



This is a repository copy of *Predicting the risk of disease recurrence and death following curative-intent radiotherapy for non-small cell lung cancer: The development and validation of two scoring systems from a large multicentre UK cohort.*

White Rose Research Online URL for this paper:

<https://eprints.whiterose.ac.uk/216458/>

Version: Supplemental Material

Article:

Evison, M., Barrett, E., Cheng, A. et al. (20 more authors) (2021) Predicting the risk of disease recurrence and death following curative-intent radiotherapy for non-small cell lung cancer: The development and validation of two scoring systems from a large multicentre UK cohort. *Clinical Oncology*, 33 (3). pp. 145-154. ISSN 0936-6555

<https://doi.org/10.1016/j.clon.2020.09.001>

Article available under the terms of the CC-BY-NC-ND licence
(<https://creativecommons.org/licenses/by-nc-nd/4.0/>).

Reuse

Items deposited in White Rose Research Online are protected by copyright, with all rights reserved unless indicated otherwise. They may be downloaded and/or printed for private study, or other acts as permitted by national copyright laws. The publisher or other rights holders may allow further reproduction and re-use of the full text version. This is indicated by the licence information on the White Rose Research Online record for the item.

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.



eprints@whiterose.ac.uk
<https://eprints.whiterose.ac.uk/>

Table 1: Patient demographics and clinical parameters

Age	Mean (SD)	72.0 (+/-9.41)
Gender n (%)	Male	413 (46)
	Female	485 (54)
Pre-treatment WHO Performance Status n (%)	0	123 (14)
	1	439 (49)
	2	276 (31)
	3	41 (4)
	Missing	19 (2)
BMI	Mean (SD)	25.89 (+/-5.86)
Smoking Status n (%)	Never smoker	49 (6)
	Ex-smoker	539 (60)
	Current smoker	263 (29)
	Missing	47 (5)
Emphysema n (%)	None	370 (41)
	Mild	138 (15)
	Moderate	152 (17)
	Severe	38 (4)
	Missing	200 (22)
Interstitial lung disease n (%)	None	623 (70)
	Mild	45 (5)
	Moderate	19 (2)
	Severe	0 (0)
	Missing	210 (23)
FEV1 % predicted	Mean (SD)	74.67 (+/-32.33)
DLCO % predicted	Mean (SD)	62.32 (+/-25.78)
Pathological diagnosis of NSCLC n (%)	Yes	687 (76)
	No	211 (24)
Pre-treatment lymphocyte count	Mean (SD)	1.83 (1.09)
Pre-treatment lymphocyte:neutrophil	Mean (SD)	3.9 (4.0)
Post-treatment lymphocyte count	Mean (SD)	0.92 (0.63)
Post-treatment lymphocyte:neutrophil	Mean (SD)	8.39 (9.29)
8 th Edition TNM staging n (%)	Stage I	388 (43)
	Stage II	134 (15)
	Stage III	376 (42)
Primary tumour size (mm)	Mean (SD)	34.44 (+/-20.05)
Primary Tumour SUV	Mean (SD)	11.24 (+/-7.07)
Maximum lymph node SUV	Mean (SD)	2.49 (+/-1.98)
Staging EBUS n (%)	Yes	201 (22)
	No	696 (78)
	Missing	1 (0)
Ipsilateral pleural effusion n (%)	Yes	58 (6)
	No	840 (94)

Table 2: Outcomes stratified according to overall TNM stage

		Stage I	Stage II	Stage III
Radiotherapy Regime n (%)	CHART	12 (3)	6 (4)	14 (4)
	Conventional XRT	145 (37)	96 (72)	139 (37)
	SABR	228 (59)	13 (10)	1 (<1)
	Sequential CRT	1 (<1)	14 (10)	165 (44)
	Concurrent CRT	2 (<1)	5 (4)	57 (15)
Recurrence rate within 2 years, n (%)		85 (22)	48 (36)	189 (50)
Overall recurrence rate, n (%)		111 (29)	56 (42)	228 (61)
Pattern of recurrence n (%)	Local	44 (40)	13 (23)	63 (28)
	Nodal	11 (10)	4 (7)	16 (7)
	Distant	56 (51)	39 (67)	149 (65)
Recurrence treatment type n (%)	Resection	3 (3)	1 (2)	2 (<1)
	Other local curative	4 (4)	0 (0)	1 (<1)
	Radical XRT (nodes)	3 (3)	1 (2)	1 (<1)
	Oligometastatic Rx	2 (2)	0 (0)	8 (4)
	Palliative SACT	28 (25)	15 (26)	98 (43)
	Best supportive care	73 (65)	38 (66)	117 (52)
Deaths within 2 years, n (%)		112 (29)	59 (44)	198 (53)
Overall death rate, n (%)		182 (47)	89 (66)	262 (70)

