THE LANCET
Public Health

Supplementary appendix

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

Supplementary Appendix

Supplementary Table 1: The distribution of cases and mortality between age and frailty.

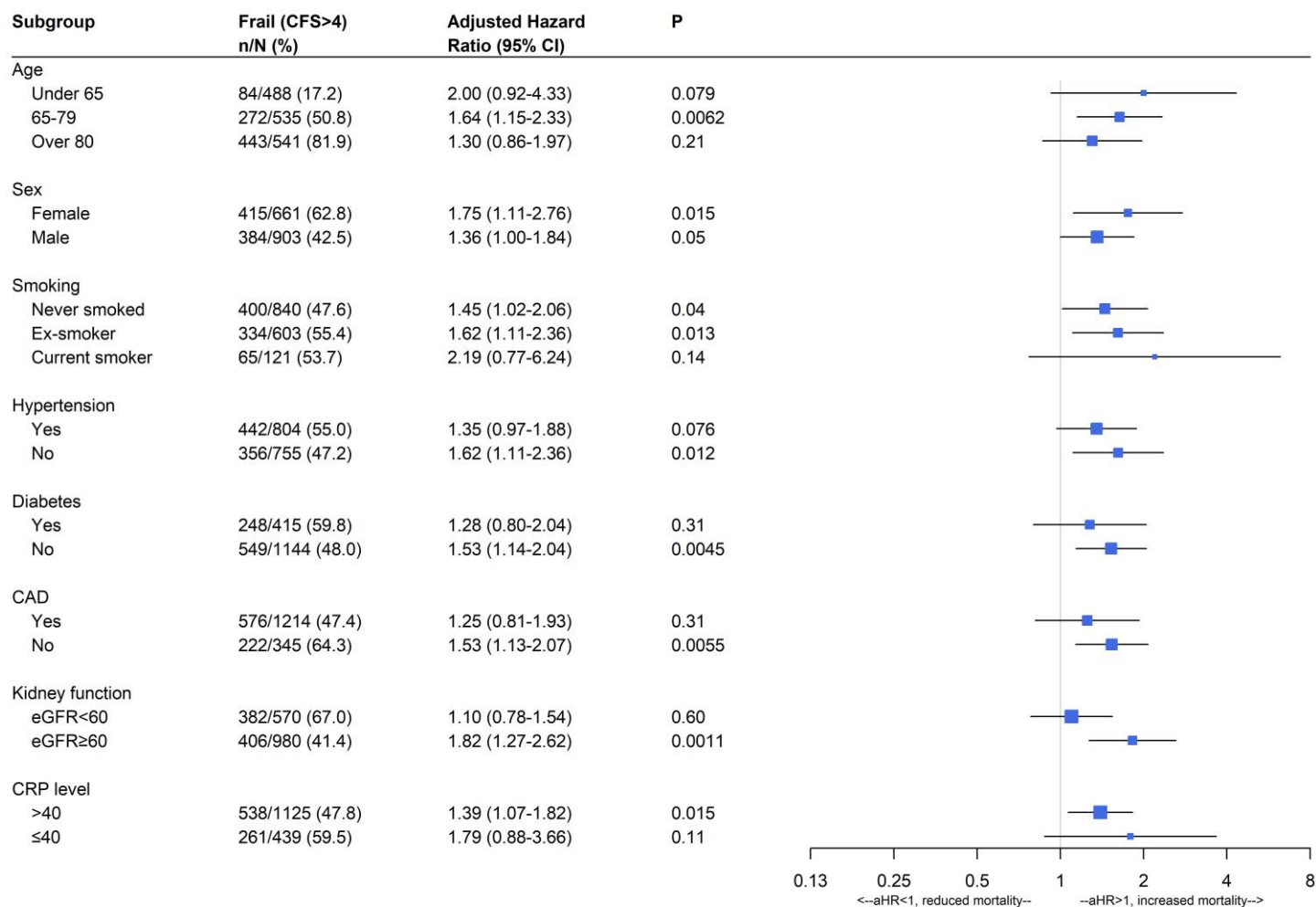| % (Death / Cases)		Clinical Frailty Score (CFS)									Missing	Total
		Very Fit	Fit	Managing well	Vulnerable	Mildly frail	Moderately frail	Severely Frail	Very Severely Frail	Terminally ill		
		1	2	3	4	5	6	7	8	9	Missing	
Age Group	20-49	2.4 (1/41)	4.3 (2/46)	6.7 (2/30)	22.2 (2/9)	14.3 (1/7)	0.0 (0/5)	20.0 (1/5)	0.0 (0/1)	0.0 (0/2)	0	6.2 (9/146)
	50-59	7.4 (2/27)	12.7 (8/63)	17.4 (12/69)	11.1 (2/18)	0.0 (0/7)	18.2 (2/11)	11.1 (1/9)	0.0 (0/1)	0 (0/0)	0	13.2 (27/205)
	60-64	10.0 (1/10)	0.0 (0/27)	9.5 (4/42)	25.0 (5/20)	12.5 (2/16)	28.6 (2/7)	30.0 (3/10)	100.0 (1/1)	50.0 (1/2)	0/2	14.1 (19/137)
	65-69	0.0 (0/5)	21.1 (4/19)	13.3 (6/45)	25.0 (5/20)	14.3 (1/7)	25.0 (2/8)	26.7 (4/15)	62.5 (5/8)	60.0 (3/5)	1/1	22.7 (31/133)
	70-74	40.0 (2/5)	5.9 (1/17)	21.4 (9/42)	30.3 (10/33)	25.0 (5/20)	29.6 (8/27)	37.5 (12/32)	20.0 (2/10)	50.0 (2/4)	1/1	26.8 (52/191)
	75-79	0.0 (0/1)	27.3 (3/11)	43.8 (14/32)	33.3 (10/30)	41.7 (15/36)	32.6 (14/43)	50.0 (20/40)	58.3 (7/12)	20.0 (1/5)	1/1	40.0 (85/211)
	80-84	50.0 (1/2)	25.0 (1/4)	23.5 (4/17)	37.1 (13/35)	33.3 (13/39)	42.1 (24/57)	36.4 (16/44)	56.3 (9/16)	50.0 (2/4)	0	38.1 (83/218)
	85-89	0 (0/0)	16.7 (1/6)	37.5 (3/8)	23.1 (3/13)	21.4 (6/28)	22.4 (11/49)	36.4 (20/55)	61.5 (8/13)	50.0 (2/4)	0	30.7 (54/176)
	90+	0 (0/0)	50.0 (2/4)	50.0 (1/2)	28.6 (2/7)	31.8 (7/22)	47.7 (21/44)	38.0 (19/50)	70.6 (12/17)	100.0 (1/1)	0	44.2 (65/147)
	Subtotal	7.7 (7/91)	11.2 (22/197)	19.2 (55/287)	28.1 (52/185)	27.5 (50/182)	33.5 (84/251)	36.9 (96/260)	55.7 (44/79)	44.4 (12/27)	(3/5)	27.2 (425/1564)

