Supplementary Online Content

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This supplementary material has been provided by the authors to give readers additional information about their work.

eAppendix. List of Contributing Centers (10 America, 23 Europe, 5 Asia, 1 Australia)

Countries: 20	**Institutions: 39**
Australia	Princess Alexandra Hospital, University of Queensland, Brisbane
Belgium	Katholieke Universiteit Leuven, Leuven
Brazil	University of Sao Paulo School of Medicine, Sao Paulo
Canada	Toronto General Hospital, Toronto
China	Sichuan Cancer Hospital & Institute, Chengdu Queen Mary Hospital, The University of Hong Kong, Hong Kong SAR
Denmark	Odense University Hospital, Odense
France	Claude Huriez University Hospital, Lille Aix-Marseille University, North Hospital, Marseille
Germany	Center for Esophageal Diseases, Elisabeth Hospital Essen, University Medicine Essen, Essen University Hospital of Cologne, Cologne
India	Tata Memorial Centre, Mumbai
Ireland	St. James's Hospital Trinity College, Dublin
Italy	University of Verona, Verona Vita-Salute San Raffaele University, Milan
Japan	Keio University, Tokyo
Netherlands	Amsterdam UMC, University of Amsterdam, Amsterdam Erasmus Medical Center, Rotterdam University Medical Center, Utrecht
Northern Ireland	Royal Victoria Hospital, Belfast
Singapore	National University Hospital, Singapore
Spain	Hospital Universitario del Mar, Barcelona
Sweden	Karolinska Institutet and Karolinska University Hospital, Stockholm
Switzerland	Hirslanden Medical Center, Zurich
UK	Queen Elizabeth Hospital Birmingham, UHB Foundation Trust, Birmingham Cambridge Oesophago-Gastric Centre, Addenbrookes Hospital, Cambridge Guy's & St Thomas' NHS Foundation Trust, London Northern Oesophagogastric Cancer Unit, Royal Victoria Infirmary, Newcastle upon Tyne Nottingham University Hospitals NHS Trust, Nottingham Oxford University Hospitals NHS Foundation Trust, Oxford University Hospital Southampton NHS Foundation Trust, Southampton
USA	University of Michigan Health System, Ann Arbor, MI Massachusetts General Hospital, Boston, MA The University of Chicago Medicine, Chicago, IL MD Anderson Cancer Center, Houston, TX Memorial Sloan Kettering Cancer Center, New York City, NY Esophageal and Lung Institute, Allegheny Health Network, Pittsburgh, PA Oregon Health and Science University, Portland, OR Virginia Mason Medical Center, Seattle, WA

eTable 1. Additional demographic and clinical comparison between developmental and validation cohort

N (%)	Total N=8403	Development cohort (N=4172)	Validation cohort (N=4231)	P-value
Gender				.622
Female	1762 (21%)	884 (21.2)	878 (20.8%)	
Male	6641 (79%)	3288 (78.8%)	3353 (79.2%)	
ASA status score				.457
1	1042 (12.4%)	540 (12.9%)	502 (11.9%)	
2	3955 (47.1%)	1941 (46.5%)	2014 (47.6%)	
3	3255 (38.7%)	1614 (38.7%)	1641 (38.8%)	
4	151 (1.8%)	77 (1.8%)	74 (1.7%)	
Age-related Charlson comorbidity index (ACCI)				.634
0-3	2970 (35.3%)	1471 (35.2%)	1499 (35.4%)	
4-7	5385 (64%)	2678 (64%)	2707 (63.9%)	
≥8	48 (0.1%)	23 (0.1%)	25 (0.1%)	
Charlson comorbidities				
Myocardial infarction (%)	442 (5.3)	215 (5.2)	227 (5.4)	.664
Congestive heart failure (%)	240 (2.9)	100 (2.4)	140 (3.3)	.012
Chronic pulmonary disease (%)	845 (10.1)	417 (10)	428 (10.1)	.854
Connective tissue disease (%)	71 (0.8)	36 (0.9)	35 (0.8)	.858
Peripheral vascular disease (%)	433 (5.2)	220 (5.3)	213 (5)	.62
Cerebrovascular disease (%)	262 (3.1)	120 (2.9)	142 (3.4)	.206
Dementia (%)	15 (0.2)	6 (0.1)	9 (0.2)	.607
Peptic ulcer disease (%)	84 (1)	46 (1.1)	38 (0.9)	.346
Diabetes mellitus (uncomplicated) (%)	1058 (12.6)	550 (13.2)	508 (12)	.104
Diabetes mellitus (end-organ damage) (%)	62 (0.7)	33 (0.8)	29 (0.7)	.572
Leukemia (%)	23 (0.3)	16 (0.4)	7 (0.2)	.062
Malignant lymphoma (%)	61 (0.7)	31 (0.7)	30 (0.7)	.85
Liver disease (mild) (%)	167 (2)	84 (2)	83 (2)	.865
Liver disease (moderate to severe) (%)	35 (0.4)	20 (0.5)	15 (0.4)	.374
Hemiplegia (%)	9 (0.1)	5 (0.1)	4 (0.1)	.491
Solid tumor present (%)	8228 (97.9)	4086 (97.9)	4142 (97.9)	.892
Metastatic tumor present (%)	73 (0.9)	33 (0.8)	40 (0.9)	.446
Moderate to severe renal disease (%)	136 (1.6)	66 (1.6)	70 (1.7)	.792
AIDS (%)	7 (0.1)	2 (0.1)	5 (0.1)	.232
Tumor histology (%)				.671
Adenocarcinoma	3923 (46.7)	1951 (46.8)	1972 (46.6)	
Squamous cell carcinoma	1752 (31.2%)	888 (21.3)	864 (20.4)	
Other malignancy	107 (1.3)	54 (1.3)	53 (1.3)	
Unknown	2621 (31.2)	1279 (30.7)	1342 (31.7)	
Tumor cT stage (%)				.497
T0	24 (0.3)	14 (0.3)	10 (0.2)	
T1	735 (8.7)	369 (8.8)	366 (8.7)	
T2	1372 (16.3)	654 (15.7)	718 (17)	
T3	5610 (66.8)	2803 (67.2)	2807 (66.3)	
T4	395 (4.7)	205 (4.9)	190 (4.5)	
Tis	55 (0.7)	23 (0.6)	32 (0.8)	
Tx	212 (2.5)	104 (2.5)	108 (2.6)	
Tumor cN stage (%)				.863
N0	2988 (35.6)	1469 (35.2)	1519 (35.9)	
N1	3173 (37.8)	1577 (37.8)	1596 (37.7)	
N2	1061 (12.6)	536 (12.8)	525 (12.4)	
N3	225 (2.7)	107 (2.6)	118 (2.8)	
Nx	956 (11.4)	483 (11.6)	473 (11.2)	
Tumor location (%)				.631

