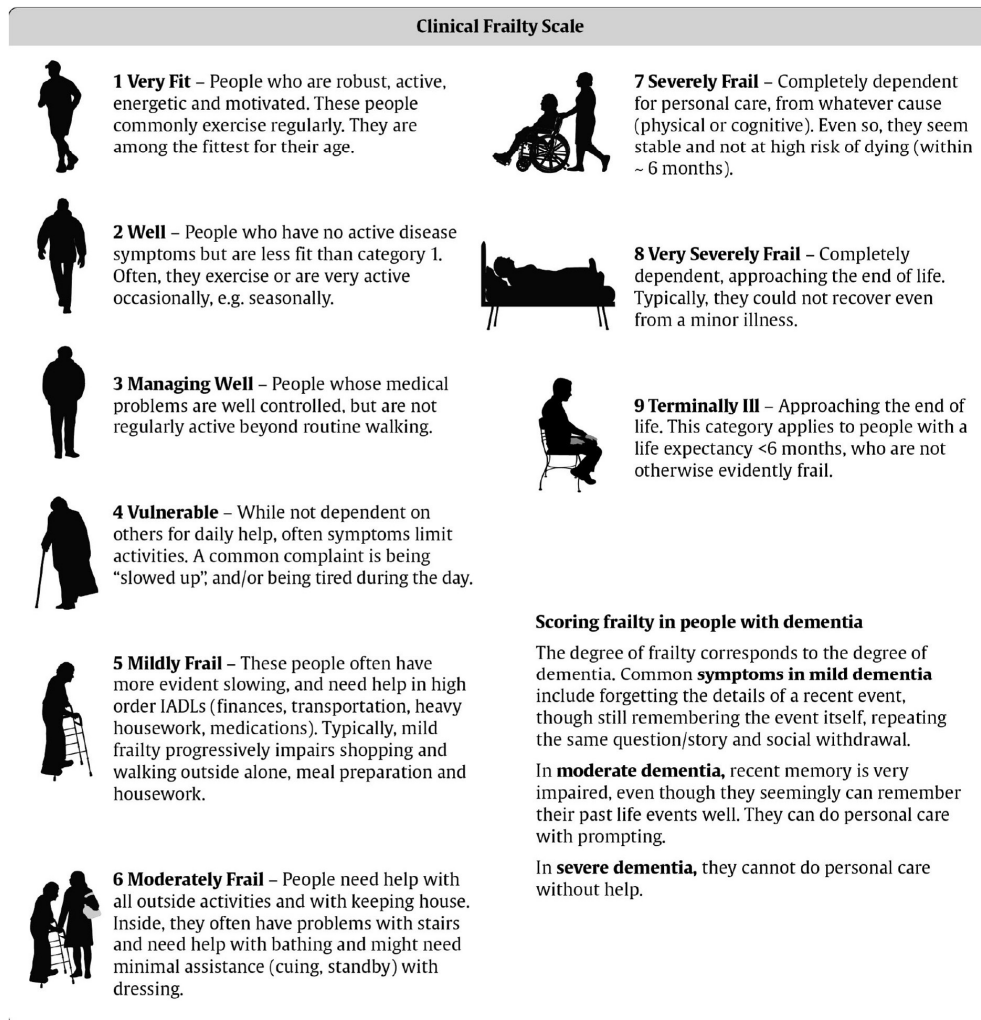


## SUPPLEMENTAL DIGITAL CONTENT

Figure 1: Clinical Frailty Score



**Appendix Tables 1–6. This appendix was part of the submitted manuscript and has been peer reviewed. It is posted as supplied by the authors.**