Supplementary Table 2: Day 7 mortality

| | Crude Odds Ratio (OR) | | Adjusted Odds Ratio (aOR)[&] | |
| | (n=1,515)[&&] | | (n=1,494)[&&&] | |
	OR (95%CI)	p-value	aOR (95%CI)	p-value
Age				
Under 65	Ref -		Ref -	
65 to 79	4.62 (2.89-7.39)	<0.0001	2.79 (1.66-4.72)	0.0001
80 and Over	6.68 (4.18-10.67)	<0.0001	3.51 (2.01-6.15)	<0.0001
Sex (Female)	Ref -		Ref -	
Male	0.96 (0.72-1.28)	0.78	1.06 (0.76-1.49)	0.73
Smoking status (Never)				
Ex-smokers	1.49 (1.11-2.01)	0.0008	1.11 (0.79-1.55)	0.56
Current smokers	0.81 (0.44-1.49)	0.50	0.93 (0.46-1.87)	0.83
Elevated CRP (>40)	4.23 (2.71-6.62)	<0.0001	4.63 (2.90-7.38)	<0.0001
Patients with diabetes	1.19 (0.87-1.63)	0.28	0.97 (0.68-1.40)	0.89
Patients with CAD	2.22 (1.62-3.04)	<0.0001	1.51 (1.05-2.17)	0.024
Patients with hypertension	1.27 (0.95-1.69)	0.11	0.84 (0.60-1.17)	0.30
Patients with reduced renal function	3.24 (2.40-4.37)	<0.0001	2.18 (1.56-3.05)	<0.0001
Clinical Frailty Scale (CFS)				
CFS (CFS 1 & 2)	Ref -		Ref -	
CFS 3 to 4	2.12 (1.14-3.93)	0.017	1.22 (0.63-2.38)	0.56
CFS 5 to 6	3.99 (2.17-7.34)	<0.0001	1.62 (0.81-3.26)	0.17
CFS 7 to 9	7.52 (4.11-13.74)	<0.0001	3.12 (1.56-6.24)	0.0012