Proximal ½ of esophagus	1050 (12.5)	529 (12.7)	521 (12.3)	
Distal ½ of esophagus	4495 (53.5)	2210 (53)	2285 (54)	
At the GE junction	2858 (34)	1433 (34.3)	1425 (33.7)	
Surgical approach				.70
Minimally invasive	4930 (58.7%)	2439 (58.5%)	2491 (58.9%)	
Open	3473 (41.3%)	1733 (41.5%)	1740 (41.1%)	
Transhiatal	695 (8.3%)	354 (8.5%)	341 (8.1%)	.768
Transthoracic	7708 (91.7%)	3818 (91.5%)	3890 (91.9%)	

Footnote: Footnote table 1: Fisher's exact test and chi-square test were used as appropriate.

eTable 2. Association between risk factors with 90-day mortality in the development cohort

(%)	Alive after 90 days N= 3988	Deceased within 90 days N= 184	P-value
Gender (%)			
Female	858 (21.5%)	26 (14.1%)	.017
Male	3130 (78.5%)	158 (85.9%)	
Age group, yrs			
40 or less	72 (1.8%)	3 (1.6%)	.002
41–50	311 (7.8%)	10 (5.4%)	
51–60	1003 (25.2%)	35 (19%)	
61–70	1567 (39.3%)	74 (40.2%)	
71–80	927 (23.2%)	48 (26.1%)	
More than 80	108 (2.7%)	14 (7.6%)	
BMI group (%)			.003
<18.5	208 (5.2%)	19 (10.3%)	
18.5–24.9	1584 (39.7%)	84 (45.7%)	
25–29.9	1425 (35.7%)	53 (28.8%)	
≥30	771 (19.3%)	28 (15.2%)	
WHO/ECOG performance			.008
0	1997 (50.1%)	76 (41.3%)	
1	1788 (44.8%)	90 (48.9%)	
2	172 (4.3%)	14 (7.6%)	
3	31 (0.8%)	4 (2.2%)	
Myocardial infarction (%)	194 (4.9%)	21 (11.4%)	<0.01
Congestive heart failure (%)	96 (2.4%)	4 (2.2%)	.84
Chronic pulmonary disease (%)	393 (9.9%)	24 (13%)	.159
Connective tissue disease (%)	32 (0.8%)	4 (2.2%)	.049
Peripheral vascular disease (%)	200 (5%)	20 (10.9%)	.001
Cerebrovascular disease (%)	112 (2.8%)	8 (4.3%)	.222
Dementia (%)	6 (0.2%)	0	.763
Peptic ulcer disease (%)	44 (1.1%)	2 (1.1%)	.923
Diabetes mellitus (uncomplicated) (%)	519 (13%)	31 (16.8%)	.133
Diabetes mellitus (end-organ damage) (%)	33 (0.8%)	0	.215
Leukemia (%)	16 (0.4%)	0	.389
Malignant lymphoma (%)	28 (0.7%)	3 (1.6%)	.152
Liver disease (mild) (%)	79 (2%)	5 (2.7%)	.487
Liver disease (moderate to severe) (%)	16 (0.4%)	4 (2.2%)	.01
Hemiplegia (%)	4 (0.1%)	1 (0.5%)	.202
Solid tumor present (%)	3906 (97.9%)	180(97.8%)	.912
Metastatic tumor present (%)	32 (0.8%)	1 (0.5%)	.698
Moderate to severe renal disease (%)	59 (1.5%)	7 (3.8%)	.013
AIDS (%)	2 (0.1%)	0	.914
Timing to surgery (%)			.303
Elective	3981 (99.8%)	183 (99.5%)	
Emergency	7 (0.2%)	1 (0.5%)	
Tumour location (%)			.133
Proximal ½ of esopaghus	497 (12.5%)	32 (17.4%)	
Distal ½ of esophagus	2122 (53.2%)	88 (47.8%)	
At the GE junction	1369 (34.3%)	64 (34.8%)	
Neoadjuvant therapy (%)			.072
Chemoradiotherapy	1865 (46.8%)	104 (56.5%)	
Chemotherapy	1158 (29%)	41 (22.3%)	
Definitive chemoradiotherapy	71 (1.8%)	5 (2.7%)	
None	888 (22.3%)	34 (18.5%)	
Radiotherapy	6 (0.2%)	0	

