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MEDICAL CENTER

DEPARTMENT OF
UROLOGY

Centralization of care in rare urologic malignancies:

Academic centers improve survival in primary urethral cancer

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Centralization of Care

- Shifting cancer care to high-volume providers and multidisciplinary teams; academic centers
- Centralization of care improves outcomes across urologic malignancies¹
 - Bladder, prostate, kidney, penile, testicular cancer
 - Greatest benefit for complex procedures, e.g. radical cystectomy
- Paucity of data for low-incidence cancers
 - Adrenal, urethral, penile, testicular

¹Williams SB, Ray-Zack MD, Hudgins HK, et al. Impact of Centralizing Care for Genitourinary Malignancies to High-volume Providers: A Systematic Review. *European urology oncology* 2019;2:265-73.



Primary Urethral Cancer

- International collaboration on primary urethral carcinoma
 - 124 patients, 10 tertiary academic centers
 - “Given the rarity of this cancer, there remain critical gaps in our understanding of the optimal management... there is an urgent clinical need”²⁻³
- Recommend that all patients with primary UC be referred to academic centers
 - No clinical data to support this recommendation

²Gakis G, Morgan TM, Efstathiou JA, et al. Prognostic factors and outcomes in primary urethral cancer: results from the international collaboration on primary urethral carcinoma. World journal of urology 2016;34:97- 103.

³Gakis G, Morgan TM, Daneshmand S, et al. Impact of perioperative chemotherapy on survival in patients with advanced primary urethral cancer: results of the international collaboration on primary urethral carcinoma. Annals of oncology : official journal of the European Society for Medical Oncology 2015;26:1754-9.

EAU Guidelines on Primary Urethral Carcinoma

Georgios Gakis^{a,}, J. Alfred Witjes^b, Eva Comp erat^c, Nigel C. Cowan^d, Maria De Santis^e, Thierry Le Bret^f, Maria J. Ribal^g, Amir M. Sherif^h*

1. Neoadjuvant chemotherapy improves survival for locally advanced urothelial carcinoma
2. Neoadjuvant chemoradiation improves survival for locally advanced SCC
3. In clinical N+ patients, regional LAD should be considered for initial treatment, may be curative
4. Should be discussed by a multidisciplinary team of urologists, medical oncologists, radiation oncologists

Hypothesis

- Patients with primary urethral cancer treated at NCDB-reporting hospitals will have greater overall survival associated with centralization of care
- There will be a greater frequency of guideline-based care at academic centers

