

Online Supplementary Table A: Factors associated with death within 30 days of surgery

		Overall N=10,991				Died within 30 days of surgery (n= 334)			
		n	%	n	%	OR	95% CI	Adjusted OR	95% CI
Sex	Female	4,824	43.9	107	2.2	1.00		1.00	
	Male	6,167	56.1	227	3.7	1.62	1.33-2.13 <i>p<0.0001</i>	1.30	1.02-1.66 <i>p=0.0320</i>
Age group	<55	1,008	9.2	12	1.2	0.31	0.17-0.57	0.29	0.16-0.54
	55-59	1,090	9.9	21	1.9	0.50	0.31-0.81	0.46	0.28-0.76
	60-64	1,847	16.8	31	1.7	0.44	0.29-0.66	0.41	0.27-0.63
	65-69	2,128	19.4	56	2.6	0.64	0.45-0.91	0.61	0.42-0.87
	70-74	2,226	20.3	84	3.8	1.00		1.00	
	75-79	1,828	16.6	88	4.8	1.29	0.95-1.75	1.38	1.01-1.88
	80-84	730	6.6	34	4.7	1.25	0.83-1.87	1.43	0.94-2.17
	85+	134	1.2	12	9.0	2.51	1.33-4.72 <i>p<0.0001**</i>	2.84	1.47-5.48 <i>p<0.0001**</i>
Ethnicity	White	8,983	81.7	254	2.8	1.00		1.00	
	Black	82	0.7	1	1.2	0.42	0.06-3.06	0.44	0.06-3.22
	Asian	112	1.0	2	1.8	0.62	0.15-2.54	0.66	0.16-2.73
	Other	77	0.7	1	1.3	0.45	0.06-3.26	0.45	0.06-3.32
	Missing	1,737	15.8	76	4.4	1.57	1.21-2.04 <i>p=0.0088</i>	1.73	1.32-2.26 <i>p=0.0017</i>
Townsend quintile	1	1,343	12.2	36	2.7	1.10		1.00	
	2	1,602	14.6	45	2.8	1.05	0.67-1.64	1.07	0.68-1.68
	3	1,609	14.6	52	3.2	1.21	0.79-1.87	1.33	0.85-2.06
	4	1,723	14.6	64	4.0	1.40	0.93-2.12	1.59	1.04-2.43
	(most deprived) 5	2,074	15.7	74	4.3	1.34	0.90-2.01	1.52	1.00-2.31
	Missing	2,640	18.9	63	3.0	0.89	0.59-1.34 <i>p=0.0558**</i>	0.84	0.54-1.29 <i>p=0.0098**</i>
PS	0	3,422	31.1	72	2.1	1.00		1.00	
	1	2,815	25.6	84	3.0	1.43	1.04-1.97	1.16	0.84-1.61
	2	465	4.2	23	4.9	2.42	1.50-3.91	1.84	1.12-3.03
	3-4	108	1.0	11	10.2	5.28	2.71-10.27	3.77	1.87-7.58
	Missing	4,181	38.0	144	3.4	1.66	1.25-2.21 <i>p<0.0001**</i>	1.33	0.96-1.85 <i>p=0.0001**</i>
Per cent predicted FEV1	>80%	1,891	17.2	34	1.8	1.00		1.00	
	60-79%	1,499	13.6	42	2.8	1.57	1.00-2.49	1.41	0.88-2.25
	40-59%	726	6.6	23	3.2	1.79	1.05-3.05	1.63	0.94-2.84
	<40%	141	1.3	5	3.5	2.01	0.77-5.22	1.96	0.73-5.28
	Missing	6,734	61.3	230	3.4	1.93	1.34-2.78 <i>p=0.0176**</i>	1.72	1.17-2.53 <i>p=0.0895**</i>
Charlson index	0	5,456	49.6	128	2.3	1.00		1.00	
	1	2,791	25.4	87	3.1	1.34	1.02-1.77	1.23	0.93-1.63
	2-3	2,233	20.3	95	4.3	1.85	1.41-2.42	1.66	1.25-2.19
	≥4	511	4.6	24	4.7	2.05	1.31-3.20 <i>p<0.0001**</i>	1.77	1.11-2.81 <i>p=0.0002**</i>
Stage	IA	2,249	20.5	37	1.6	1.00		1.00	
	IB	3,064	27.9	87	2.8	1.75	1.18-2.58	1.42	0.96-2.12
	IIA	334	3.0	6	1.8	1.09	0.46-2.61	0.90	0.37-2.19
	IIB	1,494	13.6	55	3.7	2.28	1.50-3.48	1.66	1.06-2.59
	IIIA	933	8.5	41	4.4	2.57	1.64-4.04	1.85	1.15-2.98
	missing	2,857	26.0	108	3.8	2.35	1.61-3.43 <i>p<0.0001**</i>	1.71	1.12-2.60 <i>p=0.0143**</i>
Side	Right	5,067	46.1	157	3.1	1.00			
	Left	3,930	35.8	105	2.7	0.86	0.67-1.10		
	Other	85	0.8	5	5.9	1.95	0.78-4.89		
	Missing	1,909	17.4	67	3.5	1.14	0.85-1.52 <i>p=0.1615</i>		
Histology	Adenocarcinoma	3,406	31.0	60	1.8	1.00		1.00	
	Squamous cell	3,106	28.3	125	4.0	2.34	1.71-3.19	1.57	1.14-2.18
	NSCLC NOS	1,833	16.7	62	3.4	1.95	1.36-2.80	1.67	1.01-2.12
	Other	368	3.3	10	2.7	1.56	0.79-3.07	1.12	0.56-2.25
	Missing	2,278	20.7	77	3.4	1.95	1.39-2.75 <i>p<0.0001</i>	1.46	1.00-2.13 <i>p=0.0643</i>
Procedure	Segmentectomy/wedge	1,671	15.2	35	2.1	0.92	0.64-1.33	0.82	0.56-1.19
	Lobectomy	7,051	64.2	160	2.3	1.00		1.00	
	Bi-lobectomy	431	3.9	25	5.8	2.65	1.72-4.09	2.61	1.67-4.07
	Pneumonectomy	1,121	10.2	78	7.0	3.22	2.44-4.25	3.54	2.60-4.81
	Other	717	6.5	36	5.0	2.28	1.57-3.30 <i>p<0.0001</i>	1.69	1.14-2.50 <i>p<0.0001</i>