Tumor histology (%)			.751
Adenocarcinoma	1861 (46.7%)	90 (48.9%)	
Squamous cell carcinoma	847 (21.2%)	41 (22.3%)	
Other malignancy	51 (1.3%)	3 (1.6%)	
Unknown	1229 (30.8%)	50 (27.2%)	
Surgical approach (%)			.947
Minimally invasive	2331 (58.5%)	108 (58.7%)	
Open	1657 (41.5%)	76 (41.3%)	
Volume activity (mean/year/center) (%)			.095
0-45.9	1043 (26.2%)	59 (32.1%)	
46-71.6	934 (23.4%)	46 (25%)	
71.7-108.6	1089 (27.3%)	49 (26.6%)	
>108.6	922 (23.1%)	30 (16.3%)	

eTable 3. Repartition of patients according to the score and collapsing in homogeneous risk group:

- Very low risk (score ≥1): grey
- Low risk (score=0): green
- Medium risk (score <0 and ≥-2): yellow
- High-risk (score ≤-3 and >-5): orange
- Very high-risk patients (score ≤-5): red

Score	Development cohort				Validation cohort			
	Alive	Deceased	n	%	Alive	Deceased	n	%
-10	0	1	1	100	-	-	-	-
-9	2	0	2	0	1	0	1	0
-8	0	2	2	100	3	1	4	25
-7	7	4	11	36.4	8	2	10	20
-6	17	0	17	0	17	6	23	26.1
-5	50	10	60	16.7	50	4	54	7.4
-4	121	12	133	9	124	7	131	5.3
-3	223	22	245	9	215	24	239	10
-2	389	32	421	7.6	367	19	386	4.9
-1	843	44	887	5	814	46	860	5.3
0	1026	32	1058	3	1142	31	1173	2.6
1	807	19	826	2.3	794	16	810	2
2	342	5	347	1.4	376	7	383	1.8
3	131	1	132	0.8	128	4	132	3
4	26	0	26	0	21	2	23	8.7
5	4	0	4	0	2	0	2	0

eTable 4. Repartition of patients according to the final score and according to risk groups

dCRT: definitive chemoradiotherapy. BMI: body mass index.

Variables	Weighted points	Very high risk	High risk	Median risk	Low risk	Very low risk
		N=185	N=748	N=2554	N=2231	N=2685
Age (years) (%)						
40 or less (n=170)	**0**	1 (.5)	11 (1.5)	63 (2.5)	58 (2.6)	37 (1.4)
41 – 50 (n=658)	**1**	2 (1.1)	23 (3.1)	87 (3.4)	154 (6.9)	392 (14.6)
51 – 60 (n=2076)	**1**	13 (7)	95 (12.7)	305 (11.9)	528 (23.7)	1135 (42.3)
61 – 70 (n=3357)	**0**	80 (43.2)	302 (40.4)	1257 (49.2)	1002 (44.9)	716 (26.7)
71-80 (n=1920)	**0**	39 (21.1)	209 (27.9)	780 (30.5)	487 (21.8)	405 (15.1)
More than 80 (n=222)	**-3**	50 (27)	108 (14.4)	62 (2.4)	2 (.1)	0
BMI (%)						
<18.5 (n=445)	**-3**	57 (30.8)	209 (27.9)	161 (6.3)	18 (.8)	0
18.5–24.9 (n=3386)	**0**	71 (38.4)	283 (37.8)	1326 (51.9)	849 (38.1)	857 (31.9)
25–29.9 (n=2966)	**1**	40 (21.6)	170 (22.7)	693 (27.1)	891 (39.9)	1172 (43.6)
≥30 (n=1606)	**1**	17 (9.2)	86 (11.5)	374 (14.6)	473 (21.2)	656 (24.4)
Gender (%)						
Male (n=6641)	**0**	170 (91.9)	683 (91.3)	2288(89.6)	2038 (91.3)	1462 (54.5)
Female (n=1762)	**2**	15 (8)	65 (8.7)	266 (10.4)	193 (8.7)	1223 (45.5)
WHO/ECOG (%)						
0 (n=4205)	**0**	19 (10.3)	192 (25.7)	816 (31.9)	1300 (58.3)	1878 (69.9)
1 (n=3753)	**-1**	108 (58.4)	414 (55.3)	1563 (61.2)	888 (39.8)	780 (29.1)
2 (n=379)	**-2**	37 (20)	113 (15.1)	160 (6.3)	42 (1.9)	27 (1)
3 (n=66)	**-4**	21 (11.4)	29 (3.9)	15 (.6)	1 (0)	0
Myocardial Infarction (%) (n=442)	**-2**	58 (31.4)	181 (24.2)	176 (6.9)	22 (1)	5 (.2)
Connective tissue disease (%) (n=71)	**-3**	17 (9.2)	29 (3.2)	23 (.9)	2 (.1)	0
Peripheral vascular disease (%) (n=433)	**-2**	68 (36.8)	175 (23.4)	169 (6.6)	16 (.7)	5 (.2)
Liver disease moderate/severe (%) (n=35)	**-5**	23 (12.4)	10 (1.3)	2 (.1)	0	0