[&]The multivariable mixed-effects logistic regression was adjusted for: age group; sex; smoking; CRP; diabetes; CAD; hypertension; renal function; and the Clinical Frailty Scale.
[&&]49 Cases were excluded from the analysis as the patient was followed up for less than 7 Days and alive and in hospital.
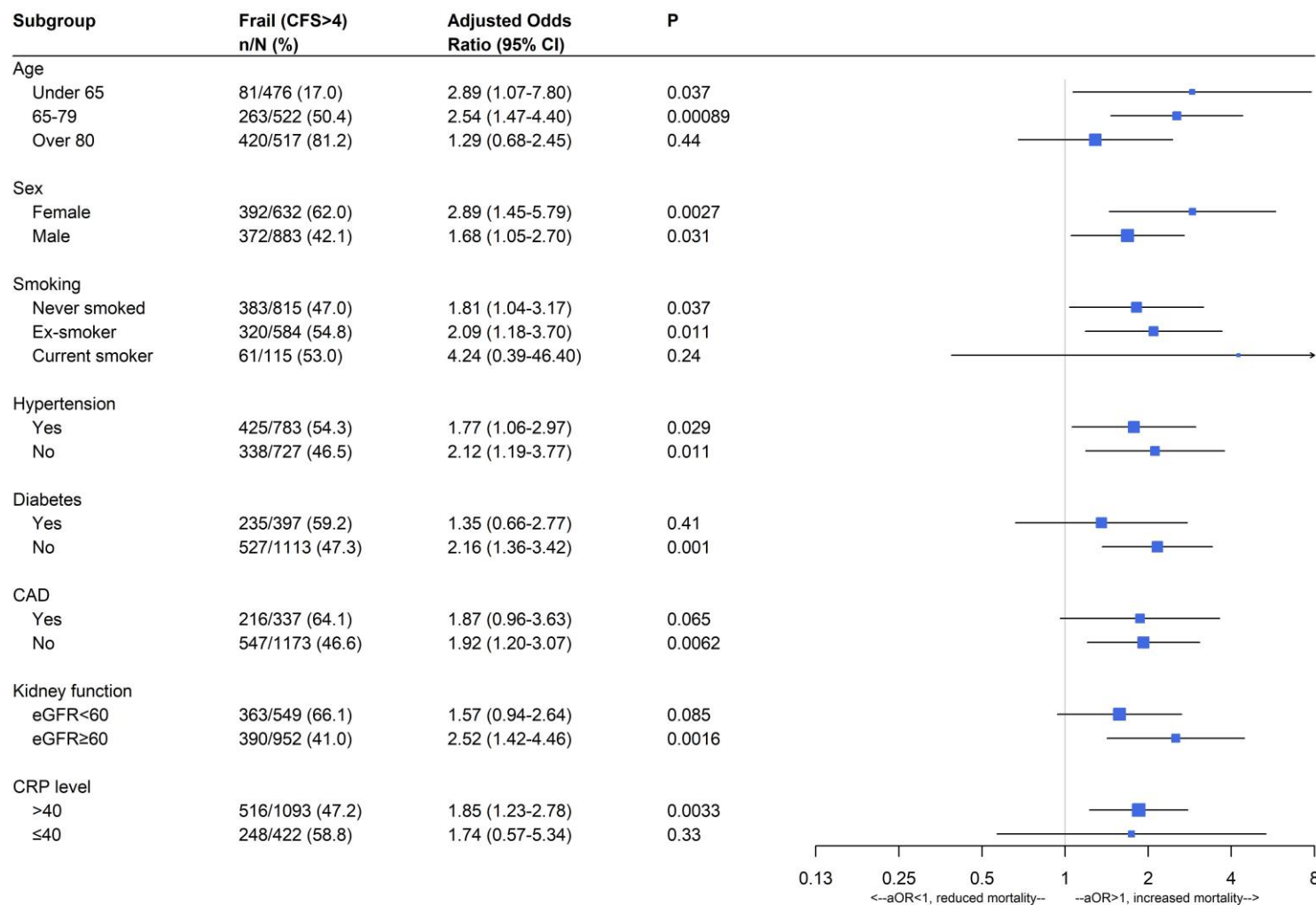[&&&]21 Cases were not included in analysis due to missing covariate data-see Table 1.