OR odds ratio; CI confidence interval; PS performance status; FEV₁ forced expiratory volume in 1 second. *ORs are adjusted for all other factors for which adjusted ORs are given. All p values calculated using likelihood ratio test; ** LRT p for trend.

Online Supplementary Table B: Factors associated with death within 30 days of surgery for patients with records of performance status, stage, and lung function.

		Overall N=3,319				Died within 30 days of surgery (n=82)			
		n	%	n	%	OR	95% CI	Adjusted OR*	95% CI
Sex	Female	1,482	44.7	24	1.6	1.00		1.00	
	Male	1,837	55.3	58	3.2	1.98	1.22-3.20	1.47	0.89-2.44
							p=0.0038		p=0.1244
Age group	<55	268	8.1	2	0.7	0.25	0.06-1.09	0.32	0.07-1.38
	55-59	272	8.2	3	1.1	0.38	0.11-1.28	0.36	0.10-1.27
	60-64	583	17.6	9	1.5	0.53	0.24-1.17	0.54	0.24-1.22
	65-69	665	20.0	20	3.0	1.04	0.56-1.96	1.00	0.52-1.91
	70-74	694	20.9	20	2.9	1.00		1.00	
	75-79	566	17.1	19	3.4	1.17	0.62-2.22	1.26	0.66-2.43
	80-84	236	7.1	6	2.5	0.88	0.35-2.22	1.11	0.43-2.86
	85+	35	1.1	3	8.6	3.16	0.89-11.19	4.00	1.04-15.38
							p=0.0015**		
Ethnicity	White	2,769	83.4	69	2.5	1.00			
	Black	21	0.6	-	-				
	Asian	28	0.8	-	-				
	Other	24	0.7	-	-				
	Missing	477	14.4	13	2.7	1.10	0.60-2.00		
Townsend quintile	1	448	13.5	7	1.6	1.00			
	2	512	15.4	12	2.3	1.51	0.59-3.87		
	3	531	16.0	20	3.8	2.47	1.03-5.89		
	4	615	18.5	13	2.1	1.36	0.54-3.44		
	(most deprived) 5	772	23.3	20	2.6	1.68	0.70-3.99		
	Missing	441	13.3	10	2.3	1.46	0.55-3.88		
							p=0.4889**		
PS	0	1,674	50.4	22	1.3	1.00		1.00	
	1	1,390	41.9	47	3.4	2.63	1.58-4.38	2.26	1.33-3.85
	2	215	6.5	12	5.6	4.44	2.16-9.10	3.74	1.74-8.06
	3-4	40	1.2	1	2.5	1.93	0.25-14.65	1.93	0.19-11.39
							p=0.0002**		p=0.0046**
Per cent predicted FEV1	>80%	1,508	45.4	28	1.9	1.00		1.00	
	60-79%	1,145	34.5	29	2.5	1.37	0.81-2.32	1.26	0.73-2.17
	40-59%	557	16.8	20	3.6	1.97	1.10-3.52	1.76	0.95-3.26
	<40%	109	3.3	5	4.6	2.54	0.96-6.72	2.25	0.79-6.39
							p=0.0094**		p=0.0408**
Charlson index	0-1	2,508	75.6	56	2.2	1.00			
	≥2	811	24.4	26	3.2	1.20	0.95-1.52		
							p=0.1316**		
Stage	IA	949	28.6	14	1.5	1.00		1.00	
	IB	1,237	37.3	29	2.3	1.60	0.84-3.05	1.32	0.68-2.56
	IIA	131	3.9	2	1.5	1.04	0.23-4.61	0.72	0.16-3.32
	IIB	614	18.5	21	3.4	2.37	1.19-4.69	1.53	0.73-3.21
	IIIA	388	11.7	16	4.1	2.87	1.39-5.94	1.93	0.89-4.23
							p=0.0020**		p=0.1093**
Side	Right	1,841	55.5	43	2.3	1.00			
	Left	1,365	41.1	32	2.3	1.00	0.63-1.59		
	Other	18	0.5	1	5.6	2.46	0.32-18.90		
	Missing	95	2.9	6	6.3	2.82	1.17-6.80		
