Frequency of Low Grade T1 Bladder Cancer Has Decreased but Continues to Vary by Institution

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BACKGROUND

- Low grade but invasive papillary urothelial carcinomas are rare
- Current bladder cancer grading system aimed to reduce tumor heterogeneity and was widely adopted in 2004
- There is a paucity of data on the questionable clinical entity of low grade (LG) T1 bladder cancer
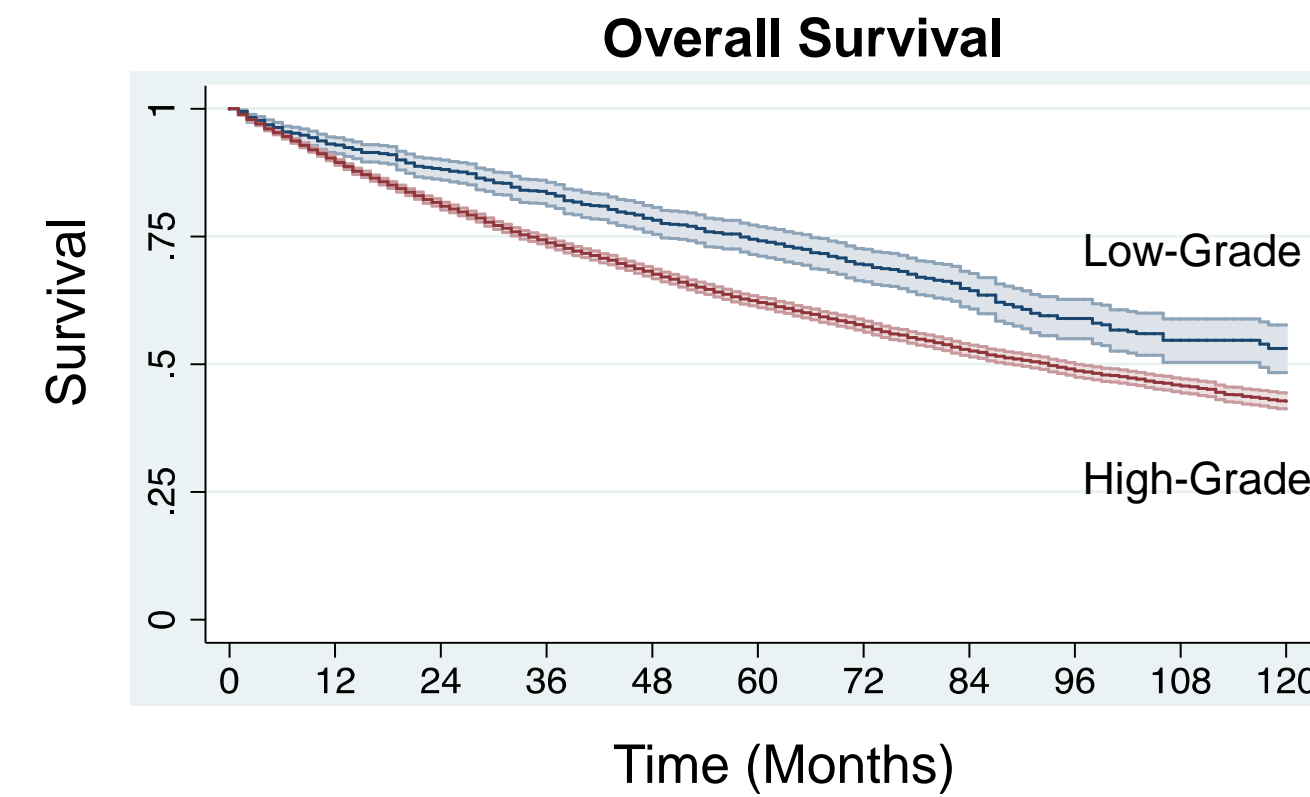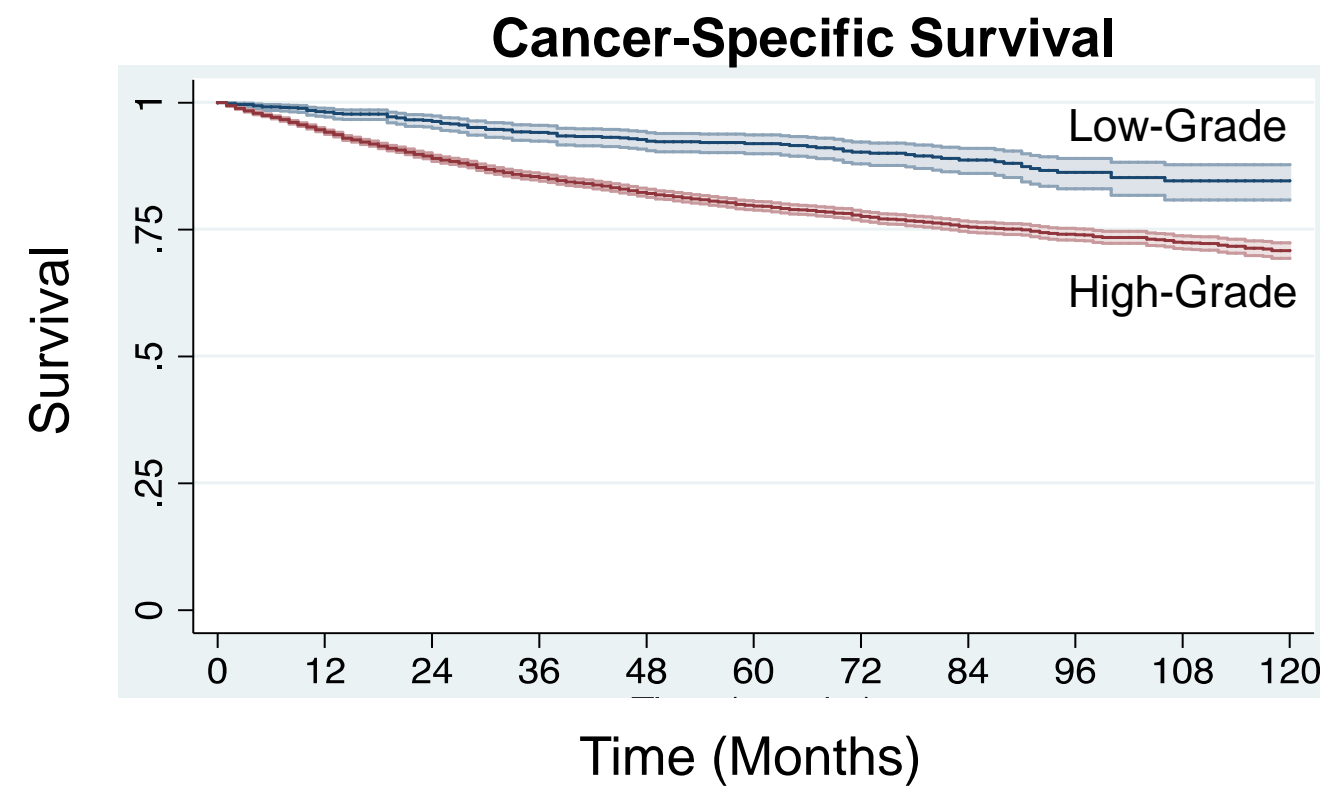
OBJECTIVES

