19 (0.4)	0 (0)	0 (0)	0 (0)	3 (1.7)	0 (0)	6 (2.7)	0 (0)	0 (0)

G2	82 (1.8)	0 (0)	0 (0)	0 (0)	26 (14.9)	0 (0)	72 (32.7)	0 (0)	0 (0)
G3	1539 (33.5)	20 (22.7)	1 (9.1)	22 (30.6)	92 (52.6)	3 (17.6)	94 (42.7)	34 (29.1)	1 (33.3)
G4	2794 (60.8)	64 (72.7)	9 (81.8)	47 (65.3)	39 (22.3)	12 (70.6)	34 (15.5)	57 (48.7)	2 (66.7)
Gx	162 (3.5)	4 (4.5)	1 (9.1)	3 (4.2)	15 (8.6)	2 (11.8)	14 (6.4)	26 (22.2)	0 (0)
<b>NNR, median (IQR)</b>	13 (7-21)	14 (9-22)	21 (9-26)	15 (8-25)	13 (7-23)	12 (8-28)	11 (5-19)	12 (7-20)	24 (15-27)
<b>NPN, median (IQR)</b>	2 (1-4)	3 (2-8)	2 (1-5)	2 (1-3)	2 (1-5)	2 (1-3)	2 (1-3)	2 (1-4)	1 (1-2)
<b>LN density, mean</b>	31.1	42.2	32.9	28.1	37.4	23.7	35.2	31.7	9.2

**Abbreviations.** CT: chemotherapy; IQR: interquartile range; LN: lymph node; NNR: number of lymph nodes removed; NPN: number of positive removed lymph nodes; TMT: trimodal therapy; TURB: transurethral resection of the bladder; UC: urothelial carcinoma

**Supplementary Table 2.** Descriptive characteristics of patients with urothelial, urothelial variant and non-urothelial variant histologies bladder cancer with positive lymph node invasion (N=5299).