Supplementary Figure 1: Subgroup Analyses for the time to mortality (presenting the adjusted[&] Hazard Ratio with 95% CI) to compare those patients who were frail (CFS 5-9), with those who were not frail (CFS 1-4).

Subgroup	Frail (CFS>4) n/N (%)	Adjusted Hazard Ratio (95% CI)	P
Age			
Under 65	84/488 (17.2)	2.00 (0.92-4.33)	0.079
65-79	272/535 (50.8)	1.64 (1.15-2.33)	0.0062
Over 80	443/541 (81.9)	1.30 (0.86-1.97)	0.21
Sex			
Female	415/661 (62.8)	1.75 (1.11-2.76)	0.015
Male	384/903 (42.5)	1.36 (1.00-1.84)	0.05
Smoking			
Never smoked	400/840 (47.6)	1.45 (1.02-2.06)	0.04
Ex-smoker	334/603 (55.4)	1.62 (1.11-2.36)	0.013
Current smoker	65/121 (53.7)	2.19 (0.77-6.24)	0.14
Hypertension			
Yes	442/804 (55.0)	1.35 (0.97-1.88)	0.076
No	356/755 (47.2)	1.62 (1.11-2.36)	0.012
Diabetes			
Yes	248/415 (59.8)	1.28 (0.80-2.04)	0.31
No	549/1144 (48.0)	1.53 (1.14-2.04)	0.0045
CAD			
Yes	576/1214 (47.4)	1.25 (0.81-1.93)	0.31
No	222/345 (64.3)	1.53 (1.13-2.07)	0.0055
Kidney function			
eGFR<60	382/570 (67.0)	1.10 (0.78-1.54)	0.60
eGFR≥60	406/980 (41.4)	1.82 (1.27-2.62)	0.0011
CRP level			
>40	538/1125 (47.8)	1.39 (1.07-1.82)	0.015
≤40	261/439 (59.5)	1.79 (0.88-3.66)	0.11