To evaluate the incidence and factors associated with the diagnosis of LG T1 bladder cancer since the adoption of the 2004 grading system
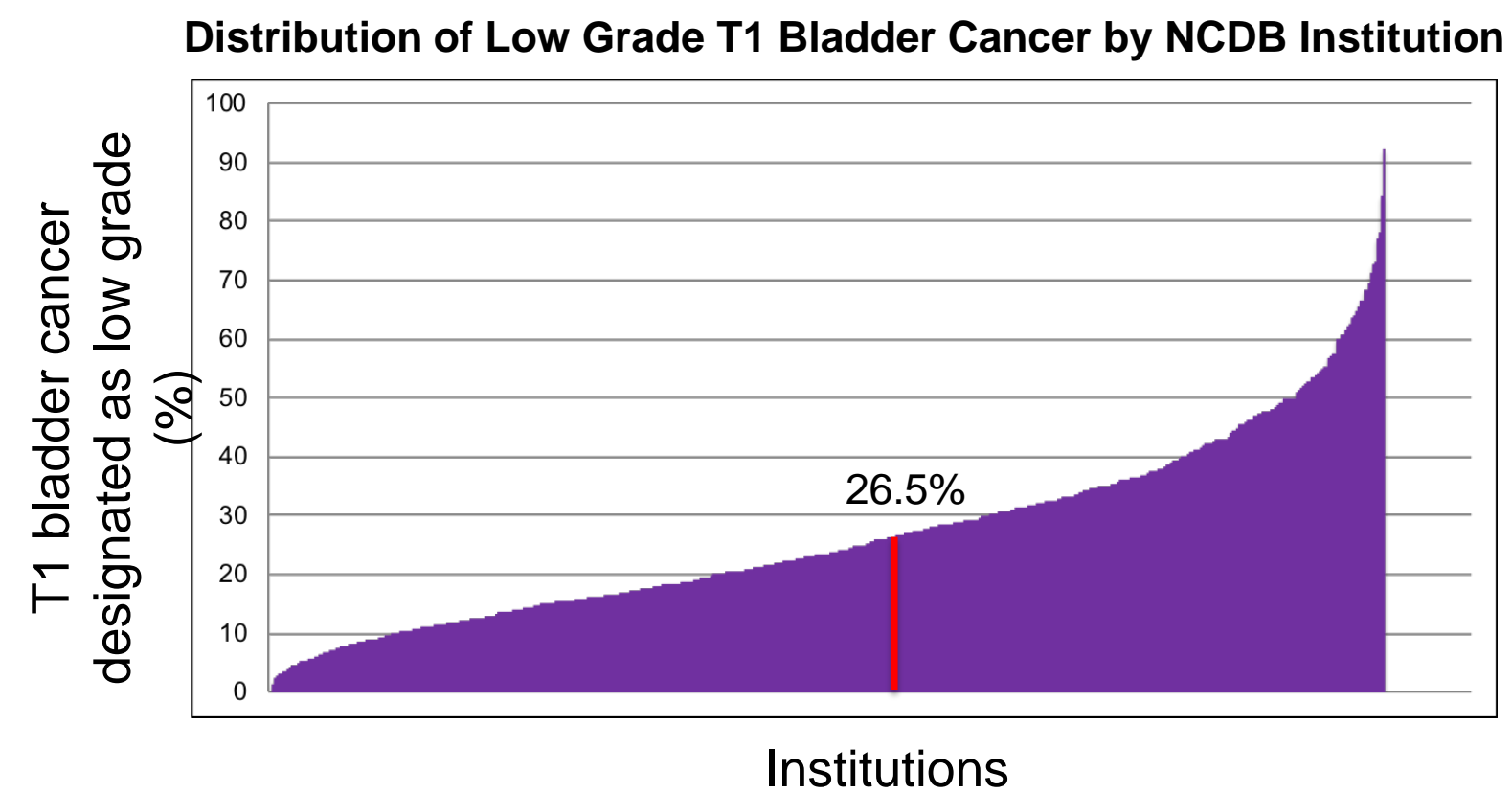
METHODS