Neoadjuvant therapy (%)						
None (n=1927)	**0**	40 (21.6)	174 (23.3)	305 (11.9)	437 (19.6)	971 (36.2)
dCRT (n=154)	**-2**	17 (9.2)	33 (4.4)	64 (2.5)	26 (1.2)	14 (.5)
Chemotherapy only (n=2393)	**0**	37 (20)	182 (24.3)	715 (28)	666 (29.9)	793 (29.5)
Chemo-Radiotherapy (n=3916)	**-1**	91 (49.2)	357 (47.7)	1469 (57.5)	1099 (49.3)	900 (33.5)
Hospital volume (mean/year/center) (%)						
0-45.9 (n=2169)	**0**	78 (42.2)	233 (31.1)	769 (30.1)	536 (24)	553 (20.6)
46-71.6 (n=1975)	**0**	43 (23.2)	195 (26.1)	703 (27.5)	515 (23.1)	519 (19.3)
71.7-108.6 (n=2355)	**0**	41 (22.2)	171 (22.9)	741 (29)	677 (30.3)	725 (27)
>108.6 (n=1904)	**1**	23 (12.4)	149 (19.9)	341 (13.4)	503 (22.5)	888 (33.1)

eTable 5. Risk group with respective mortality and number of patients:

- Very low risk (score ≥1): grey
- Low risk (score=0): green
- Medium risk (score <0 and ≥-2): yellow
- High-risk (score ≤-3 and >-5): orange
- Very high-risk patients (score ≤-5): red

Score	Development cohort N=4172		Validation cohort N=4231	
	Deceased/total	Mortality %	Deceased/total	Mortality %
Very low risk (≥1)	25/1335	1.9	29/1350	2.1
Low risk (0)	32/1058	3	31/1173	2.6
Median risk (-1; -2)	76/1308	5.8	65/1246	5.2
High risk (<-3; -4)	34/378	8.9	31/370	8.3
Very High risk (≤5)	17/93	18.2	13/92	14.1

eTable 6. Predicted mortality in relation to the sum score

Predicted surgical 90-day mortality according to risk score in relation to the sum score obtained in table 2.

The predicted probability of surgical 90-day mortality (P (mortality), expressed in percentage (%), was calculated with the following formula:

$$p(mortality) = \left[\frac{e^{z}}{1+e^{z}}\right] * 100$$

$$p(mortality) = \left[\frac{1}{1+e^{-z}}\right] * 100 \quad \textit{with z = -3.382 – 0.311 * score}$$

$$p(mortality) = \left[\frac{1}{1+e^{(3.382+0.311*score)}}\right] * 100$$

IESG score	Estimated 90-day mortality (%)
-10	43.2
-9	35.8
-8	29
-7	23.1
-6	18
-5	13.9
-4	10.5
-3	8
-2	6
-1	4.4
0	3.3
1	2.4
2	1.8
3	1.3
4	1
5	0.7

eTable 7. Calculation of the score. (Excel file also available to calculate score)
To fit the excel calculation, the formula was:
$p(mortality) = [1/(1 + e\text{^}((3.382 + 0.311 * score)\ ))] * 100$. The result was expressed in %.