Table 1: Life limiting illness indicators definition and classification

<b>Life limiting illness indicator</b>	<b>Definition</b>
Cancer	Metastatic or not amenable to treatment
Organ failure	
Heart failure	NYHA stage III/IV or reduced exercise tolerance
Chronic obstructive pulmonary disease	Disease assessed as severe (eg FEV1 <30% predicted) or long term oxygen therapy / home oxygen or shortness of breath at 100m on level ground
Renal disease	Stage 5 chronic renal failure or long-term dialysis or not for dialysis or eGFR less than 15 ml/min
Neurological disease	Parkinson's disease with assistance with ADL or falls or difficulty swallowing), multiple sclerosis with dysphagia, motor neurone disease with rapid decline or episode of aspiration pneumonia
Frailty	
Frailty	Clinical frailty score 6 to 9
Dementia	No consistent meaningful conversation or needs assistance with ADL
Nursing home	From nursing home or residential aged care facility
Stroke	Minimal conscious state or dense hemiparesis
Unplanned admissions	Greater than 2 unplanned admissions to an acute hospital in the previous 6-months

Table 2: Clinical Trajectory Group

<b>Clinical Trajectory Group</b>	<b>Definition</b>
1. No life limiting illness	Patients without a LLI, or with unplanned admissions as the only LLI indicator, as this SPICT derived indicator did not directly relate to any GSF criteria.
2. Cancer	Patients with cancer as one of their LLI indicators
3. Frailty	Patients with only frailty, dementia nursing home accommodation, or stroke as their LLI Indicators
4. Organ failure	Patients with only heart failure, renal disease, COPD or neurological disease as their LLI indicator.
5. Organ failure and frailty	Patients with both organ failure and frailty LLI indicators

Variable	Clinical Trajectory Category*					P-value
	1. No-LLI	2. Cancer	3. Frailty	4. Organ Failure	5. Organ Failure / Frailty	
Number	419	104	48	305	148	
Age	61 [46-73]	72 [61-81]	84 [67-89]	72 [63-80]	79 [65-85]	<0.0001
LLI criteria						
Cancer	0 (0)	102 (98.1)	0 (0)	0 (0)	0 (0)	<0.0001
Heart failure	0 (0)	33 (31.7)	0 (0)	219 (71.8)	87 (58.8)	<0.0001
COPD	0 (0)	16 (15.4)	0 (0)	94 (30.8)	51 (34.5)	<0.0001
Renal failure	0 (0)	16 (15.4)	0 (0)	66 (21.6)	27 (18.2)	<0.0001
Neurological disease	0 (0)	13 (12.5)	0 (0)	53 (17.4)	61 (41.2)	<0.0001
Stroke	0 (0)	2 (1.9)	2 (4.2)	0 (0)	23 (15.5)	<0.0001
Frailty	0 (0)	14 (13.5)	34 (70.8)	0 (0)	106 (71.6)	<0.0001
Dementia	0 (0)	4 (3.8)	19 (39.6)	0 (0)	26 (17.6)	<0.0001

Table 3: Demographics, clinical characteristic and outcomes by clinical disease trajectory of disease.

