

Supplementary material for chapter 6

Table 1 Percentage and Rate Ratio of Survival Time Spent in Hospital Over Two Years for Three Category Frailty Scales

Frailty Scale (N)	Percentage of Survival Time Spent in Hospital			Rate Ratio (standard error)			
	Robust	Pre-Frail/ Intermediate	Frail	Pre-Frail		Frail	
				Unadjusted	Fully Adjusted†	Unadjusted	Fully Adjusted†
Leicester/Nottingham							
Fried	2.0 %	3.0 %	5.9 %	2.3* (0.2)	2.2* (0.2)	3.8* (0.2)	3.3* (0.2)
Historic HES Score	3.5 %	5.3 %	9.5 %	1.3* (0.1)	1.1 (0.1)	1.9* (0.2)	1.5* (0.2)
Current HES Score	2.5 %	5.0 %	8.9 %	1.9* (0.1)	1.4* (0.1)	2.8* (0.2)	1.7* (0.2)
Southampton							
Fried	6.1 %	10.8 %	10.6%	2.2 (0.5)	1.6 (0.8)	3.1* (0.5)	3.2 (0.7)
Historic HES Score	10.2 %	11.3 %	14.2%	1.1 (0.2)	1.0 (0.2)	1.0 (0.2)	0.9 (0.2)
Current HES Score	9.2 %	10.9 %	14.3%	1.7* (0.2)	1.8* (0.2)	1.8* (0.2)	1.9* (0.2)
Newcastle							
Fried	1.0 %	1.4 %	3.0 %	1.1 (0.3)	1.1 (0.4)	2.7* (0.3)	3.9* (0.4)
Historic HES Score	2.0 %	3.6 %	3.5 %	1.7* (0.3)	1.5 (0.3)	1.8 (0.4)	1.4 (0.5)

* Significant at 95% level, †Adjusted for gender, number of past admissions and Charlson comorbidities

Table 2 Bed Days and Rate Ratios for Two-Year Period Following Recruitment for Those Who Survive the Two Years

Frailty Scale (N)	Bed days per person (standard deviation)		Rate Ratio (standard error)		
	Non-Frail	Frail	Unadjusted	Adjusted for age and sex‡	Fully Adjusted†
Leicester/Nottingham					
Fried (457)	16.4 (24.5)	30.2 (41.4)	2.0* (0.1)	1.9* (0.1)	1.7* (0.1)
Rothman (464)	16.3 (16.3)	30.4 (30.4)	1.9* (0.1)	1.9* (0.1)	1.6* (0.1)
Grip Strength (612)	19.9 (29.2)	25.4 (36.6)	1.3* (0.1)	1.2 (0.1)	1.2 (0.1)
Rockwood (446)	14.6 (22.7)	30.9 (39.8)	2.2* (0.1)	2.3* (0.1)	1.9* (0.1)
Historic HES Score (434)	19.4 (27.8)	34.7 (40.6)	1.8* (0.1)	1.8* (0.1)	1.4* (0.1)
Current HES Score (624)	14.7 (22.6)	30.9 (38.0)	2.1* (0.1)	2.1* (0.1)	1.5* (0.1)
Southampton					
Fried (82)	68.1 (63.1)	54.7 (44.5)	0.8 (0.2)	0.8 (0.2)	1.0 (0.2)
Rothman (112)	53.2 (52.0)	66.2 (46.6)	1.2 (0.2)	1.2 (0.2)	1.2 (0.2)
Grip Strength (141)	55.7 (60.1)	67.1 (53.1)	1.1 (0.2)	1.1 (0.2)	1.1 (0.2)
Historic HES Score (106)	56.4 (48.6)	74.4 (56.5)	1.3* (0.2)	1.3* (0.2)	1.3 (0.2)
Current HES Score (141)	48.7 (52.9)	72.2 (54.3)	1.4* (0.1)	1.4* (0.1)	1.4* (0.2)
Newcastle					
Fried (468)	7.4 (17.0)	16.5 (30.6)	2.6* (0.3)	2.6* (0.3)	3.1* (0.3)
Grip Strength (596)	6.4 (15.4)	12.7 (25.0)	1.9* (0.2)	1.8* (0.2)	1.9* (0.3)
Rockwood (607)	8.4 (19.5)	17.4 (28.5)	2.5* (0.2)	2.6* (0.2)	2.1* (0.3)
Historic HES Score (336)	9.9 (20.8)	18.8 (30.3)	2.2* (0.3)	2.2* (0.3)	1.6 (0.3)
* Significant at 95% level, ‡ Southampton analysis adjusted for age only (women-only cohort) and Newcastle analysis adjusted for sex only (all 85 years old at baseline), †Adjusted for gender, number of past admissions and Charlson comorbidities					