Table 3: Multivariate analysis & scoring system for the risk of recurrence within 2 years of radiotherapy

Variable		OR (95% CI)	p-value
Age	<75yrs	1	0.005
	≥75yrs	0.58 (0.4-0.84)	
Performance Status	0	1	0.17 0.47 0.02
	1	0.68 (0.4-1.18)	
	2	0.81 (0.45-1.46)	
	3	0.27 (0.09-0.83)	
T-stage (clinical staging)	T1a	1	0.09 0.005 0.007 0.12 0.03 0.007
	T1b	2.46 (0.84-7.17)	
	T1c	4.74 (1.58-14.24)	
	T2a	4.33 (1.49-12.58)	
	T2b	2.79 (0.76-10.33)	
	T3	3.5 (1.14-10.74)	
	T4	4.89 (1.54-15.48)	
Primary tumour size (mm)	<35mm	1	0.02
	≥35mm	1.95 (1.23-3.38)	
N-stage (clinical staging)	N0	1	0.02 0.05 0.81
	N1	1.99 (1.13-3.48)	
	N2	1.63 (1.0-2.65)	
	N3	0.89 (0.35-2.31)	
Staging EBUS performed	No	1	0.005
	Yes	1.89 (1.21-2.88)	

Table 4: ASSENT score to predict the risk of disease recurrence in the first two years of radiotherapy

Variable		Score
Age	<75	0.5
	≥75	0
Performance Status	0	1
	1	0.5
	2	0.5
	3	0
Size of Primary Tumour	<35mm	0
	≥35mm	0.5
Staging EBUS	No	0
	Yes	0.5
N-stage	N0	0
	N1	1
	N2	1
	N3	1
T-stage	T1a	0
	T1b	1
	T1c	2
	T2a	2
	T2b	2
	T3	2
	T4	3
Overall score	Low risk	≤2.5
	Moderate risk	3-3.5
	High risk	≥4

Table 5: Multivariate analysis & scoring system for the risk of death within 2 years of radiotherapy

Variable		OR (95% CI)	p-value
Gender	Female	1	<0.001
	Male	2.19 (1.54-3.11)	
Performance Status	0	1	0.13 0.002 0.04
	1	1.54 (0.88-2.71)	
	2	2.63 (1.43-4.83)	
	3	2.63 (1.05-6.56)	
T-stage (clinical staging)	T1a	1	0.19 0.2 0.05 0.19 0.05 0.002
	T1b	1.87 (0.73-4.8)	
	T1c	1.88 (0.71-4.97)	
	T2a	2.48 (0.99-6.25)	
	T2b	2.12 (0.69-6.57)	
	T3	2.76 (1.01-7.53)	
	T4	5.22 (1.84-14.83)	
Staging EBUS performed	No	1	0.03
	Yes	1.60 (1.05-2.46)	
Overall stage (clinical staging)	I	1	0.04 0.003
	II	1.92 (1.04-3.53)	
	III	2.32 (1.32-4.07)	

Table 5: POETS score to predict the risk of death in the first two years of radiotherapy

Variable		Score
Performance status	0	0
	1	0.5
	2	1.5
	3	1.5
Overall Stage	Stage I	0
	Stage II	1
	Stage III	1.5
Staging EBUS	No	0
	Yes	0.5
T-stage	T1a	0
	T1b	0.5
	T1c	0.5
	T2a	1
	T2b	1
	T3	1.5
	T4	4
Sex	Female	0
	Male	1
Overall score	Low risk	≤2.5
	Moderate risk	3-4.5
	High risk	≥5