Nursing home origin	0 (0)	8 (7.7)	20 (41.7)	0 (0)	46 (31.1)	<0.0001
>2 unplanned admissions	44 (10.5)	17 (16.3)	7 (14.6)	32 (10.5)	23 (15.5)	0.24
Referral source						
Emergency Department	105 (25.1)	9 (8.7)	4 (8.3)	50 (16.4)	24 (16.2)	0.0001
Medical MET/referral	73 (17.4)	41 (39.4)	14 (29.2)	64 (21)	90 (60.8)	<0.0001
Surgical MET/referral	83 (19.8)	21 (20.2)	25 (52.1)	47 (15.4)	28 (18.9)	<0.0001
OT elective	96 (22.9)	18 (17.3)	1 (2.1)	103 (33.8)	3 (2.0)	<0.0001
OT emergency	43 (10.3)	13 (12.5)	4 (8.3)	30 (9.8)	2 (1.4)	0.01
Retrieval	19 (4.5)	2 (1.9)	0 (0)	11 (3.6)	1 (0.7)	0.1
Treatment limitation						
Pre-hospital ACP	12 (2.9)	13 (12.5)	5 (10.4)	28 (9.2)	22 (14.9)	<0.0001
In-hospital	14 (3.3%)	42 (40.4)	27 (56.3)	72 (23.6)	81 (54.7)	<0.0001
Referral outcome ICU	280 (66.8)	44 (42.3)	14 (29.2)	202 (66.2)	31 (20.9)	<0.0001
Hospital LOS	7 [4-14]	11 [6-18]	9 [5-14]	9 [5-15]	9 [5-17]	0.008
Discharge destination						
Home	328 (78.3)	47 (45.2)	8 (16.7)	183 (60.0)	40 (27.0)	<0.0001
Nursing home	1 (0.2)	6 (5.8)	10 (20.8)	6 (2.0)	27 (18.2)	<0.0001
Other hospital	42 (10.0)	8 (7.7)	4 (8.3)	21 (6.9)	14 (9.5)	0.66
Sub-acute	32 (7.6)	11 (10.6)	13 (27.1)	46 (15.1)	23 (15.5)	0.0002
Palliative care	1 (0.2)	9 (8.7)	0 (0)	3 (1.0)	2 (1.4)	<0.0001
Died	15 (3.6)	23 (22.1)	13 (27.1)	46 (15.1)	42 (28.4)	<0.0001
One-year mortality	32 (7.6)	62 (59.6)	21 (43.8)	72 (23.6)	70 (47.3)	<0.0001

- Data are shown as median [IQR] or number (%)
- \* Clinical trajectory category 1: No LLI = No LLI or LLI criteria >2 unplanned admission, 2: Cancer = LLI indicators cancer or cancer with any other LLI indicator, 3: Frailty = LLI indicators frailty, dementia, nursing home, or stroke 4: Organ failure = LLI indicators heart failure, renal disease, COPD or neurological disease, 5: Organ failure and frailty = LLI indicators for category 3 “frailty” and 4 “organ failure”
- Abbreviations: LLI = life-limiting illness, COPD =chronic obstructive pulmonary disease, MET = medical emergency team, OT = operating theatre, ACP = advanced care plan, ICU = intensive care unit LOS = length of stay

Table 4: Completion of goals of care discussion in patients with LLI indicator

	All*	ED	Ward	ICU
Total	223	14	150	47
Medical officer completing*				
Intern	5 (2.2)	0 (0)	5 (3.3)	0 (0)
Resident	40 (17.9)	2 (14.3)	29 (19.3)	9 (19.1)
Registrar	150 (67.3)	12 (85.7)	109 (72.7)	25 (53.2)
Consultant	18 (8.1)	0 (0)	6 (4.0)	13 (27.7)
Competency assessed	192 (86.1)	14 (100)	133 (88.7)	40 (85.1)
Discussion documented	178 (79.8)	12 (85.7)	122 (81.3)	41(87.2)
All steps completed	166 (74.4)	12 (85.7)	114 (76.0)	37 (78.7)

- Data are shown as median [IQR] or number (%)
- \*Team completing not specified in 12 (5.4%), medical officer not specified in 10 (4.5%)



Table 5: Comparison of patients referred to intensive care with and without goals of care documentation