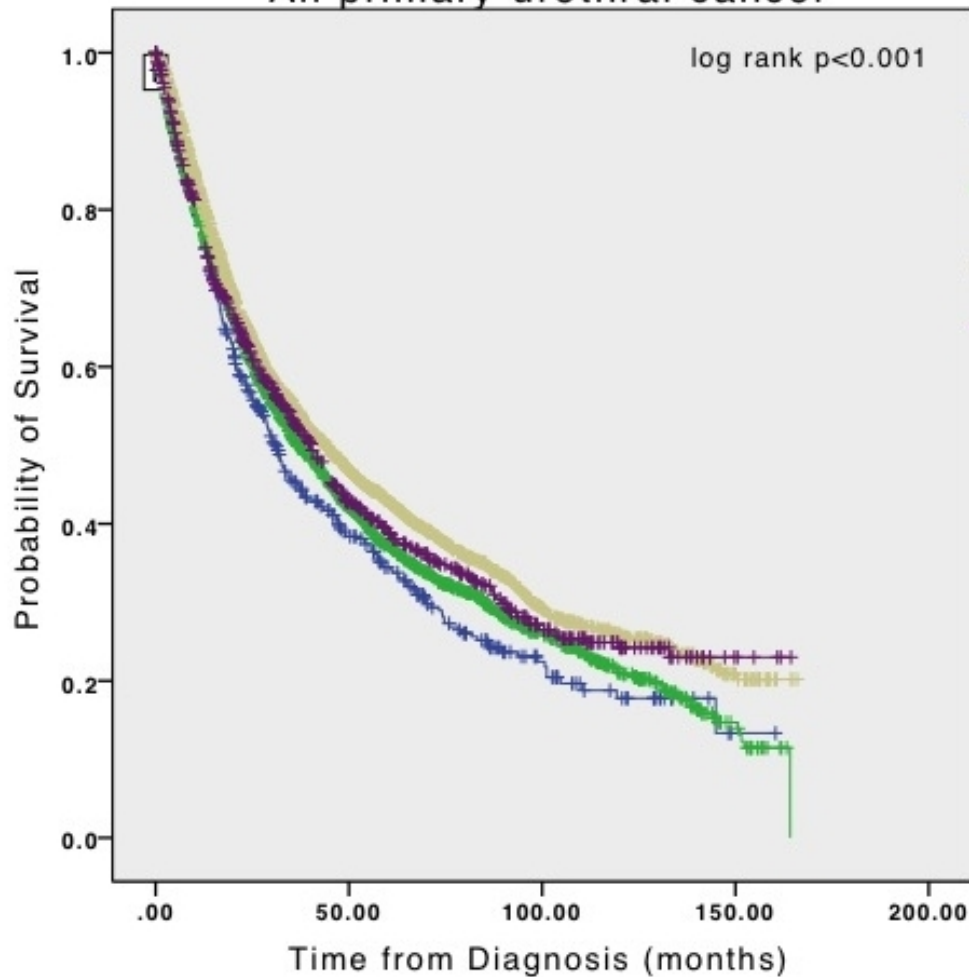


Baseline demographic and clinical data

N	7,148
Age	72 (IQR 62-80)
Race	
White	5,868 (82.1%)
Black	1,027 (14.4%)
Asian/Pacific Islander	123 (1.7%)
Other/Unknown	130 (1.8%)
Gender	
Male	5,042 (70.5%)
Female	2,106 (29.5%)
Subtype	
SCC	1,446 (20.2%)
Urothelial	4,102 (57.4%)
Adenocarcinoma	1,016 (14.2%)
Other/Unknown	449 (8.2%)
Facility type	
Community Cancer Program	525 (7.3%)
Comprehensive Community Cancer Program	2,393 (33.5%)
Academic/Research	3,223 (45.1%)
Integrated Network Cancer Program	913 (12.8%)
Unknown	94 (1.3%)



All primary urethral cancer



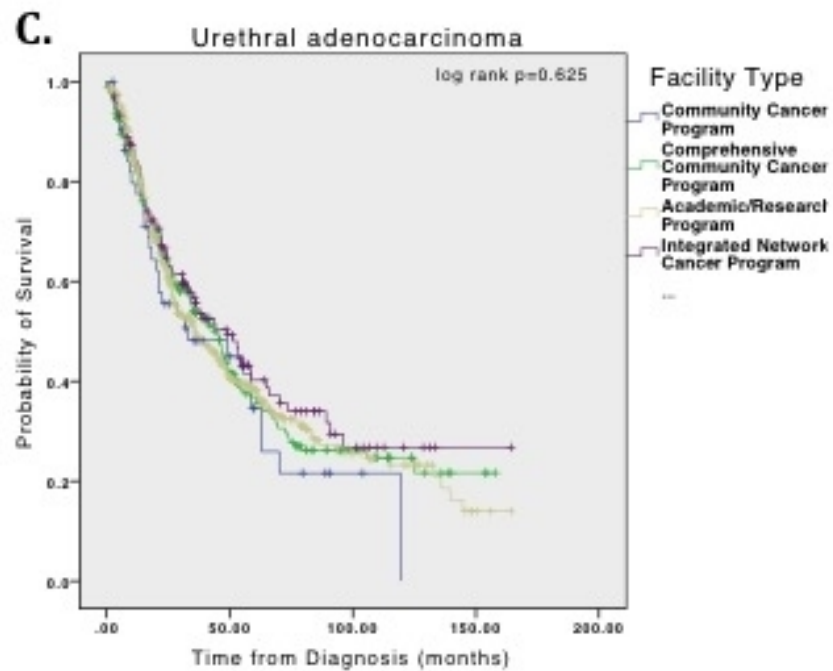
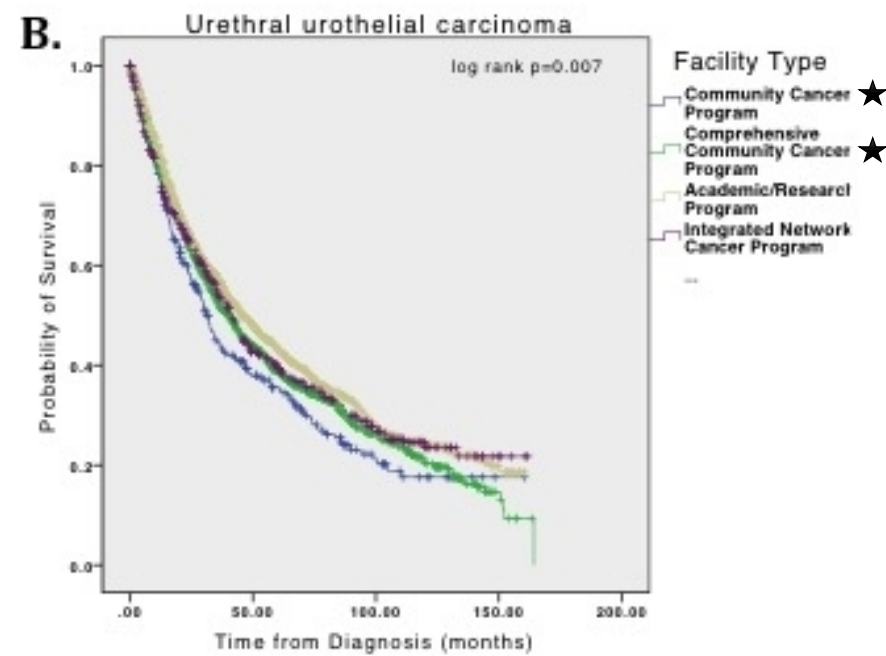
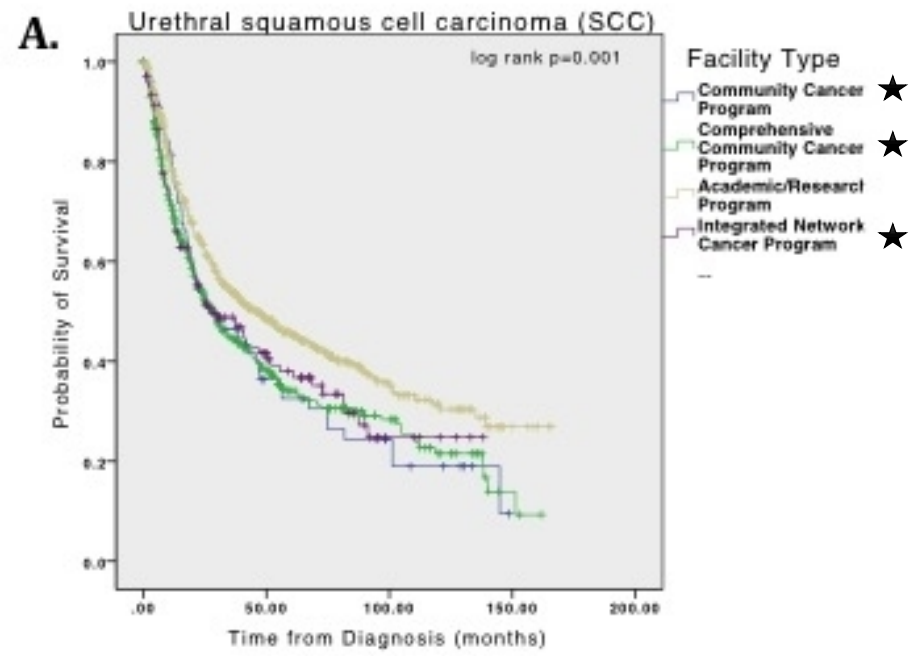
Facility Type