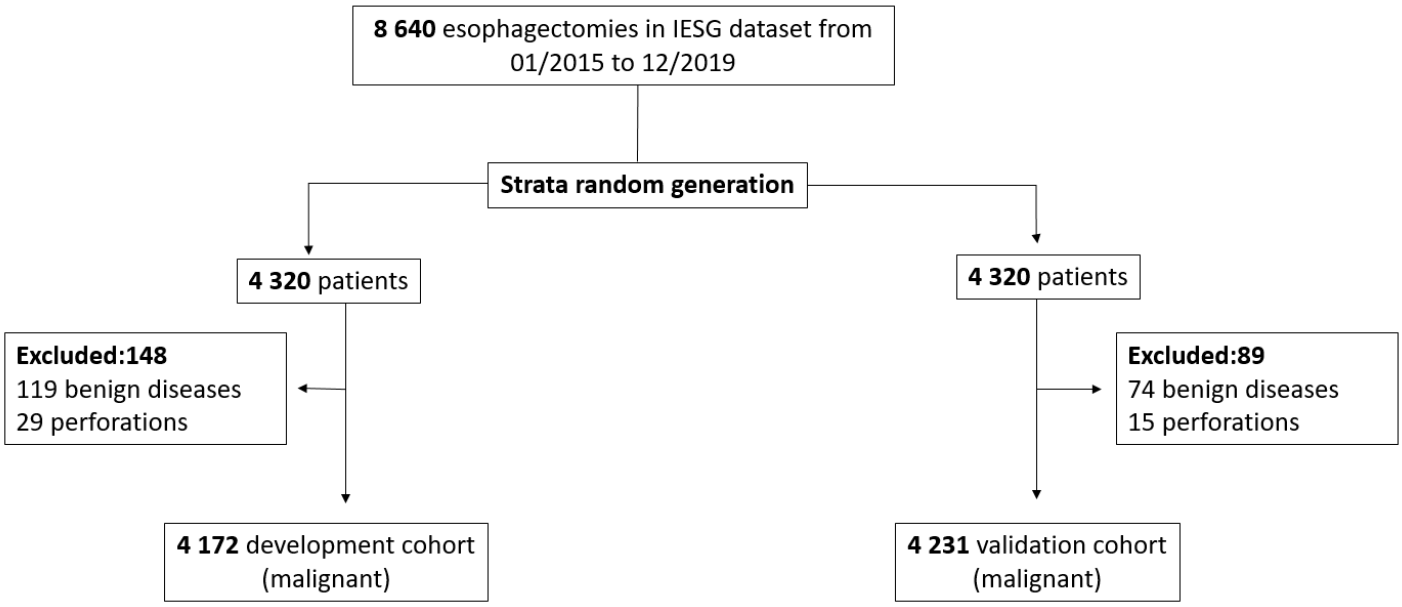
Variable	Weighted points	Enter score	Variable	Weighted points	Enter score		IESG score	0
Age (years)			**Myocardial Infarction**	**-2**	**0**		**Predicted mortality (%)**	**3.3**
40 or less	**0**		**Connective tissue disease**	**-3**	**0**			
41 – 50	**1**		**Peripheral vascular disease**	**-2**	**0**			
51 – 60	**1**	**0**	**Liver disease moderate to severe**	**-5**	**0**			
61 – 70	**0**		**Neoadjuvant therapy**					
71-80	**0**		None	**0**				
More than 80	**-3**		Definitive Chemo/Radiotherapy	**-2**	**0**			
BMI			Chemotherapy only	**0**				
<18.5	**-3**		Chemo-Radiotherapy	**-1**				
18.5–24,9	**0**	**0**	**Hospital volume (mean/year/center)**					
25–29,9	**1**		0-45	**0**				
≥30	**1**		46-71.6	**0**	**0**			
Gender			71.7-108.6	**0**				
Male	**0**	**0**	>108.6	**1**				
Female	**2**							
WHO/ECOG								
0	**0**							
1	**-1**	**0**						
2	**-2**							
3	**-4**							

eTable 8. Repartition of death and complications among the whole cohort and among each risk group