	GoC absent	GoC present	P-value
Number	788	236	
Age	68 [54.5-78]	75 [61.5-85]	<0.0001
Male	460 (58)	110 (47)	0.004
Hospital LOS on study day	0 [0-2]	1 [0-3]	0.002
Pre-hospital Advanced Care Plan	42 (5)	38 (16)	<0.0001
Referral source			
Emergency department	159 (20)	33 (14)	0.03
Medical MET/referral	155 (20)	127 (54)	<0.0001
Surgical MET/referral	140 (18)	64 (27)	0.002
Operating theatre elective	217 (28)	4 (2)	<0.0001
Operating theatre emergency	88 (11)	4 (2)	<0.0001
External retrieval	29 (4)	4 (2)	0.13
Admission diagnosis			
Cancer related	14 (2)	14 (6)	0.0006
Cardiac disease	68 (9)	13 (6)	0.12
Gastrointestinal/hepatic	23 (3)	16 (7)	0.007
Surgery, non-cardiothoracic	213 (27)	58 (25)	0.45
Surgery, cardiothoracic	179 (23)	3 (1)	<0.0001
Sepsis, pneumonia	26 (3)	23 (10)	<0.0001
Sepsis, other	64 (8)	28 (12)	0.08
Neurological disease	41 (5)	19 (8)	0.10
Medical, other	87 (11)	28 (12)	0.73
Respiratory disease	49 (6)	30 (13)	0.001
Trauma	23 (3)	4 (2)	0.30
Referral outcome			
ICU	517 (66)	54 (23)	<0.0001
Ward			
Hospital LOS	8 [5-15]	10 [5-16.5]	0.19
Discharge destination			
Home	556 (71)	50 (21)	<0.0001
Nursing home	14 (2)	36 (15)	<0.0001
Other hospital	67 (9)	22 (9)	0.70
Sub-acute	94 (12)	31 (13)	0.62
Palliative care	3 (0)	12 (5)	<0.0001
Died	54 (7)	85 (36)	<0.0001
One-year mortality	101 (13)	156 (66)	<0.0001

1. Data are shown as median [IQR] or number (%)
2. Abbreviations: GoC = goals of care, LOS = length of stay, MET = medical emergency team, ICU = intensive care unit

Table 6: Comparison of patients referred to ICU by survival at 1-year

	Survived	Died	P-value
No.	767	257	
Age	69 [55-79]	75 [61-83]	<0.0001
Male	440 (57)	130 (51)	0.06
Pre-hospital Advanced Care Plan	50 (7)	30 (12)	0.008
Referral source			
Emergency department	147 (19)	45 (18)	0.56
Medical MET/referral	168 (22)	114 (44)	<0.0001
Surgical MET/referral	143 (19)	61 (24)	0.08
Operating theatre elective	204 (27)	17 (7)	<0.0001
Operating theatre emergency	79 (10)	13 (5)	0.01
External retrieval	26 (3)	7 (3)	0.6
LLI indicator			
Any	421 (55)	228 (89)	<0.0001
Cancer	40 (5)	62 (24)	<0.0001
Heart failure	227 (30)	112 (44)	<0.0001
COPD	91 (12)	70 (27)	<0.0001
Renal failure	68 (9)	41 (16)	<0.0001
Neurological disease	72 (9)	55 (21)	<0.0001
Frailty	76 (10)	78 (30)	<0.0001
Dementia	227 (30)	112 (44)	<0.0001
Nursing home	26 (3)	48 (19)	<0.0001
Stroke	16 (2)	11 (4)	0.06
>2 unplanned admission	87 (11)	36 (14)	0.26
Admission diagnosis			
Cancer related	11 (1)	17 (7)	<0.0001
Cardiac disease	58 (8)	23 (9)	0.48
Gastrointestinal/hepatic	23 (3)	16 (6)	0.02
Surgery, non-cardiothoracic	201 (26)	70 (27)	0.75
Surgery, cardiothoracic	173 (23)	9 (4)	<0.0001
Sepsis, pneumonia	28 (4)	21 (8)	0.003
Sepsis, other	69 (9)	23 (9)	0.98
Neurological disease	41 (5)	19 (7)	0.23
Medical, other	89 (12)	26 (10)	0.51
Respiratory disease	49 (6)	30 (12)	0.006
Trauma	24 (3)	3 (1)	0.09
Referral outcome ICU	477 (62)	94 (37)	<0.0001

- Data are shown as median [IQR] or number (%)
- Abbreviations: MET = Medical Emergency Team, LLI = life limiting illness, COPD = chronic obstructive pulmonary disease, ICU = intensive care unit