- Community Cancer Program
- Comprehensive Community Cancer Program
- Academic/Research Program
- Integrated Network Cancer Program
- ...

Pairwise comparisons

Academic 44.2 months (40.6-47.8)	Community 31.2 months (26.1-36.2)	p < 0.00 1
Academic 44.2 months (40.6-47.8)	Comprehensive Community 36.8 months (33.5-40.0)	p < 0.00 1
Integrated Network 40.3 months (35.6-45.0)	Community 31.2 months (26.1-36.2)	p = 0.04





★ = inferior OS vs. academic centers, p<0.05

Cox regression analysis, all primary urethral cancer

Variable	HR	p-value
Age	1.035 (1.031-1.039)	<0.001
Race		
White	Ref	
Black	1.159 (1.048-1.283)	0.004
Asian/Pacific Islander	0.725 (0.534-0.983)	0.038
Other/Unknown	0.936 (0.720-1.217)	0.621
Gender		
Male	Ref	
Female	0.907 (0.834-0.987)	0.024
Insurance status		
Uninsured	Ref	
Private insurance	0.663 (0.518-0.848)	0.001
Medicaid	1.177 (0.882-1.570)	0.267
Medicare	0.691 (0.541-0.883)	0.003
Other government	0.735 (0.490-1.102)	0.136
Unknown	0.806 (0.592-1.097)	0.171
Urban/Rural residence		
Rural	Ref	
Metropolitan	0.863 (0.747-0.996)	0.044
Facility type		
Community	Ref	
Comprehensive	0.893 (0.783-1.017)	0.088
Academic	0.848 (0.744-0.967)	0.014
Integrated Network	0.867 (0.745-1.009)	0.065
Charlson/Deyo Score		
0	Ref	
1	1.172 (1.078-1.273)	<0.001
2	1.634 (1.424-1.874)	<0.001
≥3	1.664 (1.334-2.076)	<0.001
Distance to hospital	0.999 (0.999-1.000)	<0.001