Table 3 Excess bed days beyond HRG trim point per person by frailty scale

Frailty Scale (sample size)	Excess Bed Days Per Person (SD)		P value for difference z test
	Non-Frail	Frail	
<i>Leicester/Nottingham hospital cohort</i>			
Fried (584)	2.1 (7.6)	6.6 (15.0)	<0.001
Rothman (594)	2.0 (7.6)	6.6 (14.8)	<0.001
Grip Strength (805)	3.2 (10.6)	5.9 (13.5)	0.021
Rockwood (569)	1.6 (6.3)	6.6 (15.1)	<0.0001
HES Historic (599)	3.4 (10.9)	6.7 (15.0)	0.003
HES Current (825)	1.7 (7.7)	6.4 (14.5)	<0.0001
<i>Southampton hospital cohort</i>			
Fried (140)	14.2 (19.4)	12.2 (19.7)	0.624
Rothman (192)	12.1 (19.1)	16.1 (28.1)	0.242
Grip Strength (246)	13.9 (23.9)	16.4 (23.4)	0.516
HES Historic (187)	13.0 (20.8)	17.6 (24.3)	0.168
HES Current (246)	16.0 (24.4)	15.9 (23.2)	0.976
<i>Newcastle 85+ cohort</i>			
Fried (538)	2.1 (9.9)	6.6 (19.4)	0.018
Grip Strength (711)	2.3 (11.3)	4.4 (15.4)	0.038
Rockwood (726)	2.8 (11.9)	6.1 (18.2)	0.014
HES Historic (418)	3.4 (13.8)	7.3 (18.2)	0.051

Figure 1 Survival over two years by Rockwood frailty status in Leicester/Nottingham hospital based cohort and the Newcastle community based cohort

