

Supplemental Appendix for:

Changes in Stage Distribution and Disease Specific Survival in Differentiated Thyroid Cancer with Transition to AJCC 8th edition: A Meta-Analysis

Melissa Lechner et al.

**Appendix S1.  
Supplemental Methods and Data**

**1. Survival analysis on Shteinshaidler and Verburg data**

Data on differentiated thyroid cancer patients was provided by Shteinshaidler *et al.* and Verburg *et al.* Patients were staged based on AJCC cancer staging 7<sup>th</sup> and 8<sup>th</sup> editions. Ten-year disease-specific survival (DSS) was calculated using Kaplan Meier analysis. Cox proportional hazards regression was utilized to compare survival by stage categories I, II, III, and IV. Significance tests two two-tailed with alpha=0.05. All analyses were performed using SAS software v. 9.4.

Shteinshaidler

One participant (ID=259) was excluded from the analysis due to incomplete data (missing start year).

Verburg

Participants with missing stage data (N=200) were excluded from the analysis.

Shteinshaidler

**Table 1.** Survival between seventh and eighth editions of the AJCC TNM staging system\*

AJCC Stage	10-year DSS (95% CI)	HR (95% CI)	P-value
<b>7<sup>th</sup> Edition</b>			
I	95.71 (91.32, 97.91)	(ref)	(ref)
II	93.18 (75.03, 98.28)	1.90 (0.40, 8.94)	0.42
III	75.36 (59.99, 85.50)	5.77 (2.36, 14.13)	0.0001
IV	54.92 (26.17, 76.50)	12.17 (4.40, 33.67)	<0.0001
<b>8<sup>th</sup> Edition</b>			
I	94.23 (90.28, 96.61)	(ref)	(ref)
II	69.40 (49.51, 82.71)	5.25 (2.33, 11.83)	<0.0001
III	66.67 (5.41, 94.52)	4.73 (0.62, 35.99)	0.13
IV	25.00 (1.23, 64.60)	20.51 (6.70, 62.84)	<0.0001

Abbreviation: CI, confidence interval; DSS, disease-specific survival

\*Cox proportional hazards regression

Verburg

**Table 2.** Survival between seventh and eighth editions of the AJCC TNM staging system\*

AJCC Stage	10-year DSS (95% CI)	HR (95% CI)	P-value
<b>7<sup>th</sup> Edition</b>			
I	99.19 (98.20, 99.64)	(ref)	(ref)
II	98.24 (95.34, 99.34)	2.25 (0.68, 7.48)	0.18
III	94.81 (88.57, 97.69)	5.54 (2.08, 14.77)	0.0006
IV	68.75 (60.85, 75.39)	45.61 (21.73, 95.73)	<0.0001
<b>8<sup>th</sup> Edition</b>			

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I	98.90 (98.05, 99.38)	(ref)	(ref)
II	88.20 (81.66, 92.51)	12.36 (5.96, 25.67)	<0.0001
III	69.44 (29.14, 89.78)	25.35 (7.15, 89.84)	<0.0001
IV	55.35 (43.01, 66.05)	62.33 (32.50, 119.56)	<0.0001

Abbreviation: CI, confidence interval; DSS, disease-specific survival

\*Cox proportional hazards regression

## 2. Creating combined stage 4 HR estimate for Tae Huyk Kim study

One study only provided estimates for finer strata (a and b) for survival in stage 4 group. The 8<sup>th</sup> edition stage 4 cumulative HR was estimated using a fixed-effects model. The risk of mortality in thyroid patients in stage 4 is about 40 times higher (HR 43.6, 95% CI 18.4, 103.2) than those in stage 1.