Cox regression analysis, all primary urethral cancer

Variable	HR	p-value
Histology		
SCC	Ref	
Urothelial	0.953 (0.866-1.049)	0.325
Adenocarcinoma	0.930 (0.827-1.046)	0.227
Other	1.244 (0.867-1.784)	0.236
Grade		
1	Ref	
2	1.281 (1.097-1.494)	0.002
3	1.352 (1.173-1.557)	<0.001
4	1.286 (1.101-1.503)	0.002
Unknown	1.209 (1.044-1.400)	0.011
Clinical T		
cT1	Ref	
cTx	1.288 (1.134-1.462)	<0.001
cT0	1.294 (0.806-2.075)	0.286
cTa	0.764 (0.648-0.901)	0.001
cTis	0.784 (0.665-0.924)	0.003
cT2	1.280 (1.127-1.454)	<0.001
cT3	1.770 (1.542-2.031)	<0.001
cT4	2.214 (1.902-2.577)	<0.001
Unknown	0.893 (0.706-1.131)	0.347
Clinical N		
cN0	Ref	
cN1	1.050 (0.886-1.245)	0.571
cN2	1.458 (1.267-1.678)	<0.001
cNx	1.024 (0.918-1.144)	0.667
Unknown	1.148 (0.799-1.649)	0.455
Clinical M		
cM0	Ref	
cM1	3.110 (2.726-3.547)	<0.001
Unknown	1.268 (1.030-1.561)	0.025



Multivariable Cox Regression

- Academic centers associated with greater OS
 - HR 0.848 (95% CI 0.744-0.967)
- Black race associated with poor OS
 - HR 1.159 (95% CI 1.048-1.283)
- Male gender associated with poor OS
 - Female gender HR 0.907 (0.834-0.987)
- Age, Charlson-Deyo, grade, stage
- Metropolitan residence, distance traveled to hospital associated with greater OS
- Private and Medicare insurance associated with greater OS



Subgroup analysis, SCC and urothelial carcinoma

- Urothelial carcinoma:
 - Academic centers with survival advantage compared to community centers, HR 0.800 (95% CI 0.681-0.940)
- SCC:
 - Facility type not significant
 - Academic centers HR 0.813 (95% CI 0.599-1.103)

Practice patterns

Facility type	Community Cancer Program	Comprehensive Community Cancer Program	Academic/Research Program	Integrated Network Cancer Program	p-value
Any chemotherapy	18.3%	17.9%	29.6%	22.6%	<0.001
Neoadjuvant chemo	1.1%	1.1%	5.1%	1.1%	<0.001
Adjuvant chemo	10.4%	11.9%	16.3%	13.6%	
Any radiation	16.0%	16.9%	18.6%	18.0%	0.272
Neoadjuvant radiation	0.2%	0.2%	1.0%	1.0%	<0.001
Adjuvant radiation	8.0%	9.6%	9.7%	9.2%	
Any surgery					<0.001
Ablative	1.3%	1.9%	1.3%	1.3%	
Local excision	49.5%	46.9%	28.7%	44.4%	
Simple excision	7.8%	8.8%	13.0%	9.0%	
Radical surgery	14.1%	15.4%	33.2%	19.9%	<0.001
Lymph node dissection	12.4%	11.8%	31.2%	16.5%	



Practice patterns, clinically advanced disease (\geq cT3, cN+, M0)

Facility type	Community Cancer Program	Comprehensive Community Cancer Program	Academic/Research Program	Integrated Network Cancer Program	p-value
Any chemotherapy	49.4%	48.5%	59.8%	54.9%	0.008
Neoadjuvant chemo	4.3%	3.4%	12.4%	3.0%	0.002
Adjuvant chemo	18.8%	22.6%	22.7%	23.5%	
Any radiation	38.0%	48.5%	37.3%	49.3%	0.002
Neoadjuvant radiation	1.3%	0.7%	2.8%	3.5%	0.064
Adjuvant radiation	12.7%	22.7%	15.1%	22.2%	
Any surgery					<0.001
Ablative	0.0%	0.3%	0.6%	0.0%	
Local excision	26.6%	26.8%	15.2%	25.0%	
Simple excision	10.1%	7.8%	7.5%	4.9%	
Radical surgery	20.3%	19.3%	42.2%	29.2%	<0.001
Lymph node dissection	25.3%	23.7%	48.4%	32.6%	



Conclusions

- There is a survival advantage to centralization of care in primary urethral cancer
- There is poor overall adherence to guidelines/expert opinion, but significantly higher at academic centers
 - Higher rates of radical surgery/LND, neoadjuvant chemoradiation
- Disparities in survival based upon race and gender warrant further investigation



Thank you

For questions, please email
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