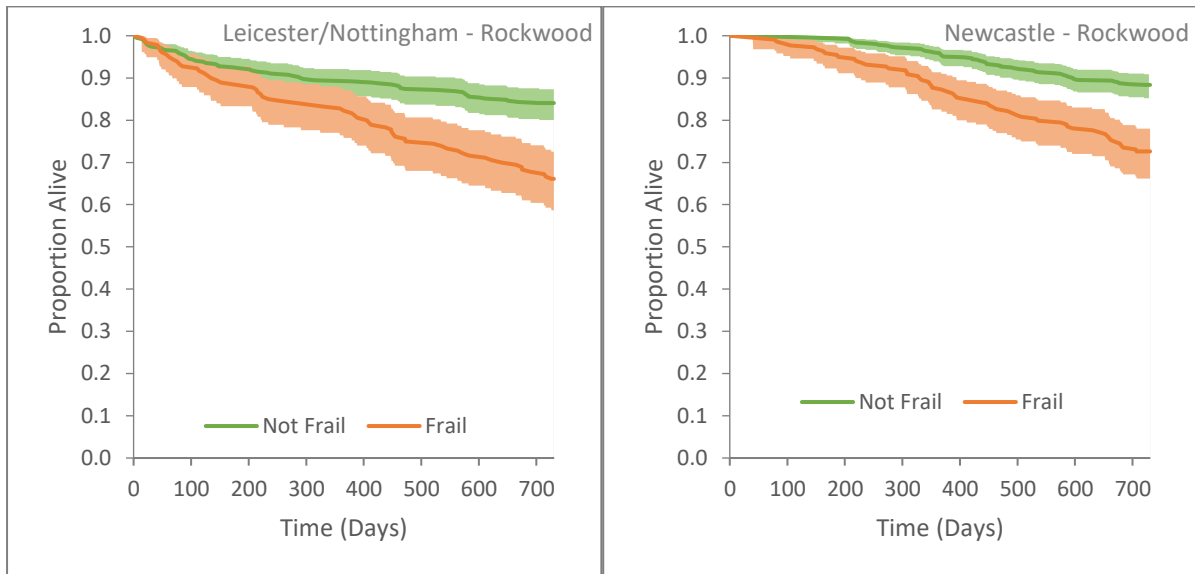


Figure 2 Survival over two years by Historic HES Frailty Risk Score frailty status in the three cohorts

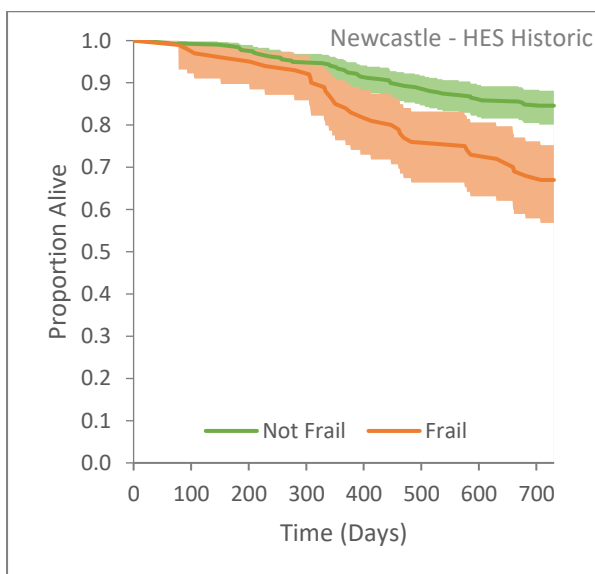
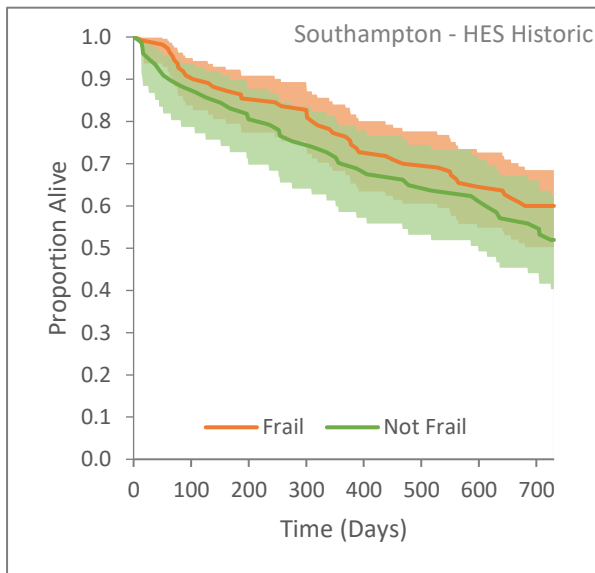
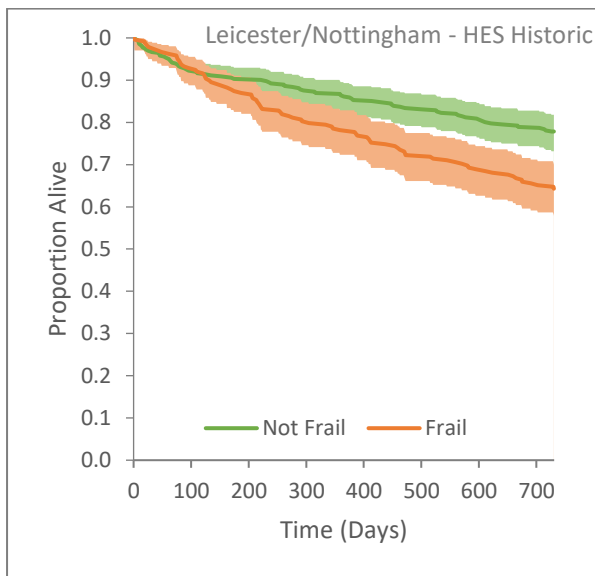