0.13   0.25   0.5   1   2   4   8

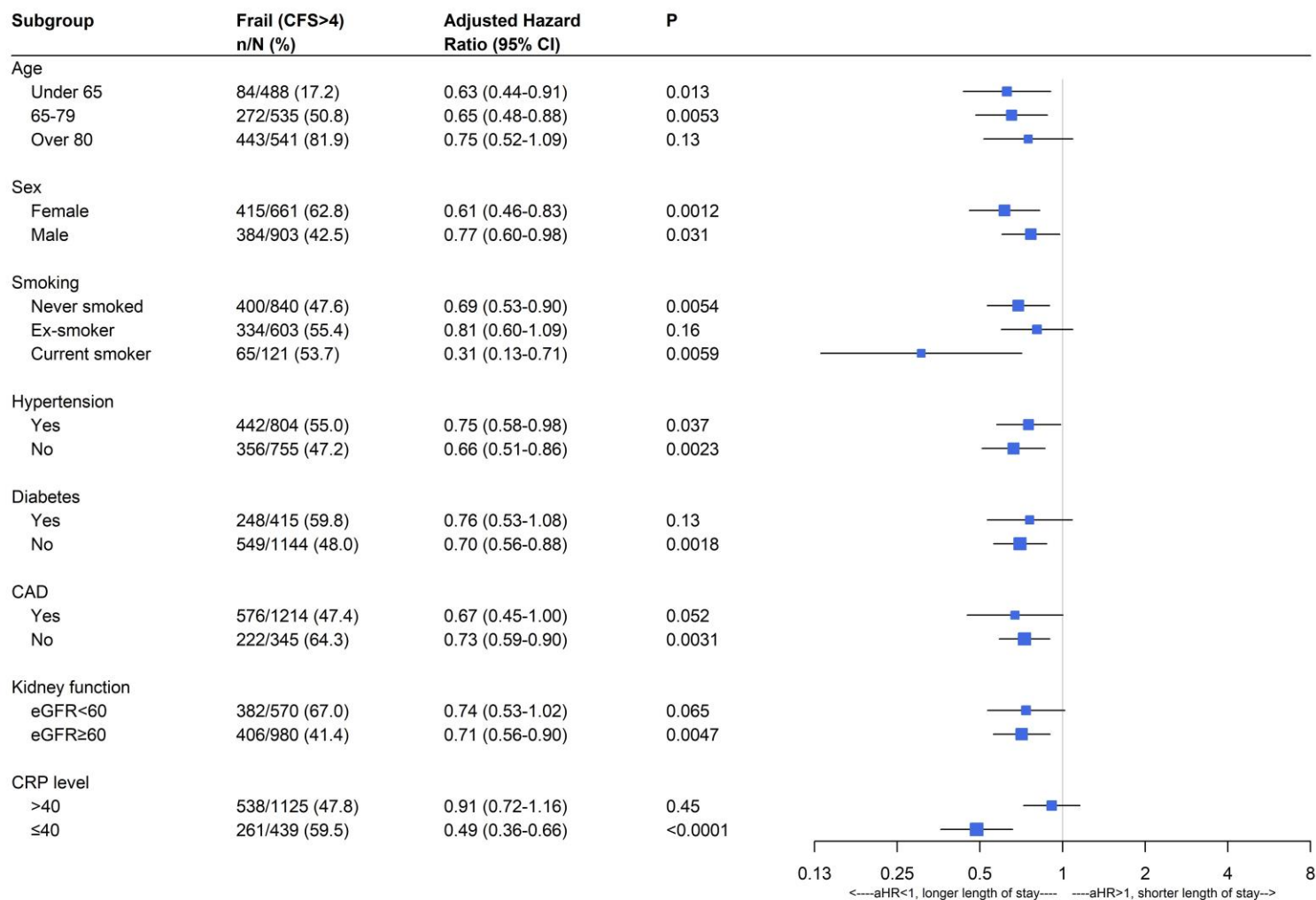<--aHR<1, reduced mortality--   --aHR>1, increased mortality-->

[&]The multivariable mixed-effects Cox regression was adjusted for: age group; sex; smoking; CRP; diabetes; CAD; hypertension; kidney function; and the Clinical Frailty Scale.

Supplementary Figure 2: Subgroup Analyses Day-7 Mortality (presenting the adjusted[&] Odds Ratio with 95% CI) to compare those patients who were frail (CFS 5-7), with those who were not frail (CFS 1-4).

Subgroup	Frail (CFS>4) n/N (%)	Adjusted Odds Ratio (95% CI)	P
Age			
Under 65	81/476 (17.0)	2.89 (1.07-7.80)	0.037
65-79	263/522 (50.4)	2.54 (1.47-4.40)	0.00089
Over 80	420/517 (81.2)	1.29 (0.68-2.45)	0.44
Sex			
Female	392/632 (62.0)	2.89 (1.45-5.79)	0.0027
Male	372/883 (42.1)	1.68 (1.05-2.70)	0.031
Smoking			
Never smoked	383/815 (47.0)	1.81 (1.04-3.17)	0.037
Ex-smoker	320/584 (54.8)	2.09 (1.18-3.70)	0.011
Current smoker	61/115 (53.0)	4.24 (0.39-46.40)	0.24
Hypertension			
Yes	425/783 (54.3)	1.77 (1.06-2.97)	0.029
No	338/727 (46.5)	2.12 (1.19-3.77)	0.011
Diabetes			
Yes	235/397 (59.2)	1.35 (0.66-2.77)	0.41
No	527/1113 (47.3)	2.16 (1.36-3.42)	0.001
CAD			
Yes	216/337 (64.1)	1.87 (0.96-3.63)	0.065
No	547/1173 (46.6)	1.92 (1.20-3.07)	0.0062
Kidney function			
eGFR<60	363/549 (66.1)	1.57 (0.94-2.64)	0.085
eGFR≥60	390/952 (41.0)	2.52 (1.42-4.46)	0.0016
CRP level			
>40	516/1093 (47.2)	1.85 (1.23-2.78)	0.0033
≤40	248/422 (58.8)	1.74 (0.57-5.34)	0.33

0.13   0.25   0.5   1   2   4   8

<--aOR<1, reduced mortality--   --aOR>1, increased mortality-->

[&]The multivariable mixed-effects logistic regression was adjusted for: age group; sex; smoking; CRP; diabetes; CAD; hypertension; kidney function; and the Clinical Frailty Scale.