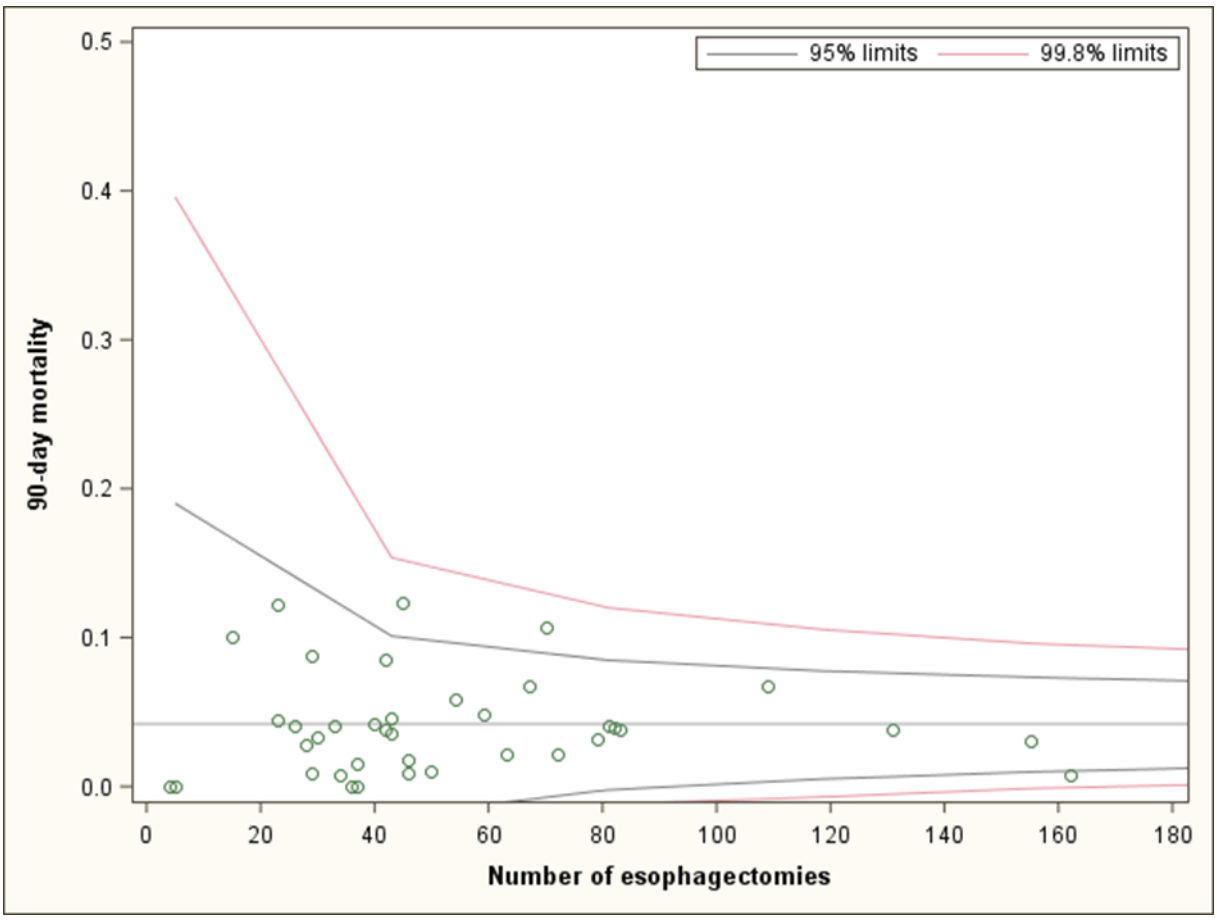
Variables	Total	Very high risk	High risk	Median risk	Low risk	Very low risk
	N=8403	N=185	N=748	N=2554	N=2231	N=2685
30-day death	164 (2)	17 (9.2)	32 (4.3)	63 (2.5)	26 (1.2)	26 (1)
90-day death	353 (4.2)	30 (16.2)	65 (8.7)	141 (5.5)	63 (2.8)	54 (2)
No complications	3091 (37)	49 (27)	201 (28)	902 (35.3)	906 (40.6)	1033 (38.5)
Complication Clavien/Dindo	5312 (63)	136 (73)	547 (72)	1652 (64.7)	1325 (59.4)	1652 (61.5)
Grade I	624 (7.4)	13 (7)	52 (7)	192 (7.5)	172 (7.7)	195 (7.3)
Grade II	1903 (22.3)	37 (20)	174 (23.3)	605 (23.7)	528 (23.7)	559(20.8)
Grade IIIa	1298 (15.4)	30 (16.2)	136 (18.2)	380 (14.9)	297 (13.3)	455 (16.9)
Grade IIIb	658 (7.8)	21 (11.4)	67 (9)	194 (7.6)	156 (7)	220 (8.2)
Grade IVa	535 (6.4)	9 (4.9)	69 (9.2)	174 (6.8)	118 (5.3)	165 (6.1)
Grade IVb	98 (1.2)	2 (1.1)	8 (1.1)	33 (1.3)	25 (1.1)	30 (1.1)
Grade V	196 (2.3)	24 (13)	41 (5.5)	74 (2.9)	29 (1.3)	28 (1)
Pulmonary complications	2356 (28)	64 (34.6)	267 (35.7)	747 (29.2)	582 (26.1)	696 (25.9)
Pneumonia	1231 (14.6)	39 (21.1)	138 (18.4)	407 (15.9)	318 (14.3)	329 (12.3)
Respiratory failure requiring reintubation	525 (6.2)	15 (8.1)	64 (8.6)	179 (7)	110 (4.9)	157 (5.8)
Acute respiratory distress syndrome	163 (1.9)	8 (4.3)	22 (2.9)	49 (1.9)	41 (1.8)	43 (1.6)
Acute aspiration	86 (1)	5 (2.7)	16 (2.1)	28 (1.1)	22 (1)	15 (0.6)
Chyle leak	409 (4.9)	8 (4.3)	35 (4.7)	131 (5.1)	113 (5.1)	122 (4.5)
Esophagoenteric leak*	1108 (13.2)	29 (15.7)	119 (15.9)	367 (14.4)	262 (11.7)	331 (12.3)
Type I	253 (3)	3 (1.6)	23 (3.1)	95 (3.7)	70 (3.1)	62 (2.3)
Type II	549 (6.5)	13 (7)	61 (8.2)	175 (6.9)	123 (5.5)	177 (6.6)
Type III	300 (3.6)	13 (7)	34 (4.5)	95 (3.7)	68 (3)	90 (3.4)
Conduit necrosis/failure	93 (1.1)	3 (1.6)	19 (2.5)	29 (1.1)	28 (1.3)	14 (.5)
Ileus**	101 (1.2)	4 (2.2)	13 (1.7)	28 (1.1)	28 (1.3)	28 (1)
Small bowel obstruction	34 (0.4)	2 (1.1)	2 (.3)	11 (.4)	9 (.4)	10 (.4)
Clostridium difficile infection	59 (.7)	4 (2.2)	6 (.8)	24 (.9)	12 (.5)	13 (.5)
GI bleeding requiring intervention or transfusion	50 (.6)	3 (1.6)	10 (1.3)	15 (.6)	6 (.3)	16 (.6)
Liver dysfunction	67 (.8)	3 (1.6)	3 (.4)	9 (.4)	17 (.8)	35 (1.3)
Myocardial infarction	35 (0.4)	6 (3.2)	7 (.9)	11 (.4)	5 (.2)	6 (.2)
Pulmonary embolism	116 (1.4)	2 (1.1)	12 (1.6)	39 (1.5)	29 (1.3)	34 (1.3)
Dysrhymtia atrial requiring intervention	1195 (14.2)	33 (17.8)	129 (17.2)	462 (18.1)	287 (12.9)	284 (10.6)
Acute renal insufficiency***	115 (1.4)	5 (2.7)	15 (2)	39 (1.5)	22 (1)	34 (1.3)
Acute renal failure requiring dialysis	44 (.5)	2 (1.1)	6 (.5)	13 (.5)	9 (.4)	14 (.5)
Neurological / psychiatric	700 (8.3)	18 (9.7)	95 (12.7)	213 (8.3)	165 (7.4)	209 (7.8)
Multiple organ dysfunction syndrome	51 (0.6)	7 (3.8)	12 (1.6)	12 (.5)	9 (.4)	11 (.4)