Table 4 Two-Year Survival and Hazard Ratios for Three Category Frailty Scales

Frailty Scale (N)	Mortality Percentage			Mortality Hazard Ratio (standard error)			
	Robust	Pre-Frail/Intermediate	Frail	Pre-Frail Unadjusted	Adjusted†	Frail Unadjusted	Adjusted†
Leicester/Nottingham							
Fried	8 %	18 %	37 %	2.3 (0.4)	1.5 (0.4)	5.1* (0.4)	2.5* (0.4)
Historic HES Score	22 %	31 %	46 %	1.5* (0.2)	1.2 *0.2)	2.4* (0.2)	1.7* (0.2)
Current HES Score	16 %	31 %	46 %	2.1* (0.2)	1.5* (0.2)	3.4* (0.2)	2.1* (0.2)
Southampton							
Fried‡	0 %	26 %	46 %	-	-	-	-
Historic HES Score	48 %	40 %	40 %	0.8 (0.2)	0.8 (0.3)	0.8 (0.3)	0.7 (0.4)
Current HES Score	43 %	43 %	42 %	1.1 (0.2)	1.1 (0.2)	1.0 (0.3)	1.0 (0.3)
Newcastle							
Fried	7 %	11 %	23 %	1.7 (0.4)	1.3 (0.6)	3.6* (0.5)	2.5 (0.6)
Historic HES Score	15 %	27 %	55 %	1.9* (0.3)	1.3 (0.3)	4.4* (0.3)	2.3* (0.4)

* Significant at 95% level, †Adjusted for gender, number of past admissions and Charlson comorbidities, ‡ Subgroup size not large enough for calculation of hazard ratios

Table 5 Percentage and Rate Ratio of Survival Time Spent in Hospital Over Two Years for Three Category Frailty Scales

Frailty Scale (N)	Percentage of Survival Time Spent in Hospital			Rate Ratio (standard error)			
	Robust	Pre-Frail/ Intermediate	Frail	Pre-Frail Unadjusted	Fully Adjusted†	Frail Unadjusted	Fully Adjusted†
Leicester/Nottingham							
Fried	2.0 %	3.0 %	5.9 %	2.3* (0.2)	2.2* (0.2)	3.8* (0.2)	3.3* (0.2)
Historic HES Score	3.5 %	5.3 %	9.5 %	1.3* (0.1)	1.1 (0.1)	1.9* (0.2)	1.5* (0.2)
Current HES Score	2.5 %	5.0 %	8.9 %	1.9* (0.1)	1.4* (0.1)	2.8* (0.2)	1.7* (0.2)
Southampton							
Fried	6.1 %	10.8 %	10.6 %	2.2 (0.5)	1.6 (0.8)	3.1* (0.5)	3.2 (0.7)
Historic HES Score	10.2 %	11.3 %	14.2 %	1.1 (0.2)	1.0 (0.2)	1.0 (0.2)	0.9 (0.2)
Current HES Score	9.2 %	10.9 %	14.3 %	1.7* (0.2)	1.8* (0.2)	1.8* (0.2)	1.9* (0.2)
Newcastle							
Fried	1.0 %	1.4 %	3.0 %	1.1 (0.3)	1.1 (0.4)	2.7* (0.3)	3.9* (0.4)
Historic HES Score	2.0 %	3.6 %	3.5 %	1.7* (0.3)	1.5 (0.3)	1.8 (0.4)	1.4 (0.5)

* Significant at 95% level, †Adjusted for gender, number of past admissions and Charlson comorbidities

Table 6 Bed Days and Rate Ratios for Two-Year Period Following Recruitment for Those Who Survive the Two Years

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Grip Strength (612)	19.9 (29.2)	25.4 (36.6)	1.3* (0.1)	1.2 (0.1)	1.2 (0.1)
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Historic HES Score (106)	56.4 (48.6)	74.4 (56.5)	1.3* (0.2)	1.3* (0.2)	1.3 (0.2)
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