Supplementary Figure 3: Subgroup Analyses for the time to discharge (presenting the adjusted[&] Hazard Ratio with 95% CI) to compare those patients who were frail (CFS 5-9), with those who were not frail (CFS 1-4).

Subgroup	Frail (CFS>4) n/N (%)	Adjusted Hazard Ratio (95% CI)	P	
Age				
Under 65	84/488 (17.2)	0.63 (0.44-0.91)	0.013	
65-79	272/535 (50.8)	0.65 (0.48-0.88)	0.0053	
Over 80	443/541 (81.9)	0.75 (0.52-1.09)	0.13	
Sex				
Female	415/661 (62.8)	0.61 (0.46-0.83)	0.0012	
Male	384/903 (42.5)	0.77 (0.60-0.98)	0.031	
Smoking				
Never smoked	400/840 (47.6)	0.69 (0.53-0.90)	0.0054	
Ex-smoker	334/603 (55.4)	0.81 (0.60-1.09)	0.16	
Current smoker	65/121 (53.7)	0.31 (0.13-0.71)	0.0059	
Hypertension				
Yes	442/804 (55.0)	0.75 (0.58-0.98)	0.037	
No	356/755 (47.2)	0.66 (0.51-0.86)	0.0023	
Diabetes				
Yes	248/415 (59.8)	0.76 (0.53-1.08)	0.13	
No	549/1144 (48.0)	0.70 (0.56-0.88)	0.0018	
CAD				
Yes	576/1214 (47.4)	0.67 (0.45-1.00)	0.052	
No	222/345 (64.3)	0.73 (0.59-0.90)	0.0031	
Kidney function				
eGFR<60	382/570 (67.0)	0.74 (0.53-1.02)	0.065	
eGFR≥60	406/980 (41.4)	0.71 (0.56-0.90)	0.0047	
CRP level				
>40	538/1125 (47.8)	0.91 (0.72-1.16)	0.45	
≤40	261/439 (59.5)	0.49 (0.36-0.66)	<0.0001	

0.13   0.25   0.5   1   2   4   8

<----aHR<1, longer length of stay----   ----aHR>1, shorter length of stay-->

[&]The multivariable mixed-effects Cox regression was adjusted for: age group; sex; smoking; CRP; diabetes; CAD; hypertension; kidney function; and the Clinical Frailty Scale.

5

The Clinical Frailty Scale

Clinical Frailty Scale*

1 **Very Fit** – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.

2 **Well** – People who have **no active disease symptoms** but are less fit than category 1. Often, they exercise or are very **active occasionally**, e.g. seasonally.

3 **Managing Well** – People whose **medical problems are well controlled**, but are **not regularly active** beyond routine walking.

4 **Vulnerable** – While **not dependent** on others for daily help, often **symptoms limit activities**. A common complaint is being "slowed up", and/or being tired during the day.

5 **Mildly Frail** – These people often have **more evident slowing**, and need help in **high order IADLs** (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.

6 **Moderately Frail** – People need help with **all outside activities** and with **keeping house**. Inside, they often have problems with stairs and need **help with bathing** and might need minimal assistance (cuing, standby) with dressing.

7 **Severely Frail** – **Completely dependent for personal care**, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~ 6 months).

8 **Very Severely Frail** – Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.

9. **Terminally Ill** - Approaching the end of life. This category applies to people with a **life expectancy <6 months**, who are **not otherwise evidently frail**.

Scoring frailty in people with dementia

The degree of frailty corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In **moderate dementia**, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In **severe dementia**, they cannot do personal care without help.

* 1. Canadian Study on Health & Aging, Revised 2008.
2. K. Rockwood et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005;173:489-495.

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