ECCG definitions of: *Esophagoenteric leak: Type I: Local defect requiring no change in therapy or treated medically or with dietary modification; Type II: Localized defect requiring interventional but not surgical therapy, (e.g. Interventional radiology drain, stent); Type III: Localized defect requiring surgical therapy: ** Ileus defined as small bowel dysfunction preventing or delaying enteral feeding. *** Acute renal insufficiency defined as: doubling of baseline creatinine.

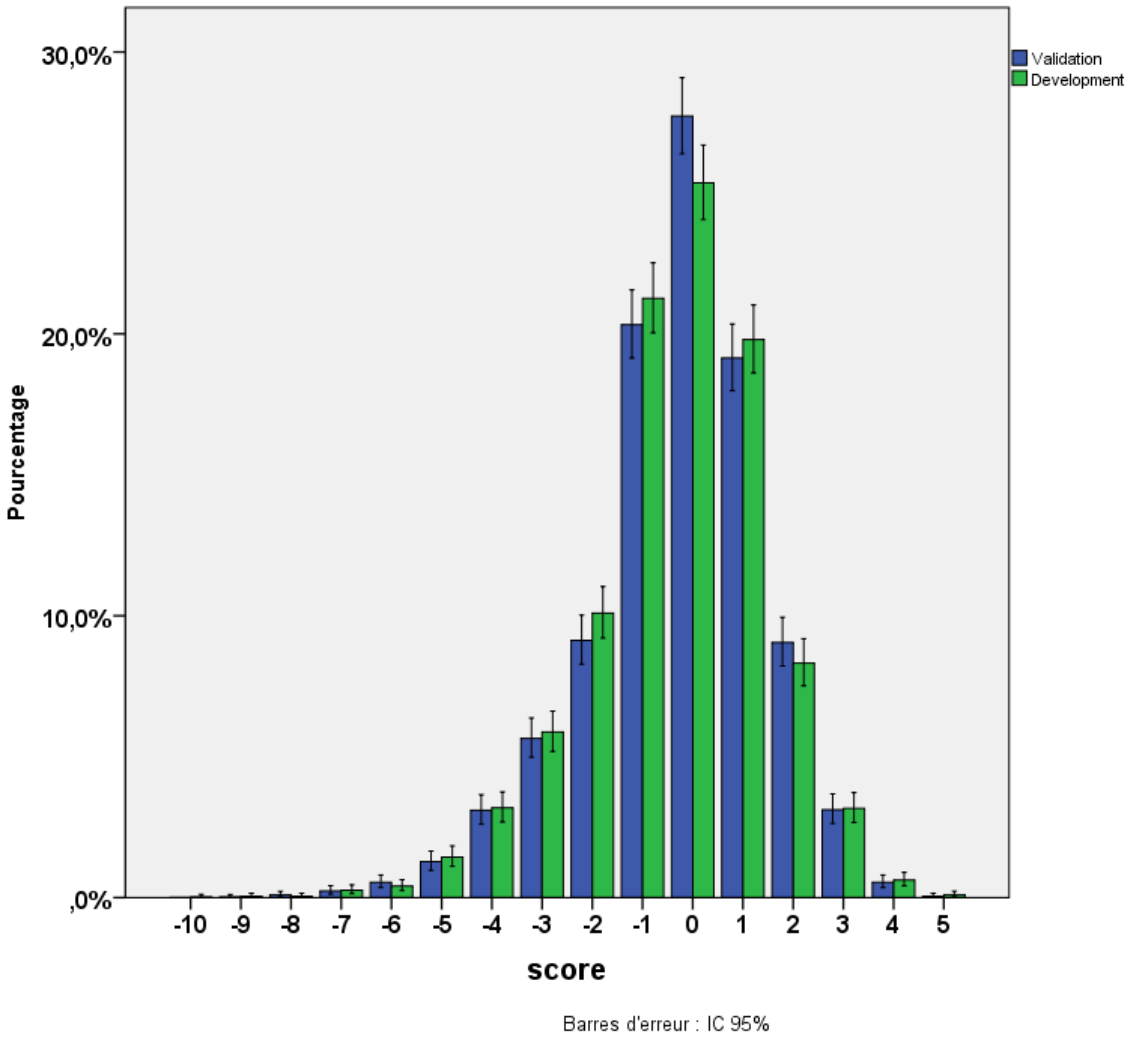
eFigure 1. Flowchart of the study



eFigure 2. Funnel plot showing the 90-day deaths according to the hospital volume represented by the mean number of procedures of esophagectomy/year/center