- SEER (2004 – 2014) and National Cancer Database (NCDB) (2004 – 2013) were queried for all T1 bladder cancer patients
- Proportion of T1 patients with LG disease was trended over time
- Overall and cancer-specific mortality was compared between LG and HG
- Factors associated with a diagnosis of LG were assessed using logistic regression
  - Year of diagnosis
  - Age
  - Race
  - Sex
  - Charlson Comorbidity Index
  - Treatment facility type
  - Income and insurance
  - Distance from treatment facility
- Institutions that did not contribute cases in each successive year were excluded

RESULTS

Cancer-Specific Survival

Overall Survival

	Proportion of LG T1	p
SEER		
2004	33.4%	
2014	15.6%	< 0.001
NCDB		
2004	38.9%	
2013	18.5%	<0.001

Distribution of Low Grade T1 Bladder Cancer by NCDB Institution

26.5%

NCDB Logistic Regression

Variable	OR (95% CI)	p
Year of diagnosis		
2004	Reference	
2005	0.86 (0.79-0.93)	<0.001
2006	0.76 (0.70-0.82)	<0.001
2007	0.74 (0.68-0.80)	<0.001
2008	0.63 (0.58-0.68)	<0.001
2009	0.58 (0.54-0.63)	<0.001
2010	0.49 (0.45-0.53)	<0.001
2011	0.46 (0.43-0.50)	<0.001
2012	0.42 (0.39-0.46)	<0.001
2013	0.38 (0.35-0.41)	<0.001
Age		
Per one year	0.99 (0.99-0.99)	<0.001
Sex		
Male	Reference	
Female	1.15 (1.10-1.20)	<0.001
Charlson comorbidity index		
0	Reference	
1	0.95 (0.91-0.99)	0.019
>1	0.98 (0.91-1.05)	0.507
Race/Ethnicity		
White	Reference	
Black	0.99 (0.91-1.08)	0.88
Hispanic	1.26 (1.13-1.40)	<0.001
Unknown/other	0.95 (0.90-1.02)	0.137
Geographic Location		
North East	Reference	
North Central	1.33 (1.26-1.40)	<0.001
South	1.21 (1.15-1.28)	<0.001
West	1.00 (0.95-1.06)	0.922
Facility Type		
Community	Reference	
Comprehensive	0.69 (0.66-0.73)	<0.001
Academic	0.46 (0.44-0.49)	<0.001
Other	0.58 (0.35-0.94)	0.028
Insurance Type		
Medicare	Reference	
Private	0.88 (0.77-1.00)	0.042
Medicaid	0.83 (0.73-0.95)	0.006
Uninsured	0.98 (0.78-1.23)	0.86
Unknown	1.24 (1.03-1.49)	0.026
Income		
<$38,000	Reference	
$38,000-47.999	1.01 (0.95-1.07)	0.797
$48,000-$62,999	0.97 (0.91-1.04)	0.378
$63,000+	0.90 (0.83-0.96)	0.003
Distance from treatment facility		
≤60 miles	Reference	
60-120 miles	0.82 (0.74-0.91)	<0.001
>120 miles	0.71 (0.62-0.81)	<0.001

CONCLUSIONS

- Since the adoption of the current grading system the percentage of T1 bladder cancers designated as LG has declined substantially but continues to vary widely by institution
- This variability raises concerns for grading misclassification within the current system
- Given the worse overall and cancer-specific survival for HG T1, the misclassification of T1 disease at LG could have a negative impact on survival