							p=0.1820		
Histology (Pre-op)	Adenocarcinoma	1,155	34.8	16	1.4	1.00		1.00	
	Squamous cell	1,151	34.7	43	3.7	2.76	1.55-4.93	1.54	0.84-2.84
	NSCLC NOS	662	19.9	13	2.0	1.43	0.68-2.98	0.95	0.45-2.04
	Other	82	2.5	2	2.4	1.78	0.40-7.88	1.61	0.35-7.30
	Missing	269	8.1	8	3.0	2.18	0.92-4.15	1.93	0.80-4.66
							p=0.0063		p=0.3348
Procedure	Segmentectomy/wedge	441	13.3	7	1.6	0.88	0.39-1.97	0.76	0.33-1.74
	Lobectomy	2,275	68.5	41	1.8	1.00		1.00	
	Bi-lobectomy	131	3.9	6	4.6	2.62	1.09-6.28	2.33	0.93-5.81
	Pneumonectomy	335	10.1	25	7.5	4.39	2.64-7.33	4.07	2.28-7.24
	Other	137	4.1	3	2.2	1.22	0.37-3.99	0.92	0.28-3.07
							p<0.0001		p=0.0001

OR odds ratio; CI confidence interval; PS performance status; FEV₁ forced expiratory volume in 1 second. *ORs are adjusted for all other factors for which adjusted ORs are given. All p values calculated using likelihood ratio test; ** LRT p for trend.

ONLINE APPENDIX A: SURGICAL PROCEDURE CODES

HES procedure codes

Categories in order of priority (most complicated first): Pneumonectomy (P), bi-lobectomy (B), lobectomy (L), segmentectomy / wedge resection (S), Other (O).

E391 Open excision of lesion of trachea (O)
E398 Other specified partial excision of trachea (O)
E399 Unspecified partial excision of trachea (O)
E438 Other specified other open operations on trachea (O)
E439 Unspecified other open operations on trachea (O)
E461 Sleeve resection of bronchus and anastomosis HFQ (L)
E463 Excision of lesion of bronchus NEC (O)
E468 Other specified partial extirpation of bronchus (O)
E478 Other specified other open operations on bronchus (O)
E528 Other specified other operations on bronchus (O)
E529 Unspecified other operations on bronchus (O)
E541 Total pneumonectomy (P)
E542 Bi-lobectomy of lung (B)
E543 Lobectomy of lung (L)
E544 Excision of segment of lung (S)
E545 Partial lobectomy of lung NEC (S)
E548 Other specified excision of lung (O)
E549 Unspecified excision of lung (O)
E552 Open excision of lesion of lung (O)
E558 Other specified open extirpation of lesion of lung (O)
E559 Unspecified open extirpation of lesion of lung (O)
E578 Other specified other open operations on lung (O)
E598 Other specified other operations on lung (O)
E599 Unspecified other operations on lung (O)
T013 Excision of lesion of chest wall (O)
T038 Other specified opening of chest (O)
T039 Unspecified opening of chest (O)
T058 Other specified other operations on chest wall (O)
T059 Unspecified other operations on chest wall (O)