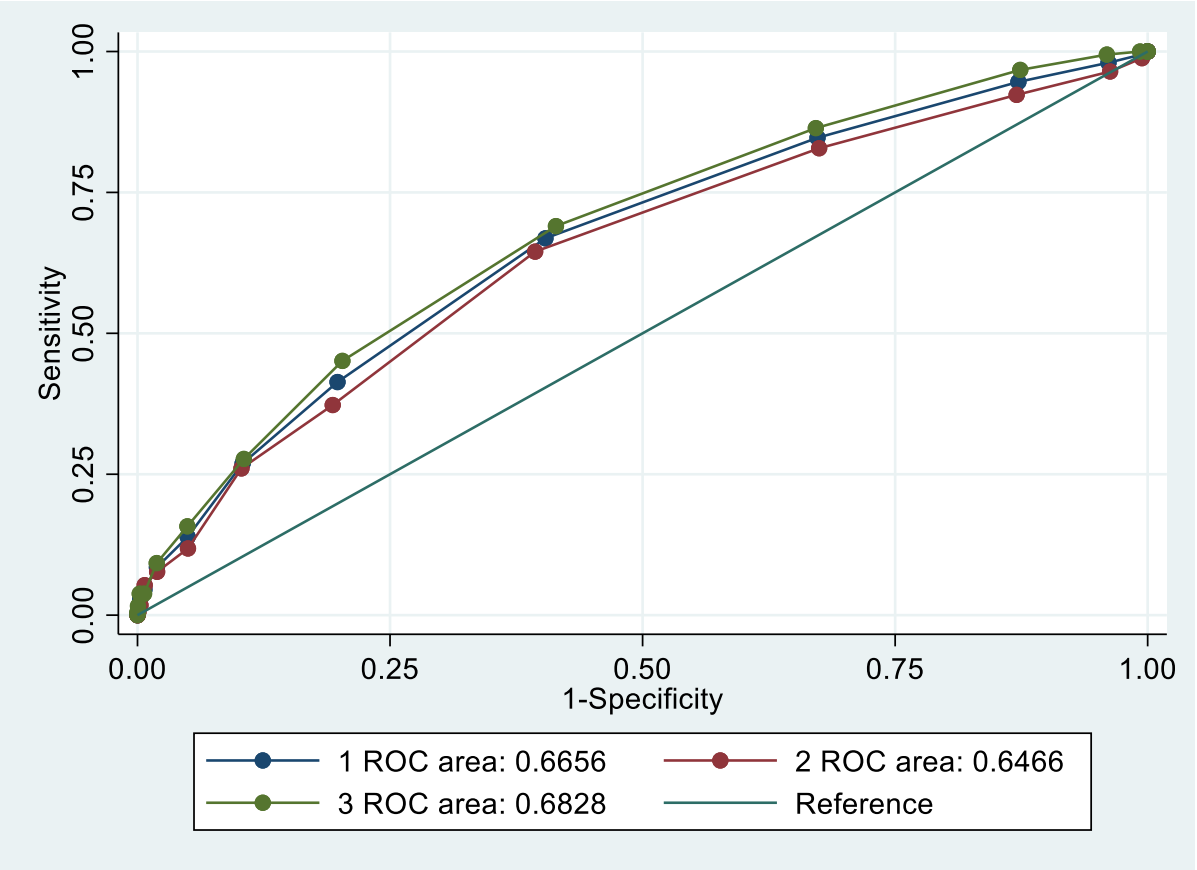


eFigure 3. Distribution of patients in the validation and in the development cohort according to final score



eFigure 4. ROC curve of prediction 90-day mortality in validation, in development cohort, and in total cohort of the final score.

In term of discrimination, the model had a moderate score in both development and validation cohort with an AUC of .68 (95 %CI .64-.72) versus .64 (95%CI .6-0.69).



Cohort	Obs	ROC Area	Std.err.	95% CI
Development (red)	4172	.683	.0197	.64-.72
Validation (green)	4231	.646	.0222	.60-.69
Total (blue)	8403	.665	.0148	.63-.69
Chi2: 1.49; df: 2; p=.474				

eFigure 5. Calibration of 90-day mortality after esophagectomy (n=8403)